

**LightWeight BackOffice  
Restaurant Backend System**

BY

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## DECLARATION OF ORIGINALITY

I declare that this report entitled “**LightWeight BackOffice – Restaurant Backend System**” is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

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Date: 08/04/2011

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## **ABSTRACT**

This project is a window based application development. It is a restaurant backend system used to help the restaurant in operation. In project initiation, several problems have been defined therefore there are some possible solutions are released to overcome it. This proposal is focus on the back end design of this system. Before proceed to the development phase, several of the studies have been done. The research on the existing systems and the technology used nowadays in computing field has contributes the idea on how to design a good restaurant system. The summary of the research had been written down as the guidance in the system development. This proposal also provided the psychological of pricing which will teach people how to price the product at a favorable price. The requirements specifications of the system have been described by using requirements gathering technique to retrieve the user requirements. Besides that, this proposal had stated the activity process needed to be done in each phase in the system development. After all the research before the development is done, next it will proceed to development phase. The system interface design and database design will take place before the development of the system. The design of the system interface and database design will be included in this project and there are some tables provided to describe what to do with that design. After that, development of the system will be started. The testing part will be worked concurrently with the programming in order to minimize the errors occurred when doing the full testing. After finish the software development, testing on the system will be done by the developers and the users. The testing of system is done by referring a test plan written by the developers of the system. The system will be deployed after the system is fulfilled the user requirements. The conclusion of this project, limitations and future enhancements will be included in the conclusion part.



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## LIST OF ABBREVIATIONS

<i>GUI</i>	Graphic User Interface
<i>PL/SQL</i>	Procedural Language/Structured Query Language
<i>POS</i>	Point of Sale
<i>SDLC</i>	System Development Life Cycle
<i>SQL</i>	Structured Query Language
<i>ERD</i>	Entity Relationship Diagram
<i>RAM</i>	Random Access Memory

# *Chapter 1*

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# *Introduction*

## **Contents:**

- 1-1 Background
- 1-2 Problem Statement
- 1-3 Solutions
- 1-4 Scopes
- 1-5 Objectives
- 1-6 Target Users

## **Chapter 1: Introduction**

Nowadays, there are many kinds of restaurants operating in the market and using the computer technology to improve their daily business process. Normally, a restaurant system will be used in their restaurant to perform the jobs which can replace the manpower performed by the staff. Most of the restaurant systems are developed to suit their restaurants trends and styles. Other restaurants are not able to use the existing restaurant systems provided in Internet because the system may not providing the features they needed in the business processes. Most of the restaurant system does not have the same provided features in other restaurant system and it leads the confusion of choosing a suitable restaurant system for their restaurants.

In this project, the author would like to develop an innovative restaurant backend system which can suit all the majority of restaurant. The existing restaurant systems do not provide a well backend system to store the records and just provide the food ordering system to let the user order the food. So, the author will like to implement a backend system to manage the records of the restaurant which do not included in the front end system.

## **1-1 Background**

Previously, the author had done the research on the medium range of restaurants in Ipoh market. The majority of all the restaurants are still using the paper and pen for business trading. The works such like taking order, sum up the bill and calculate profit are mostly performed manually by the staffs without the help of computer system. Each of the restaurants only has a cashier machine to calculate the bills in front of the counter.

However, there is a minority of the restaurants are using a system to help them to improve the process of dealing, for example Old Town White Coffee Kopitiam, they have their own restaurant system to handle the orders and sales daily. They usually using paper to take order from customer and then approach to the computer to input the order. The system they using in their restaurant mostly is predefined which mean the system is only suit to the style behaved by that particular restaurant and can be used in their own restaurant only.

## **1-2 Problem Statements**

### **1-2-1 Problem I**

Some information such as staff details, raw material details, supplier details and the purchase order records are not arranged and kept well in the cabinet and it will lead the messy and complicated of records management. The records created by the manager will cause duplication of records when they did not check the previous record properly. This will easily happen while place and order to a supplier if there is no record keeping in the file.

### **1-2-2 Problem II**

Checking and recording the inventory stock is the most difficult part to manage by the staffs. All the papers are documented into file and it takes time for the staffs to review the latest document files by flipping one file to other file in the file cabinet. It is time consuming and leads the operation of the restaurant works in disorder. By the way, calculating and updating the current stocks exist in the inventory is a tedious work for the restaurant manager. The kitchen will unaware of out of stocks of the ingredients in the inventory if the items are not updated frequently.

### **1-2-3 Problem III**

Some restaurants not experienced in pricing the dishes for their menu. Pricing the dishes at high level will cause the restaurant not welcoming by the customer because the dishes are charged at unfavorable price while pricing the dishes at low level will cause the restaurant faces the economic loss when the selling price is charged lower than the cost price.

### **1-2-4 Problem IV**

Lack of the important features led the system run incompletely and may not satisfy the end user needs. Changing software is not the possible solution for the end user and it is costly as what they thought. Sometimes, the system is not fully utilized although the system has embedded with many kinds of features. The features in system are not customizable and forces the user purchases the system at unreasonable price.

### **1-2-5 Problem V**

Errors and mistakes of the systems will be occurred often. The correct flow logic but false calculation and operation led the systems are not reliable. Miscalculating in the system will make the whole operation of the restaurants go wrong. Therefore, all the works needed to do manually by the staffs instead of using an inaccurate system to perform all the tasks. The dependency on the system will decrease as the performance of the system is unfavorable.



### **1-3 Solutions**

#### **1-3-1 Solution I**

This system is able to provide the modules such as raw material, staff, supplier and purchase order to let the manager of the restaurant to maintain the those records. The computerized records in digital format can provide a good filing system for the manager in retrieving the particular records. It is fast and efficient and the mistakes can be reduced.

#### **1-3-2 Solution II**

This system is able to keep track of the quantity of the ingredients and assets and also records all the details in the inventory. The user can check and update the stock in the inventory easily instead of using document files to keep the records of it. This system is able to estimate the quantity of ingredients using in cooking and deduct the quantity of the ingredients automatically when particular dishes are being ordered.

#### **1-3-3 Solution III**

This system is able to generate many kinds of report of the records which are kept in backend system. The manager can use this system to generate the details on the inventory to keep track of the quantity of stocks. Moreover, an accounting system will be introduced in this system to help restaurant calculate the profit based on certain area.

#### **1-3-4 Solution IV**

This system is able to calculate the cost price and selling price of a dish. It can help the restaurant solve the problem of inexperienced in pricing the dishes. This pricing system can help the particular restaurants to set the favorable prices for each dish and can help the restaurant earn possible gross profit in the sale.

### **1-3-5 Solution V**

The customization of this backend system can let user to modify the information such as raw material category, recipe category, staff position, service charge and government and so on. These available features bring out the flexibility of the backend system which can let the manager of the restaurant to customize the information they wanted to store according to their restaurant operation.

### **1-4 Scope**

In this project, the author will develop an enhanced backend system for this innovative restaurant system for the administrator of the restaurant to manage the information behind the restaurant. The backend system will involve the inventory management, recipe manager, staff management, report generator and maintenance of restaurant system. This project also involves the new design on the inventory part which is being differentiated into two different levels to record different types of items and associated with the menu ordering system and also the pricing system in this innovative restaurant system.

## **1-5 Objectives**

The main purpose in this project is to improve the efficiency and performance of the restaurant in their daily working process. This system can reduce the time consuming in particular process and boost up the performance in managing the records of a restaurant.

This system will provide a good filing system which is in database form to reduce the searching time in retrieving certain records. As the information is computerized into the system, it is able to secure the data from illegal modification by the dishonest staff and prevent the data exposed to risk.

Besides, this system is developed to reduce the management cost of the restaurant. The restaurant can use this system to do more than one person works rather than hire more staffs to monitor it. It can reduce the burden of the restaurant in hiring more staffs to manage the restaurant and maintain the labor cost of the restaurant.

Some paper works such as recording the current quantity of the raw material, place order to a supplier, manage the working progress of a staff and so on can be substituted by using system to do those jobs. It can provide a good arrangement in records ordering and the user can easily manage those records.

Minimizing the errors and mistakes making in the process is the other purpose of developing the system in this project. This system is able to perform an accurate calculation and to provide correct information in the report section for the manager of the restaurant. The accuracy in calculating the bills will improve the customer satisfaction towards the restaurant.

### **1-6 Target Users**

The system is kindly developed for the new established restaurants that do not know how to manage the daily business work. Those new restaurants do not have any experiences in managing the orders and stocks. It is not a possible way to hire other staff to manage the inventory part and for accounting part due to lacking of certain skills for some hired staff. The system also designed for some restaurants that need an innovative and customizable system to monitor the business process in a better way. It is because some of the restaurants will think that the current system is imperfect and does not meet the user requirements.

## *Chapter 2*

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# *Literature Review*

### **Contents:**

- 2-1 Fact Findings
- 2-2 Methodology Review
- 2-3 Technologies
- 2-4 Comparison of Existing Restaurant POS system
- 2-5 Pricing Strategy
- 2-6 Comparison of Existing Menu Pricing Systems

## **Chapter 2: Literature Review**

This chapter consists of the studies on fact findings, methodologies, technologies and existing systems.

### **2-1 Fact Findings**

In order to gather the information from the user, a few techniques have been introduced for the developers to do data collection. Every system has its own requirements based on the user needs. (What is Fact-Finding, 2010) Developers cannot simply design a system and deliver to the user. The developers must get the user requirements and the system requirement. Document analysis is necessary for the developers in order to get clearer and accurate requirements from the user and also on the system. It is important of using fact finding to search the facts. Without the facts, the developers cannot develop the system based on the required requirements.

#### **2-1-1 Interview**

Interview session mostly consists of two or more person including the consultant in gathering requirements. Face to face meeting will take place in interview session. Some questions will be asked by the consultant to the user about the requirements on the system. It is important for selecting right interviewees to contribute right information in gathering requirements. Some documents such as questions and schedule need to be done before conducting the interview session. The notes or summaries of the interview results will be delivered after conducting the interviews within the interviewees and interviewer.

#### **2-1-2 Questionnaire**

Questionnaire mostly is done on certain group of people which are located outside the organization. The questionnaire is set of written question in paper format or electronic format used to gather the information or opinion from the people. The participant must be chosen correctly in order to provide a standard opinion and answer to the consultant. The questions can be defined in closed-end question and opened-end question. The returned answer needed to be summarized after the questionnaire is being conducted. The consultant will develop the system based on the feedback and the requirements given by the participants.

### **2-1-3 Observation**

Observation is a process of watching the reality situation of the working environment to gather the information from the user without interrupt their works. This technique is better than using interview and questionnaire to gather information because users might not remember what are they actually performed in business work. Observation allows consultant to collect the information from the beginning of the process until the end of the process. However, there is a drawback for observation. Users may not perform their works as normal because they will try to avoid the mistake making while the process is running and it is difficulties for the consultant to gather the actual information from the user performance.

### **2-1-4 Document Analysis**

Document analysis is an approach of gathering information from the written document. The document mostly describes the specifications of the current system including user requirements and system requirements. Studying the specifications of the current system can analyze the problem faced currently by the user. The developers can get precise specification on the current system and study the requirements from the system. However, the information of the system cannot be retrieved if the process of producing documentation failed in the process.

### **2-1-5 Internet Searching**

Internet searching is the most popular method to retrieve information from all aspects. Internet provides a lot of information in all the fields. Exchanging information and opinion from all perspectives can let the users gain more knowledge and different views from one aspect. Internet can be stated as the richest brain in the global which collecting many kinds of data and information. Nowadays, many authors like to upload their journals to internet for sharing purpose. However, internet somehow will provide false information to the users since the information is provided by other people without any proving and stated that is really existed in the global.

## **2-2 Methodology Review**

In system development, normally methodology will be used to help in the activity process. A methodology will implement all the phases in system development life cycle. The system development life cycle consists of four phases, which are planning, analysis, design and implementation. The phases in SDLC are much more similar to software engineering which consists of four fundamental phases, which are software specification, software development, software validation and software evolution. Every phase in SDLC is important and gives significant impact on achieving the project goal. Skipping one phase in the SDLC most probably will lead the system undeliverable because each phase is interactive and associated with each other. There are many system development methodologies available in process development and each of the methodologies carries out different outcomes in the completed phases.

### **2-2-1 Waterfall Development**

Waterfall development is the original approach and fundamental of the process for software development. A lot of time is taken in each phase to produce documentation to clarify all the requirements and specifications of the system. All of the activities must be planned carefully and completely before proceed to next phase. All the phases in the waterfall development are processed sequentially therefore no backward action is taken in the previous phase if there is missing the step in that phase. Waterfall development methodology is suitable used in critical system development which needs a lot of documentation to describe about the requirements and specification of the system deeply to avoid the failure occurred in the further development.



**Table 2-2-1-T1 Advantages and Disadvantages of Waterfall Development**

<b>Advantages</b>	<b>Disadvantages</b>
Minimizes changes to the requirements as the project proceeds	The design must be completely specified before programming begins
Period of identifies system requirements is long before programming begins	Long time elapse between completion of the system proposal in the analysis phase and the delivery of the system
	No turning back to the previous stages

### 2-2-2 Agile Method

Agile development is a rapid software development methodology which in fast delivering the system to the user. This methodology is mainly focus on the software development process and produce less documentation in planning and analysis phases. The collaboration between the customers is taking the important role in the process of development. Agile methodology can adapt the faster changes in the project when the requirements from customer are being changed. Pair programming is one of the techniques used in agile development which consists of two programmers work concurrently on development phase and validation phase. This approach is widely used by the project team in developing small and medium system and fast delivering to the customers on time.

**Table 2-2-2-T1 Advantages and Disadvantages of Agile Method**

<b>Advantages</b>	<b>Disadvantages</b>
Less documentation and save time	Lack of emphasis on necessary design
High quality software delivers at the end result	Difficult access the effort required at the beginning of SDLC for large software development
Can move backward in any phases of the SDLC	

## **2-3 Technologies**

The advancement in computing technology does solve a lot of jobs perform in real life. There is not only one computing technique exist in the computing technology. It has several of computing methods and skills are available in the market now. Different kinds of the computing technology provide different kinds of the features to the developers. All those computing techniques can be involved in certain fields and all those techniques are not necessary used together because some computing techniques are providing the same functions but with different features.

### **2-3-1 Touch Screen**

Touch screen is the most popular feature that applying in smart phones and monitors nowadays. Touch screen can detect the presence and location of a touch within a location and communicate with interface display on the screen. Each of the touch will give different instructions to the program to perform some certain actions. Capacitive and resistive touch screen is the most popular electronic visual display used in a majority of touch screen handheld devices such as smart phones. (Touch screen, 2010) Computer's monitor also support touch screen features due to the technology advancement. The movement of the touch is same with the mouse pointer moving on the screen. Touch screen is use touch of a finger or a stylus to do direct communication with the program. It is much more convenience for a user using touch screen to control the program instead of using keyboard and mouse to perform the jobs.

### **2-3-2 Programming Languages**

Programming language is the language that has its own syntax and semantic format to communication with the machine. The written programming language mostly is called as instructions which used to give command to the computer to perform the task. It is different with the machine language which can only understand by the machine only. The programming languages written in the computer refer as high level languages which can understand by programmer, and yet the machine still cannot read it. Mostly the programming languages needed to interpret by the compiler itself into machine language and tell the machine what to do. (Programming language, 2010)

There are many programming languages created and implemented every year. All the programming languages can be categorized into certain area such as object-oriented, web based and so on. Many development tools are available in the market as the programming languages are implemented in the computer field. Each programming language has its own unique method in the invention of the program. Although the way of writing the algorithm is not same, the logic and function in the algorithm conveyed in the computer is not much different.

### **2-3-2-1 Java Programming**

Java is an object-oriented programming language which is implemented by Sun Microsystems. Java application can run in cross-platform at least the Java Virtual Machine has embedded in computer architecture. Java is the most famous programming language widely used in GUI development and web application. (Java, 2010)

The created class in Java can be used to create objects or instances and can be reused in other Java application. Java supports inheritance which can inherit the attributes and methods from other classes and save a lot of time in creating the same classes. There is a lot of free library classes available in the market which providing a lot of functions written by the programmers.

Java is well-supported in GUI development. Netbean is a free Java development tool that supporting drag and drop features to design the interface of the system. Those control tools are provided and embedded with event handlers and functions. Java also supported database connection for variety of database systems.

### **2-3-2-2 Visual Basic.NET**

Visual Basic.NET also called as VB.NET, is an object-oriented programming language that implemented on Microsoft .NET Framework. VB.NET provides GUI development for the developers. It is more suitable to start developing a simple application for beginners. (Visual Basic, 2010)

VB.NET can be used to develop a complex application for example windows form application. Control tools including buttons and text boxes will be provided for developers to develop form application. VB.NET is kindly using drag and drop feature to develop the windows form application. All the controls are customizable and have the event handlers and attributes associated with them.

VB.NET also supports wide range of database system for data handling. Connection can easily be made through the wizard. VB.NET also allows data bindings with the records in database and it is reduce the construction time of retrieving records from the database.

### **2-3-3 Database Systems**

Database is a central organization to store the data and information in a digital form. The database is control by the Database Management System and provides data controlling, enforcing data integrity, managing concurrency and database backup. The data inside the database can be logically present in the way of user defined in the query. The database allows different programs to access to do modification on the data such like insert, update and delete. All these modifications can be done by the SQL which is the language used in database.

The reason of using database system to keep information is to reduce the data redundancy and duplicated data. The database system can keep million of the data and information within a computer system. It does helps in saving the computer storage and fast data retrieving. Other than that, the database system does provide the networking system to let user connect the database via internet. Moreover, some database management systems do provide some tools that facilitate the development tasks such as report generators, application generators, import/export utility, etc.

### **2-3-3-1 Microsoft Office Access**

Microsoft Office Access is one of the members in the Microsoft Office suite application. It is a pseudo-relational database management system that supports GUI development. The presentation of the database in Microsoft Office Access is user-friendly and easy control by the user.

Access is come from the Microsoft Office package and cannot be purchased separately. The installation fee is costly on installing the whole Microsoft Office suite application into a computer system, yet Access has provides a variety of tools that facilitate the application development task such as report generators, form generators, import/export utility, etc.

Microsoft Office suite application only support for Windows based computer system. It does not support in cross-platform computer system. There is many language packages are developed to meet the user requirements in various market. The system requirement for installing Microsoft Office Access is moderate in ram consumption and processing speed.

### **2-3-3-2 Oracle Database**

Oracle database is the relational-database management system published by Oracle Corporation. Oracle database contains no GUI development for user to manage the tables in the database. The tables' creation can be done in command prompt by typing the queries. Oracle database can run the queries which are written in notepad. It is convenience for the user to do changes or correction if the queries are incorrect. (Oracle Database, 2010)

The cost of purchasing Oracle database is quite high according to the provided versions. The installation of oracle database is complicated and slow and takes a lot of spaces in the installation. It does not provide some tools that facilitate the application development task such as report generators, application generator and import/export utility. Oracle database only support Windows based computer system but it does support multiple languages.

The unique feature in Oracle database is it can store and execute procedures and functions. Those procedures and functions are written in PL/SQL format. The condition statement such as IF-ELSE and looping statement such as WHILE-LOOP can be used in Oracle database to retrieve the records.

### **2-3-3-3 Microsoft SQL Server**

Microsoft SQL server is a relational model database server published by Microsoft. Microsoft SQL server is embedded with Microsoft Visual Studio and can be installed together with the Microsoft Visual Studio Development Tools. The Microsoft SQL Server is always compatible with the software development tools such as visual basic, C#, asp.net and so on which are come in a set with Microsoft Visual Studio. (Microsoft SQL Server, 2011)

The Microsoft SQL server provides many types of database format to the developers in developing the system. Each of the database type has its own unique features to support various kinds of functions. For example, SQL Server Compact Edition can support mobile transactions and SQL Server Web Edition can support for web hosting.

The creation of database table can be done in Microsoft Visual Studio. The database creation can be done easily because Microsoft Visual Studio had provided those features to the developers in creating the database tables. The developers can add the new connection for the existing database which is compatible with the Microsoft Visual Studio format.

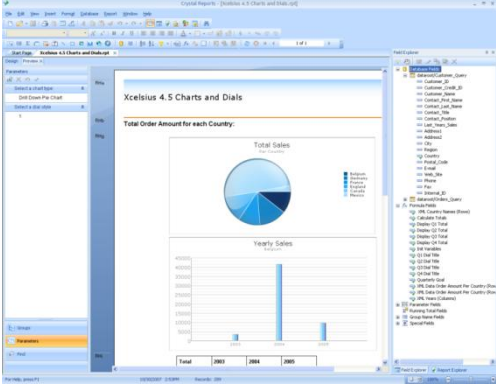
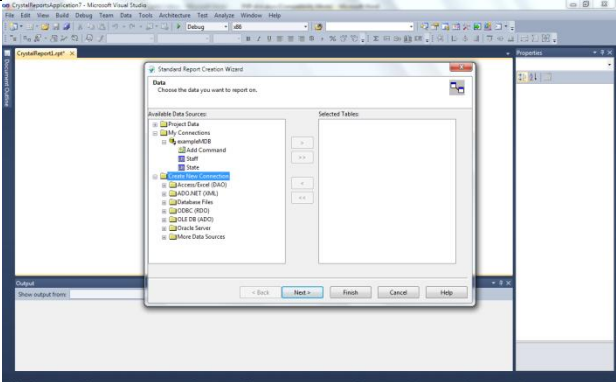
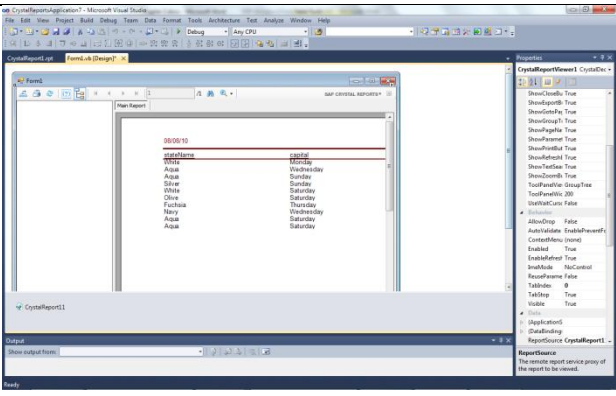
**Table 2-3-3-T1 Comparison of Database Systems**

Database Systems	Microsoft Office Access	Oracle database	Microsoft SQL Server
Features			
Operating system	Windows based	Windows based	Windows Based
Language	Multilanguage	Multilanguage	English
GUI Interface	Yes	No	No
Cost	Expensive (\$499.99 dollar for Office Professional Edition)	Expensive (\$460.00 dollar for personal edition)	Embedded with Microsoft Visual Studio
System requirements(minimum)	Processor: 500MHz processor Memory: 256MB Storage: 1.5GB	Processor: Intel Pentium or AMD Athlon, 223 MHZ Memory: 128MB Storage: 1.5GB	Processor: Intel Pentium Memory: 256MB Storage: 4MB – 4GB (Depends on the database format)

### 2-3-4 Crystal Report

Crystal Report is a report generator that can design and generate the report from various data sources. Crystal report is a windows based application embedded with visual studio and can associate with Visual Basic.NET. (Crystal Report, 2010)

User is allows to use the report designer in the application to design the presentation of the reports in different fields. Crystal report can simulate the graphical chart based on the provided data sources. Besides, it allows user to customize the coding in the report design to retrieve different views of information. Moreover, printing option is provided for the user to produce the hardcopy on the report.

Screenshot	Description
	<p>Data fields from the data source are provided and let user to design the structure of the report. Variety of charts is provided to simulate the performance of the business trend.</p>
	<p>Report creation wizard can help user to do connection on the data sources. It supports Access/Excel, XML, ODBC, Oracle, etc.</p>
	<p>User can design the structure of the report and do modification on the fonts and coloring.</p>




## 2-4 Comparing Existing Restaurant POS Systems

There are several restaurant POS system exist in the market and provide different kinds of features for the user in the restaurant management.

### 2-4-1 Amigo Restaurant Point of Sale System

AmigoPOS is a touch screen system designed for hospitality and light environments where extensive employee training is not always possible and desirable. AmigoPOS system does provide powerful features such as back office, reports, inventory, customer list, employee list, seating charts, discount, peripherals support, payroll system, etc. (Restaurant POS Touchscreen Software – Amigo, 2010)

AmigoPOS offers different types of food service modes such as dine in, car, delivery, takeout, pick up and counter mode. All the transactions can be recorded and categorized accordingly. AmigoPOS provides full functionality of billing system that can split the orders and provide different types of payroll methods. The back office system can print different types of report for analysis. Besides, the system is able to estimate the weight of ingredients used in one dishes and generate the reports for ingredients' amount left in inventory. Furthermore, the AmigoPOS system also provides discount system that can give some discount on some certain ingredient types and other discount events which can define by the manager.

Screenshots	Description
 <p>Figure 2-4-1-F1 - Login Interface</p>	<p>User login interface. It requires username and password to login the system. It also provides fingerprint method and card swiping method to login the system.</p>

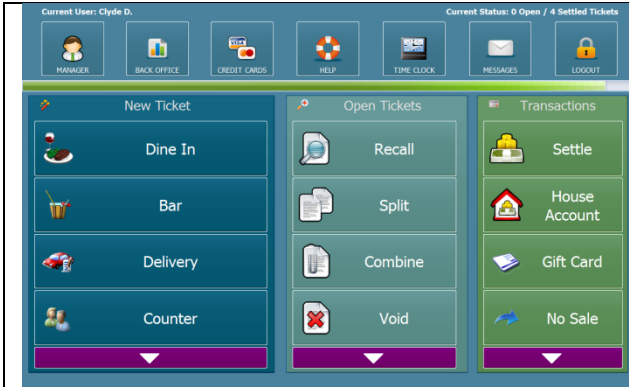


Figure 2-4-1-F2 - Main menu

The main menu user interface after login to the system. The top menu bar provides the back office management. Left menu bar provides different food service moods to record the orders. Middle menu bar provides order handling function. Right menu bar provides transaction settlements.

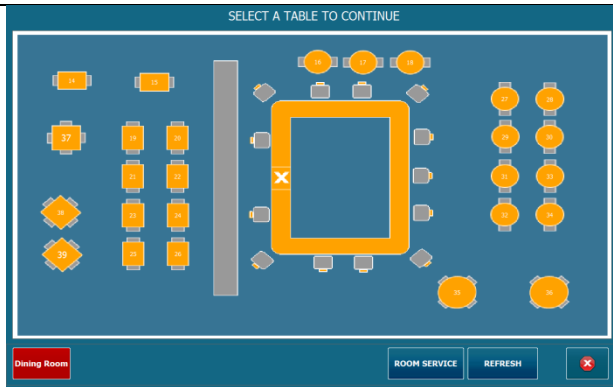


Figure 2-4-1-F3 - Dining Room Chart

When dine-in food service mood is selected, the system will display the dining room chart to user to take order on the specific table.

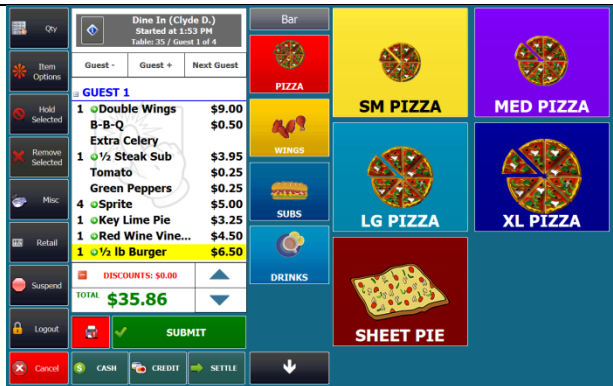


Figure 2-4-1-F4 - Main Menu for Foods and Beverages

Main menu will be showed after table is selected and many types of foods will be provided and let user to take orders. The total of amount will be appended when each dish has been selected.

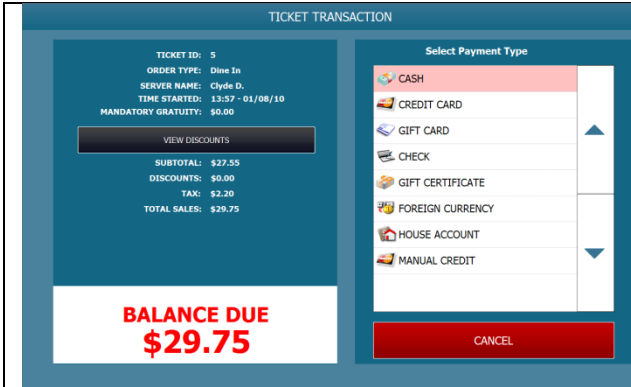


Figure 2-4-1-F5 - Transaction Settlement Menu

In transaction settlement menu, there is a list of payroll methods provided for customer to pay their foods.

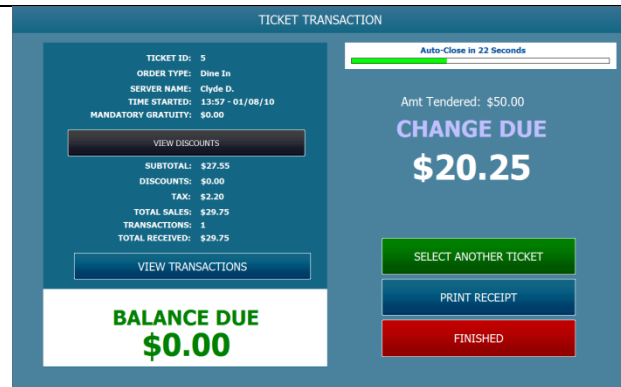


Figure 2-4-1-F6 - Page after Settlement.

The system is able calculate the change due and print the receipt for customer. This page will auto close after the fixed duration.

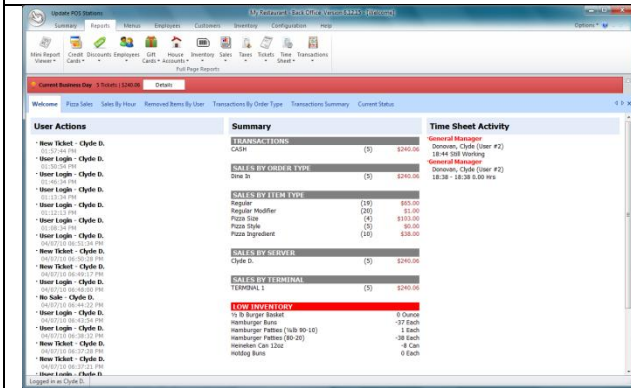


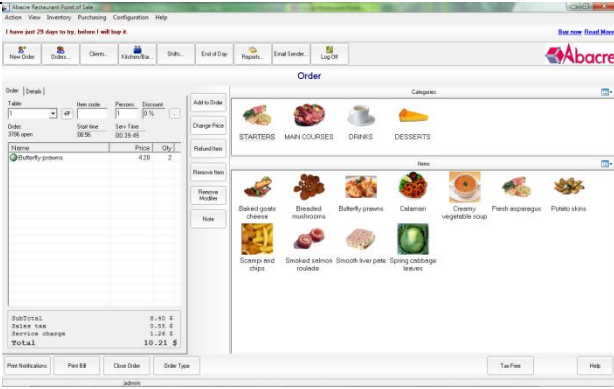
Figure 2-4-1-F7 - Report Summary

The back office system provides different types of reporting on certain aspects such as ingredients usage, big amount transaction, daily sales, employee list, customer list, etc.

### 2-4-2 Abacre Restaurant Point of Sale System

Abacre Restaurant Point of Sale (Abacre Restaurant POS) is restaurant management software for Windows based computer. Abacre Restaurant POS provides complete solutions from ordering taking until the billing and reporting. It also provides the security authorization and support for multiple computers. (Abacre, 2010)

Abacre Restaurant POS offers dine-in, delivery and takeaway food service moods to user to keep track the orders. The menu of foods is categorized according to the serving types. It also provides inventory part to keep track the quantity of the foods. The system is able to keep the information of the customers and staff. The configuration in the system provides a list of functions such as table plan, menu type, payment type, bill configuration, property setting, discount, etc. The report system in the system is able to generate all the possible reports for sales, taxes, inventory, profit, margin, shifts and others. Besides, the system provides the kitchen/Bar side for viewing the orders. Moreover, it is able to record the vendors' information for future purchasing in ingredients or assets.

Screenshots	Description
 <p data-bbox="289 1539 633 1570">Figure 2-4-2-F1 - Main menu</p>	<p data-bbox="932 1136 1438 1451">Main menu in Abacre Restaurant POS system. Left side of the menu records the orders and right side of the menu provides the food menu. Top of the menu provides tools bar for the system.</p>

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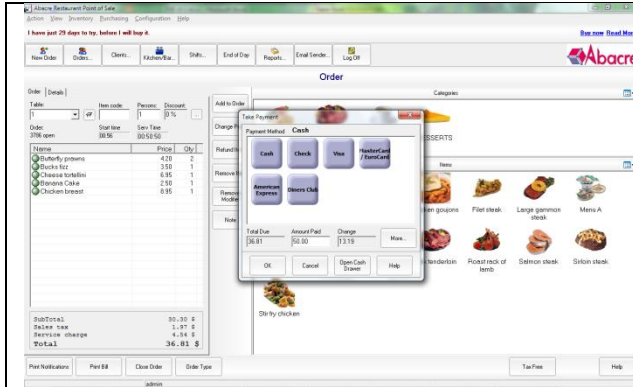


Figure 2-4-2-F2 - Billing System

The billing system provides different types of payroll methods to settle the transactions.

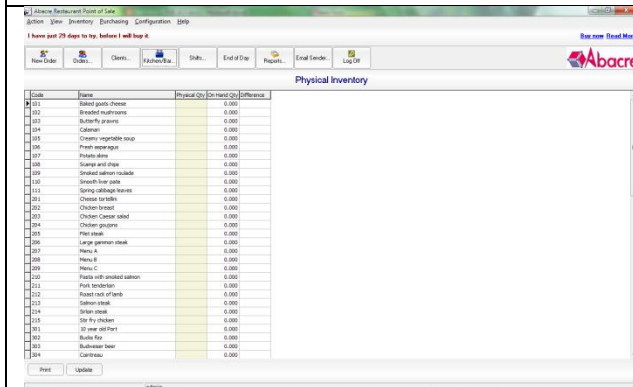


Figure 2-4-2-F3 - Inventory System

The inventory system can keep track all the quantity of the food on hand.

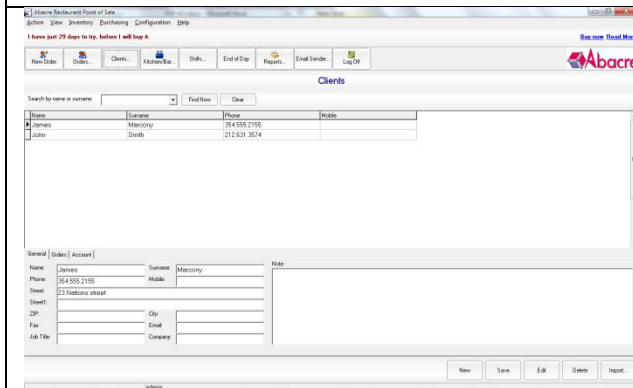


Figure 2-4-2-F4 - Client Module

The client module can keep track the information of the clients and generate a grid view for the clients

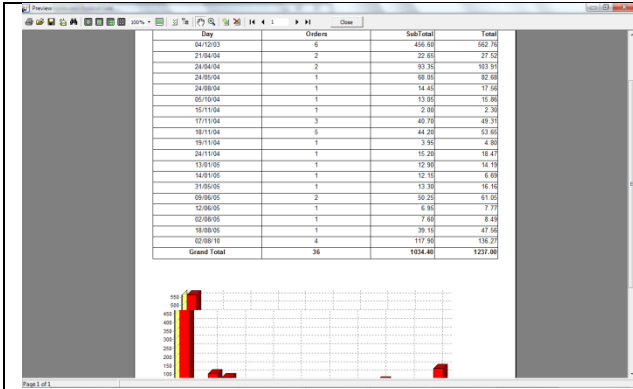


Figure 2-4-2-F5 - Report analysis

The report module is able to generate different types of report analysis such as sales, inventory, tax, etc. The sales report is also able to generate a chart for the trend viewing.

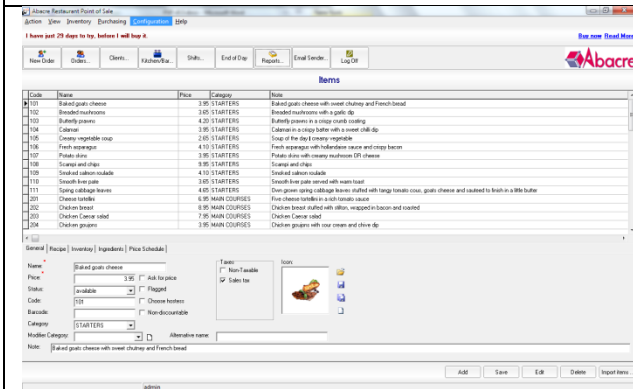


Figure 2-4-2-F6 - Menu Configuration

The menu configuration can let user to modify the content of the foods and attach the photo of the food appearance.

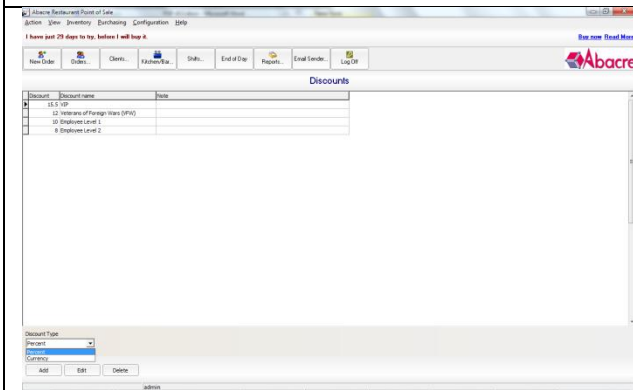



Figure 2-4-2-F7 - Discount module

The discount module is enable user to define the list of the discount events and trigger the discount event in the ordering system.

### 2-4-3 Super Packed Restaurant System

Super Packed Restaurant POS System (SPR POS) is a restaurant system that is suit for windows based computer to handle all the operation of a restaurant. SPR Pos system is fully depends on the inputs from mouse and keyboards. The design of SPR POS system is nor suitable for touch screen due to its button size. SPR POS system provides basic features such as ordering, reporting, maintenance system, system setup, inventory, etc. (SPR POS 3.01 – Point of Sale, 2010)

SPR Pos system provides delivery and dine-in food service moods for user to keep track the orders. The dine-in food service mood is using table ordering to keep track the orders from each table. The code of the foods is using in the ordering part. The system is able to record the customer details and staff details. The report system provides different of report analysis for the manager to view the trend of sales in particular period. The system setup in the SPR Pos system can help manager to define their desired setting such as language, daily time, daily backup, table creation, company information, etc. The maintenance system provides information editing for the inventory items and also for the employee scheduling. Different payroll methods also provided for the customer to pay their orders.

Screenshots	Description
 <p>The screenshot shows the main menu of the SPR POS system. It features a grid of buttons representing table numbers, ranging from 1 to 80. The buttons are arranged in 10 rows and 8 columns. The first row contains buttons for tables 1 through 8. The second row contains buttons for tables 9 through 16. The third row contains buttons for tables 17 through 24. The fourth row contains buttons for tables 25 through 32. The fifth row contains buttons for tables 33 through 40. The sixth row contains buttons for tables 41 through 48. The seventh row contains buttons for tables 49 through 56. The eighth row contains buttons for tables 57 through 64. The ninth row contains buttons for tables 65 through 72. The tenth row contains buttons for tables 73 through 80. The buttons are styled with a light blue background and black text. The window title bar at the top indicates the application is 'SPR POS' and the date is 'Monday, 1, 2010'. The menu bar includes 'Point of Sale', 'Daily Activities', 'Maintenance System', 'Reports', 'System Setup', 'Register', 'about...', and 'Help'. The toolbar includes 'Open', 'Table #', 'Barcode', 'New Table', and 'New Table (111)'.</p>	<p>Main menu of SPR Pos System. Each of the order is recorded according to the table number defined on the screen.</p>
<p>Figure 2-4-3-F1 - Main Menu</p>	

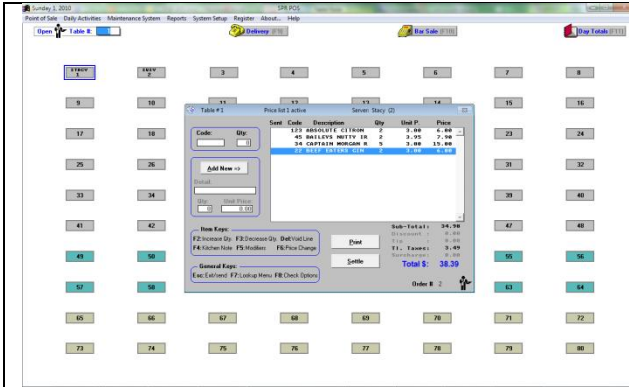


Figure 2-4-3-F2 - Menu Order

A staff must be assigned to each table before the order is taken by the staff. The orders are taken by input the code of the foods and the quantity.

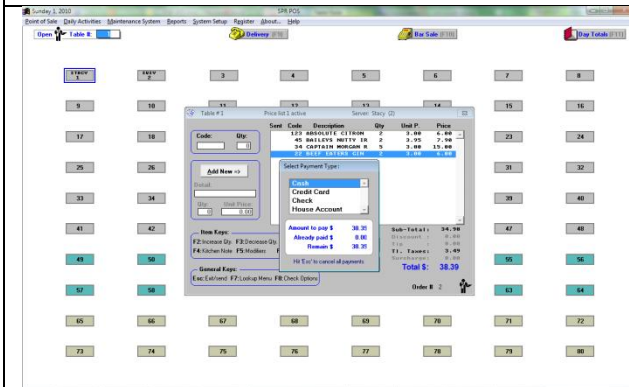


Figure 2-4-3-F3 - Billing system

Different types of payroll methods such as cash payment, credit card payment, check payment and house account provided to the customer to settle their transaction.

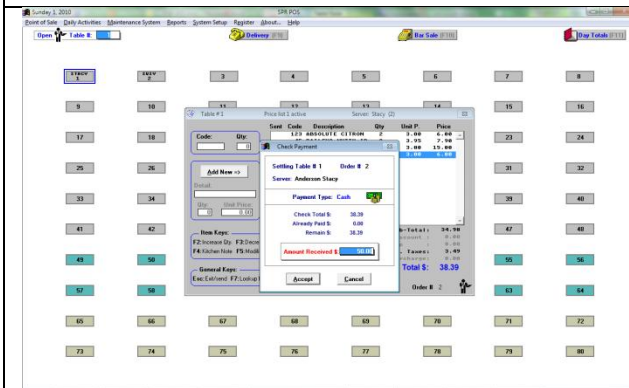


Figure 2-4-3-F4 - Transaction Summary and Receipt Printing

The billing system is able calculate the change due and print the receipt for the customer after the transaction is finished.



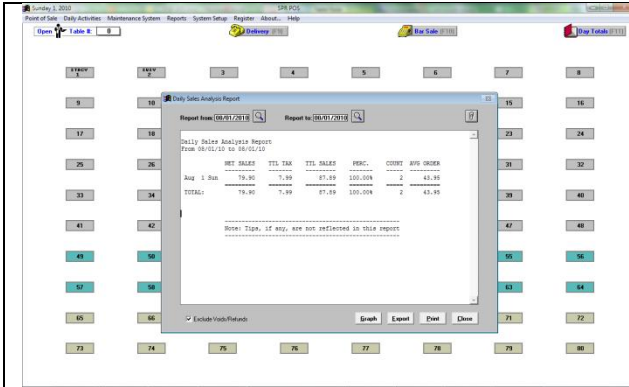


Figure 2-4-3-F5 - Daily Sales Report Analysis

The report system is able to generate different kind of sales report. The report on left is the daily sales report. Graph can be generated for the trend viewing.

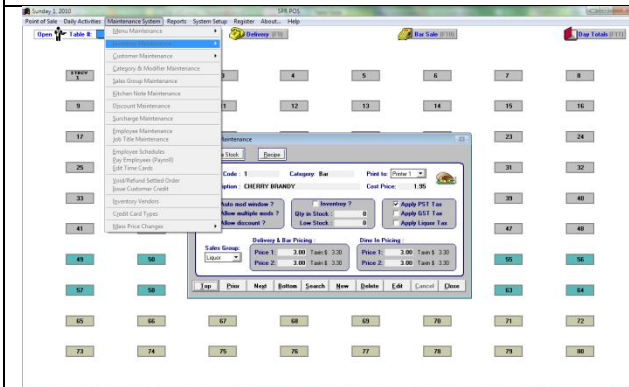


Figure 2-4-3-F6 - Menu Maintenance

Different types of maintenance of the restaurant management are provided to the user to define their own setting in Maintenance System located in menu bar.

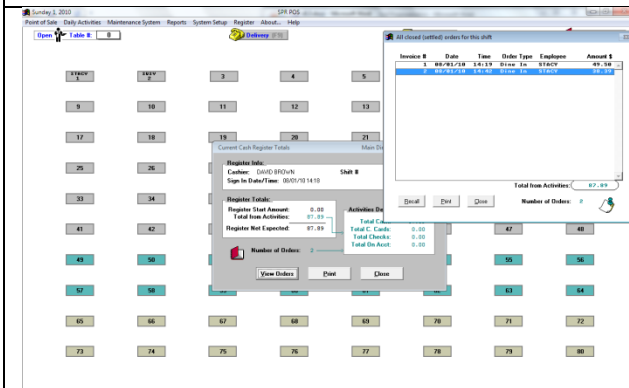


Figure 2-4-3-F7 - Summary Orders

The day tools can keep track how many orders taking by a staff in a day. The date, time, and amount are recorded in the dialog box and printing option is provided to user.

**Table 2-4-T1 Comparison of three Restaurant POS Systems**

Existing POS System Features	Amigo Point of Sale	Abacre Restaurant Point of Sale	Super Packed Restaurant POS System
Interface layout	User friendly and attractive	User friendly	Not user friendly and not attractive
System POS touch screen	Yes	Yes	No
Security Authorization	Biometric fingerprint, touch input, card swipe	Card swipe, touch input, keyboard input	Keyboard input
Report System	Specific and depth report generating, clear and specific	Clear report and chart generating in many aspect	Clear report and chart generating
Payroll methods	Cash, visa, voucher	Cash, visa, cheque, voucher	Cash
System Features	<ul style="list-style-type: none"> <li>• Menu types</li> <li>• Order methods</li> <li>• Credit card processing</li> <li>• Customer receipt</li> <li>• Cash management</li> <li>• Quickbooks accounting</li> <li>• Report generation</li> <li>• Prep Tickets</li> <li>• Inventory</li> </ul>	<ul style="list-style-type: none"> <li>• Menu types</li> <li>• Order methods</li> <li>• Kitchen view</li> <li>• Sales report</li> <li>• Inventory</li> <li>• Security authorization</li> <li>• Support foreign currency</li> <li>• Client database management</li> <li>• Table management</li> </ul>	<ul style="list-style-type: none"> <li>• Menu types</li> <li>• Item modification</li> <li>• Floor management</li> <li>• Employee payroll</li> <li>• Guest database management</li> </ul>

	<ul style="list-style-type: none"> <li>• Staff management</li> <li>• Customer management</li> <li>• Remote video display</li> <li>• Table management</li> </ul>		
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**Table 2-4-T2 Strengthens and Weakness Between Existing POS Systems.**

<b>Existing Systems</b>	<b>Strengths</b>	<b>Weakness</b>
Amigo Point of Sale	Provides full functionalities. Interface is user-friendly and attractive. Menu ordering provides food images. Nice design in table management. Support touch screen feature.	Difficult to handle the back office tools at system backend.
Abacre Restaurant Point of Sale	Interface is user-friendly. Easy in handling system backend. Support touch screen feature.	Less functions in backend system.
Super Packed Restaurant Point of Sale System	Good reporting and graph presentation.	Interface is not attractive. Menu ordering does not contain images. Table management is not organized. Does not support touch screen feature.

## 2-5 Pricing Strategy

Pricing strategy is take important role in the business structure because it related to product positioning. It is not the simplest approach to pricing on the product and it needs to take concern in many aspects, the demand curve, environment factors, competitors, marketing strategy and so forth. The aims for all the pricing strategies are the same, there are maximize the current profit, maximize profit margin, maximize current revenue and maximize quantity. (Pricing a Product, 2010)

Several pricing methods had been introduced in the market and widely used by the manager in the pricing strategy. Cost-plus pricing, target return pricing, value-based pricing and psychological pricing which were the four methods used to set the price level. (The psychology of Pricing, 2010) These methods are using different calculation and methodology to set the price for the product. And, of course there exist the psychology of pricing which is study the behaviors of the customer. The four perceptions in psychology of pricing are stated below:

- I. Perception of savings  
Set the price end with “.99” because customer looks at this price more favorable. Customer will have \$0.01 saving when purchasing an item end with the price “.99” instead of the price with whole number.
- II. Perception of value  
Offer some freebies and gift on the selling products. Customer will feel worth because they are getting more than what they are paying for.
- III. Perception of discount  
Set the discount on the selling items from 10% to 70%. It can attract more customers to buy it and customers will have the saving on the items.
- IV. Perception of unbundling  
Unbundling the price into routine payments affects the decision to purchase. “Big Money” perception will discourage people from buying the product.

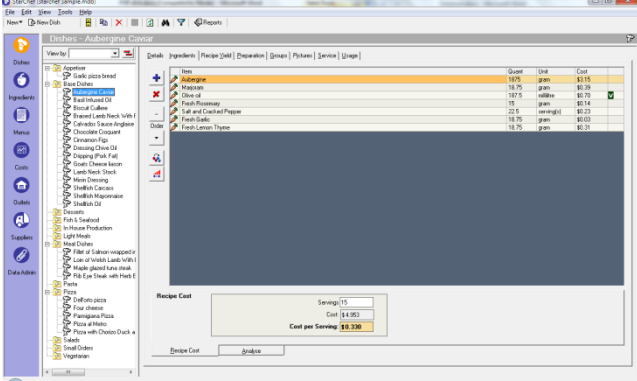
## 2-6 Comparing of Existing Menu Pricing Systems

Since the pricing strategy is takes important role in the business structure, a lot of pricing systems have been introduced in the market and provides some functionalities in menu pricing.

### 2-6-1 StarChef

StarChef is a recipe and menu management solution that can maintain the price cost of the ingredients and calculate the selling price for each dish. It is an independent system that is not associates with restaurant POS system in ordering module. It does provide menu creation in the system that helps user to calculate the cost price of the dishes by calculating the total cost of all the ingredients. (Starchef, 2010)

StarChef provides certain tools to facilitate the menu pricing such as dishes, ingredients, menus, costs and outlets. The cost price for ingredients can be defined in ingredients module. The dishes module does store the ingredients and recipe used in each dish. StarChef is using gross profit to calculate the selling price for all the dishes. Beside, the menu module in the system provides the other method which is menu gross price to calculate the selling price for one course of menu. Moreover, StarChef does provide reports generators in ingredient based, dish based, menu based and miscellaneous based.

Screenshots	Description
 <p data-bbox="289 1759 673 1791">Figure 2-6-1-F1 - Dishes module</p>	<p data-bbox="954 1360 1432 1829">The selling price is automatically calculated when all the ingredients are allocated each dish. The cost price of a dish will calculate based on the total of servings. The selling price will calculate based on the cost per serving and the defined gross price. It also provides two prices which are including tax and</p>

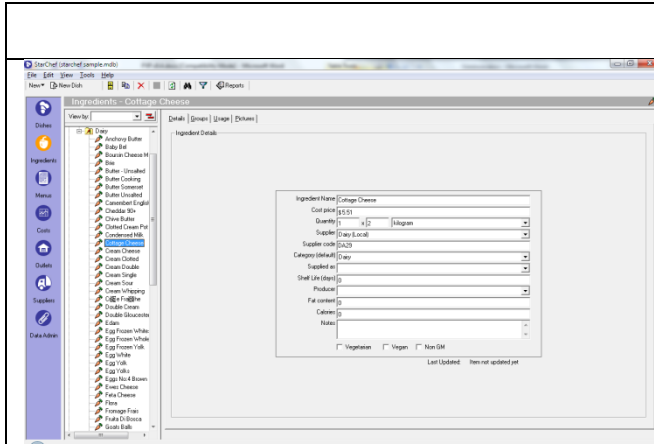


Figure 2-6-1-F2 - Ingredients Module

excluding tax.

All the details of ingredients are inputted in this module including the cost price. The ingredients can be categorized according to their types.

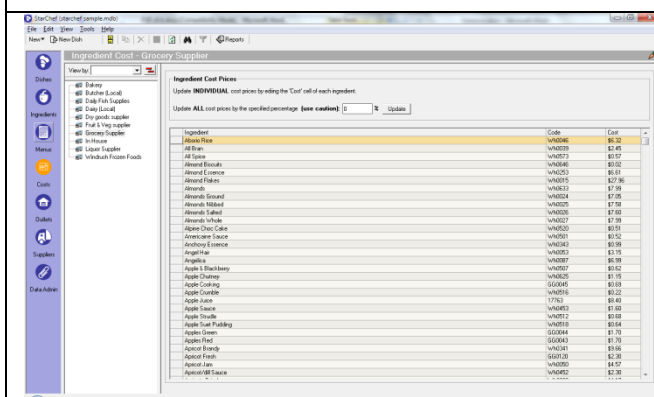


Figure 2-6-1-F3 - Cost module

Modification of cost price for each ingredient can be done in this module. The cost price can be updated separately or updated in a group by specify the percentage of the rising price.

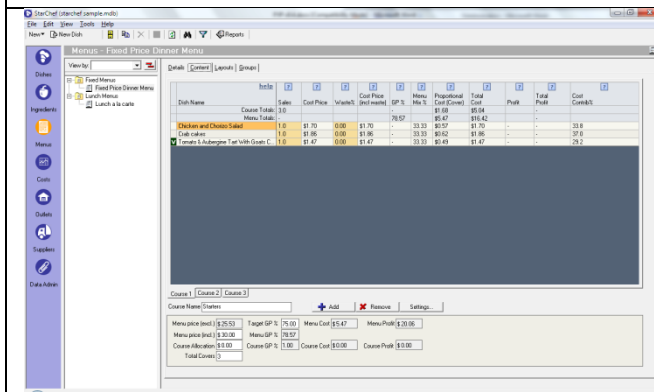


Figure 2-6-1-F4 - Menus Module

This module provides course menu creation and the menu price calculating. The gross price for menu set can be defined in this module. The dishes can be chosen from defined list in dishes module.

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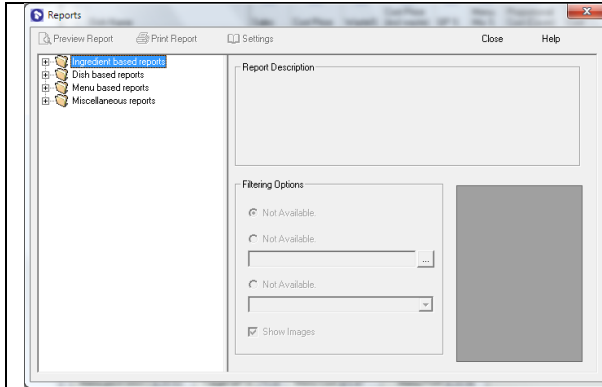


Figure 2-6-1-F5 - Report Generators

The report generators in this system consists of ingredients based report, dish based report, menu based report and miscellaneous reports.

Dish	Cost per Serving
Apple Charlotte With Figs And Vanilla Custard	\$1.88
Aubergine Caviar	\$0.33
Baked padmas	\$0.99
Balsamic onions	\$0.75
Basil Infused Oil	\$0.11
Biscuit Cufflers	\$0.12
Bomboli & Fascetti	\$0.47
Braised Lamb Neck With Root Vegetable Macedoine	\$1.04
Calvados Sauce Anglaise	\$0.26
Caramel and Amaretto Charlotte	\$0.83
Cassata	\$1.24
Chargrilled vegetables	\$0.90
Chicken and Chorizo Salad	\$1.70
Chocolate Croissant	\$0.10
Chorizo and wild mushroom risotto	\$0.95

Figure 2-6-1-F6 - Dish Based Report

This report describes the cost per serving for each dish.

Ingredient	Supplier	Category	Code	Quantity	Cost
1/2 m Pizza Pomodoro	Windrush Frozen Foods	Bakery	7449	12 x 1 single	\$25.00
Abrorio Rice	Grocery Supplier	Grocery	WH0046	1 x 3 kg	\$6.32
All Bran	Grocery Supplier	Grocery	WH0039	1 x 1 kg	\$2.45
All Spice	Grocery Supplier	Herbs and Spices	WH0573	1 x 0.4 kg	\$0.57
Almond Biscuits	Grocery Supplier	Grocery	WH0646	1 x 1 single	\$0.02
Almond Essence	Grocery Supplier	Grocery	WH0253	1 x 1 l	\$6.61
Almond Flakes	Grocery Supplier	Grocery	WH0015	1 x 3.5 kg	\$27.96
Almonds	Grocery Supplier	Grocery	WH0633	1 x 0.4 kg	\$7.99
Almonds Ground	Grocery Supplier	Grocery	WH0024	1 x 1 kg	\$7.05
Almonds Hulled	Grocery Supplier	Grocery	WH0025	1 x 1 kg	\$7.58
Almonds Sliced	Grocery Supplier	Grocery	WH0026	1 x 1 kg	\$7.65
Almonds Whole	Grocery Supplier	Grocery	WH0027	1 x 1 kg	\$7.99
Alpine Choc Cake	Grocery Supplier	Desserts	WH0520	1 x 1 single	\$0.51
Amerikane Sauce	Grocery Supplier	Jams, Sauces	WH0501	1 x 1 single	\$0.52
Anchovy Butter	Dairy (Local)	Dairy	DA28	1 x 1 kg	\$2.30

Figure 2-6-1-F7 - Ingredient Based Report

This report describes the details for each ingredient. The quantity and cost for each ingredient will show in this report.

### 2-6-2 Recipe Manager Professional

Recipe manager professional is an application for building the menu cost while tracking the recipe detail and inventory at the same time. It is a stand-alone system that does not associate with restaurant POS system. The major solution in this system is to keep track of the recipes and ingredients in the inventory. (Recipe Costing, 2010)

Recipe manager provides some tools to facilitate the menu pricing based on the cost of the ingredients using in one dish. The system is able to user to calculate the margin and the selling price for each dish. The ingredients information can be defined in inventory module. The selling prices will be calculated automatically when the required ingredients are allocated to that particular dishes. Besides, it also provides menu module to let user to design their desired menu list for their restaurant. Moreover, report generators are also provided to the user to have a quick view on the inventory and recipe. This system also is able to calculate the nutrition facts on each dish.

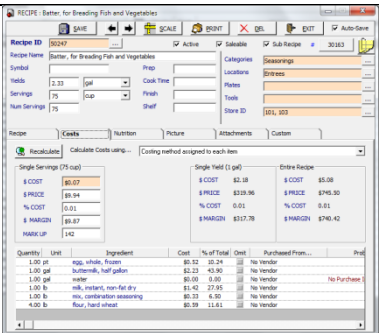
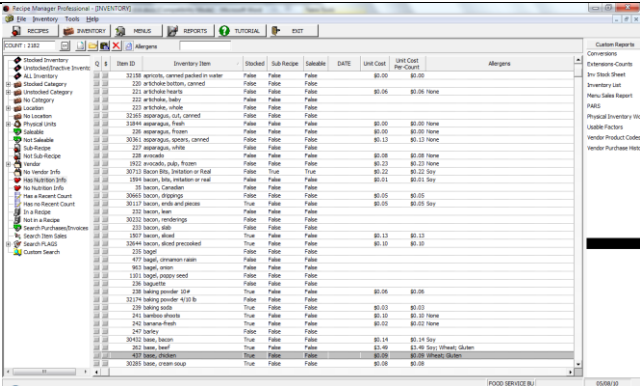
Screenshots	Description
	<p>All the recipe details can be imported in this module. The selling price of the dishes will be calculated automatically. The cost, price and margin will be displayed in this section.</p>
	<p>The ingredient details are stored in inventory module. User can click in to do modification on the specific ingredient or insert new ingredient details. The ingredients can be categorized according to the specified type.</p>

Figure 2-6-2-F1 - Recipe details

Figure 2-6-2-F2 - Inventory



## Chapter 2: Literature Review

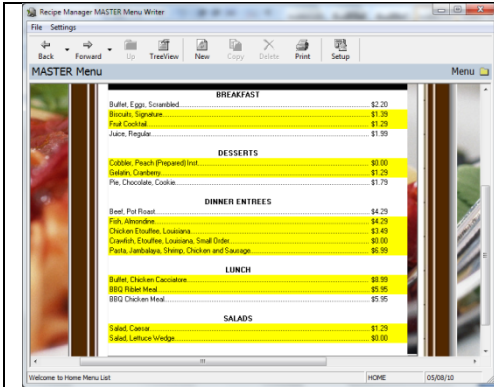


Figure 2-6-2-F3 - Menu Manager

The menu list can be designed by adding the dishes defined in recipe module. This module is enable user to print the menu for the restaurant use.

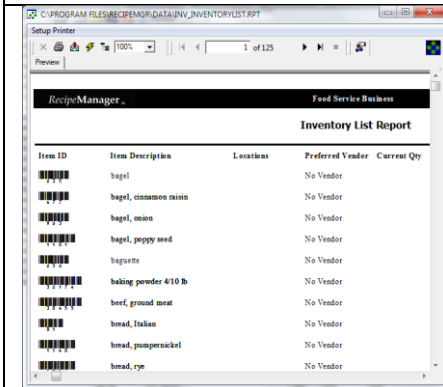


Figure 2-6-2-F4 - Inventory report

The report generator in this system is able produces different kinds of reports in many aspects. The inventory report is able to display the bar code for each ingredient and all the details are fully described in one row.

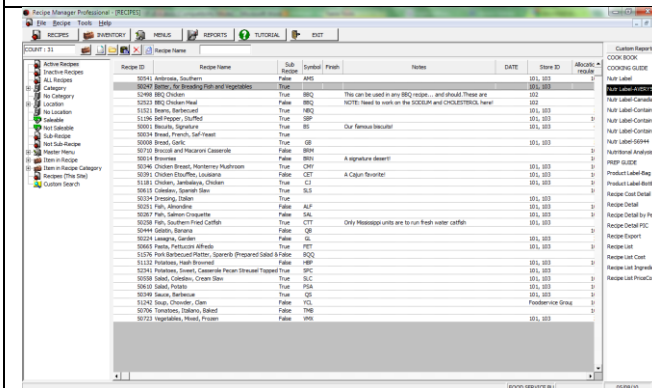


Figure 2-6-2-F5 - Recipe manager

The recipe details are displayed in recipe manager. User can click into the recipe to do modification on the ingredients, price, cooking instructions, etc.

**Table 2-6-T1 Comparison of Existing Pricing Systems**

<b>Existing pricing system</b>	<b>StarChef</b>	<b>Recipe Manager Professional</b>
<b>Features</b>		
Interface	User friendly	User friendly
Cost	\$850.00 (Professional version)	\$495.00 (Lite version)
Pricing method	Gross Profit	Undefined
System features	<ul style="list-style-type: none"> <li>• Dishes manager</li> <li>• Menu manager</li> <li>• Report generator</li> <li>• Ingredients manager</li> <li>• Cost manager</li> </ul>	<ul style="list-style-type: none"> <li>• Recipe manager</li> <li>• Menu manager</li> <li>• Report generator</li> <li>• Inventory manager</li> <li>• Nutrition manager</li> </ul>

**Table 2-6-T2 Strengthens and Weakness of Existing Pricing Systems**

<b>Existing Systems</b>	<b>Strengths</b>	<b>Weakness</b>
StarChef	Good in reporting of the recipe and the cost. Gross profit can be defined easily. Ingredients cost are easily updated.	Does not associate with restaurant POS system
Recipe Manager Professional	Provides nutrition facts on the dishes.	Does not associate with restaurant POS system. Low in reports generating. Pricing method is undefined.

## *Chapter 3*



# *Requirements Specifications*

### **Contents:**

3-1 Requirement Gathering Technique

3-2 System Requirements

## **Chapter 3: Requirements Specifications**

This chapter describes the outcomes of the user requirement for this innovative restaurant system which will be delivered at the end of this project.

### **3-1 Requirement Gathering Technique**

The requirement gathering techniques used in this project are Internet searching and observation. The author had tested some of the existing systems in the market by downloading the demo of the existing systems and read through the sufficient information given in the Internet. The author had studied the features provided in the existing systems and determined the basic features needed to be implemented into this innovative restaurant system. Besides, the author went to a few restaurants that are using POS system in their operation to do ethnographic observation. The author has observed their actions and the ways of using the POS system and recorded for requirements extraction.

The outcomes of Internet searching will be the basic features that are commonly used in most of all restaurant POS systems, which are ordering part for order food, inventory module for keep track of the stock, report generator for generate the sales report and bill payment for the transactions settlement. The author also had do research on some restaurant POS systems that do not integrated with a recipe pricing module to help the restaurant manage the recipes and the prices of the dishes. The author also had found that the inventory manager is not segmented into different levels which are raw material inventory to keep track of the raw material items and pre-cooked inventory to keep track of the pre-serving dishes. Besides, the report generators will be the main feature in the backend system to produce the reports in backend management. Moreover, some existing systems has incorporated staff module to keep track of the staffs information and arrange the duty schedule.

The outcomes of observation doing on some restaurants are likely similar with the outcomes of Internet searching. For the backend management, only the administrators of the restaurant are able to login the system to do maintenance which mean security authorization had been integrated into the restaurant system. They do use the purchasing

order in the system to stock in the ingredients and assets to update the quantity stock in inventory once they have received the ordering. In addition, the existing systems have the maintenance module to let administrators to define their own settings for each module.

### **3-2 System Requirements**

This project mainly focuses on the backend of this innovative restaurant system which will be delivered at the end of this project.

#### 1.0 Security User Authorization

- 1.1 The system should be able to provide the security authorization for user to access the inventory management.

#### 2.0 Inventory Manager

##### 2.1 Raw Material Inventory

- 2.1.1 The system should allow user to add a new raw material details in the system database.
- 2.1.2 The system should allow user to update the information of the existing raw material records
- 2.1.3 The system should allow user to categorize all the ingredients and assets accordingly.
- 2.1.4 The system is able to generate the report of ingredients and assets for user to keep track of the quantity left in the inventory.
- 2.1.5 The system can allow user to place an order to a supplier in this module.

##### 2.2 Quantity and Usage

- 2.2.1 User is allows to update the quantity of the raw material and asset.

2.2.2 The system should be able to update the raw material quantity in quantity and usage module when the restaurant has received the purchased order.

2.2.3 The system is able to generate the report of ingredients costs and the suppliers' information.

2.2.4 The system should be able to generate the report of delivering order on date ordered, items ordered, suppliers' information, etc.

### 3.0 Recipe Manager

3.1 The system should allow user to select the ingredients from raw materials list in the inventory and allocates to the dish when creating a new dish in the recipe manager.

3.2 User needs to input the quantity of ingredients using in one dish. The system should provide a list of quantity measurement for user to select in quantity setting.

3.3 The system should allow user to input the recipes information and upload the dishes photo.

3.4 User can categorized all the recipes based on the food types. For example, desserts, drinks, noodles, main courses, etc.

3.5 User is allows to modify the information of the recipes includes add, delete and update.

3.6 The system should be able to calculate the total cost of each dish and calculate the selling price automatically based on the gross profit defined by the user.

3.7 The system should able to generate the report of recipes, cost price of dishes, selling price of dishes, gross profits for each dish, etc.

#### 4.0 Pre-cooked Inventory

- 4.1 The system should allow user to store the pre-cooked dishes details and record the quantity of serving.
- 4.2 The system should be able to deduct the quantity of the dish automatically in pre-cooked inventory when that dish is being ordered.
- 4.3 The system should be able to deduct the quantity of ingredients used in pre-cooked dishes from raw material inventory.
- 4.4 The system should allow user to generate the report of pre-cooked dishes to keep track of the quantity left in the inventory.

#### 5.0 Staff Manager

- 5.1 The system should be able to keep the records of staffs on their details.
- 5.2 User can add a staff and update the existing staff information.
- 5.3 The system should allow user to arrange the available schedule and working schedule of a staff.
- 5.4 The system should be able to generate the report of staffs' information.
- 5.5 The system should be able to generate the schedule of the staffs in timetable format.

#### 6.0 Supplier Manager

- 6.1 The system should allow user to add and edit the supplier information.
- 6.2 User can add the raw material as the supplied item for the supplier.
- 6.3 User can place a purchase order to a supplier and update the status of the purchase order records.

## 7.0 Purchase Order

- 7.1 User can generate the purchase order of the raw materials which the current quantity of the raw materials is below the reorder point.
- 7.2 User can place a purchase order of a supplier and select the raw material from the created supplied list.

## 8.0 Report Manager

- 8.1 The system should be able to provide the shortcuts for each report generator in raw material manager, supplier manager, recipe manager, precook manager and so forth for user to have a quick access in report generating.
- 8.2 User is allows to preview and print the all the reports in report manager.

## 9.0 Maintenance

- 9.1 User can update the restaurant information and upload the restaurant logo in the system.
- 9.2 The system should allow user to define the tax rate and service charge rate for the restaurant.
- 9.3 The system should allow user to do backup on the database and recover from failure.
- 9.4 The system should allow user to add, edit and delete the category of raw material, recipe and staff position.



## *Chapter 4*



# *Application of Methodology*

### **Contents:**

4-1 Chosen Methodologies

4-2 Application of Chosen Methodologies

## **Chapter 4: Application of Methodology**

This chapter consists of the application of methodology and the description of activity process in each phase.

### **4-1 Chosen Methodologies**

The methodologies will be chosen to used in the development of the Innovative Restaurant System are the Waterfall Development and Agile Method. The reason why choosing more than one methodology in the system development instead of apply one methodology is there is no perfection in each methodology. Extracting and combining the advantages from each of the methodology and forms a better methodology is the approach to gain a better methodology in the system development.

Waterfall Development has the advantages in heavy documentation and all the requirements are clarify obviously. The clearer documentations can let the system developers more understanding the requirements specifications of the system as all the details are completely stated in planning and analysis phases. However, there is a main drawback for Waterfall development that is no turning back to the previous phases to do modification on the requirements. No turning back to previous stages can stop the system developers from changing the requirements specifications stated in the documentations and delay in delivering the system.

In Agile Method approach, there is less documentation required to produce in all the stages. This approach is more focus on the development stage and adapts the faster changes in requirements when requirements from customer are being changed. Nevertheless, this approach does not have the advantage in producing documentation so that the developers cannot refer back to the documentations produced in planning and analysis phases since documentations are not well prepared and specified.

Therefore, Agile Method is using the system development at the same time to overcome the drawback in Waterfall development. Agile Method is an iteration system development approach that can turning back to previous stages to refine the requirements stated in documentations. As the requirements specifications are always change due to

the users requirements, using the advantage of interaction in Agile Method is able to cope with this situation. The system developers can redefine the requirements in the documentations that are produced by using Waterfall Development approach in which heavy and clearer documentations will be delivered in each phase.

## **4-2 Application of Chosen Methodologies**

### **Planning**

The project initiation is the most important step taken in the system development life cycle. The business value must be indentified and check the system is suitable to build for organization by taking some factors into consideration. Feasibility analysis is using on this stage to check whether the desired new system is actually an achievable, realistic goal, in-terms of money, time and end result difference to the original system.

Developing a project plan is a must for all the project team which is used to illustrate the project timeline and determine the progress of the project is not overdue. Normally, Gantt chart will be produced to describe all the activities need to be done within a specific deadline. Besides that goals must be determined in the project for the project team. It is used for a project team to check whether the system is achievable or not in the end of the project.

In this stage, the author had produced a project plan that is describes the upcoming activities that are need to be taken in the next progress. The author also had done scheduling on project activities and a Gantt chart is produced which is used to illustrate the project timeline. The purpose is to ensure that the system is not late in delivering to the customer.

### **Analysis**

In this stage a lot of researches and studies need to be done to acquire sufficient information in the system development. The understanding on the existing system workflow is important when developing the system. The author had studied on existing system to determine the current issues faced by the end user and provide the possible solutions to overcome the problems.

The information can be gathered by applying the requirements gathering techniques in the project. Different of requirement gathering techniques will produce different outcomes of user requirements. The author had used Internet searching and observation to gather system requirements. The author also had tested some demo of the systems to obtain the basic requirements which are needed to include in the new system.

In the end of this stage, the author had concluded all the gathered information and written in the document and requirement document is produced which is used to record all the user and system requirements. The requirement document is treated as the system specifications which are needed to implement in the new system.

## **Design**

The design phase consists of architecture design, physical design, interface design, database design and program design. The system design will be developed based on the requirements document produced in analysis phase. The author had design the system workflow for the system. The workflow of the system is the important in the system development because one missed step in the process workflow will lead the system run inconsistency.

The author had specified the architecture design for the system on how the user interacts with the system by using the provided device components. The architecture design will be included the hardware, software and network infrastructure to be used in this system.

The interface design and database design is this project are work concurrently. The data fields in the database are designed to meet the structure in the interface design of the system. The author had produced the data dictionary which is used to describe the description of each data fields used in all the tables in the database for this system. The author also had illustrated some sketches of system interfaces for each module which are needed to be used as guidance in implementation phase.

## **Implementation**

This system will be developed by using Visual Basic.NET. The author will focus the development on windows based platform. Normally, most of the end users have better understanding and sufficient skills to run windows based application rather than using Linux under the system platform.

Microsoft SQL server will be incorporated as database storage to this system. The reason to use Microsoft SQL server as the database to this system is because Microsoft SQL server compatible with Visual Studio package and provided simple connection to Microsoft SQL server with Visual Basic.NET.

Testing is run concurrently with the development process to ask user for the input into the system. The system requirements will be redefined in analysis and design phases for adapting the fast changing in user requirements. The analysis, design and implementation phases will be performed iteratively until the system is fulfilled user requirements.

When the system development is finished developing and tested without any error, the system is ready to be installed into the client computer system and works with the actual data. The system will go into the compilation stage for the system deployment. User manual will be produced for the user to provide instructions on how to work with the system.

# *Chapter 5*



# *Design*

## **Contents:**

5-1 Data Flow Diagram

5-2 System Interface Design

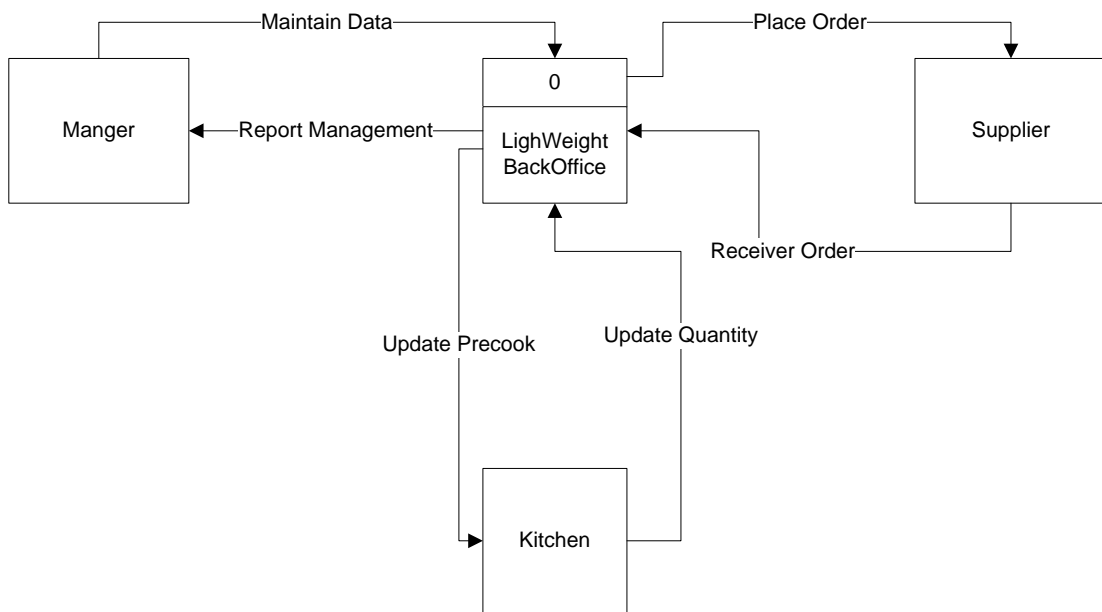
## Chapter 5: Design

This chapter describes the data flow diagram and the interface design of this system.

### 5-1 Data Flow Diagram

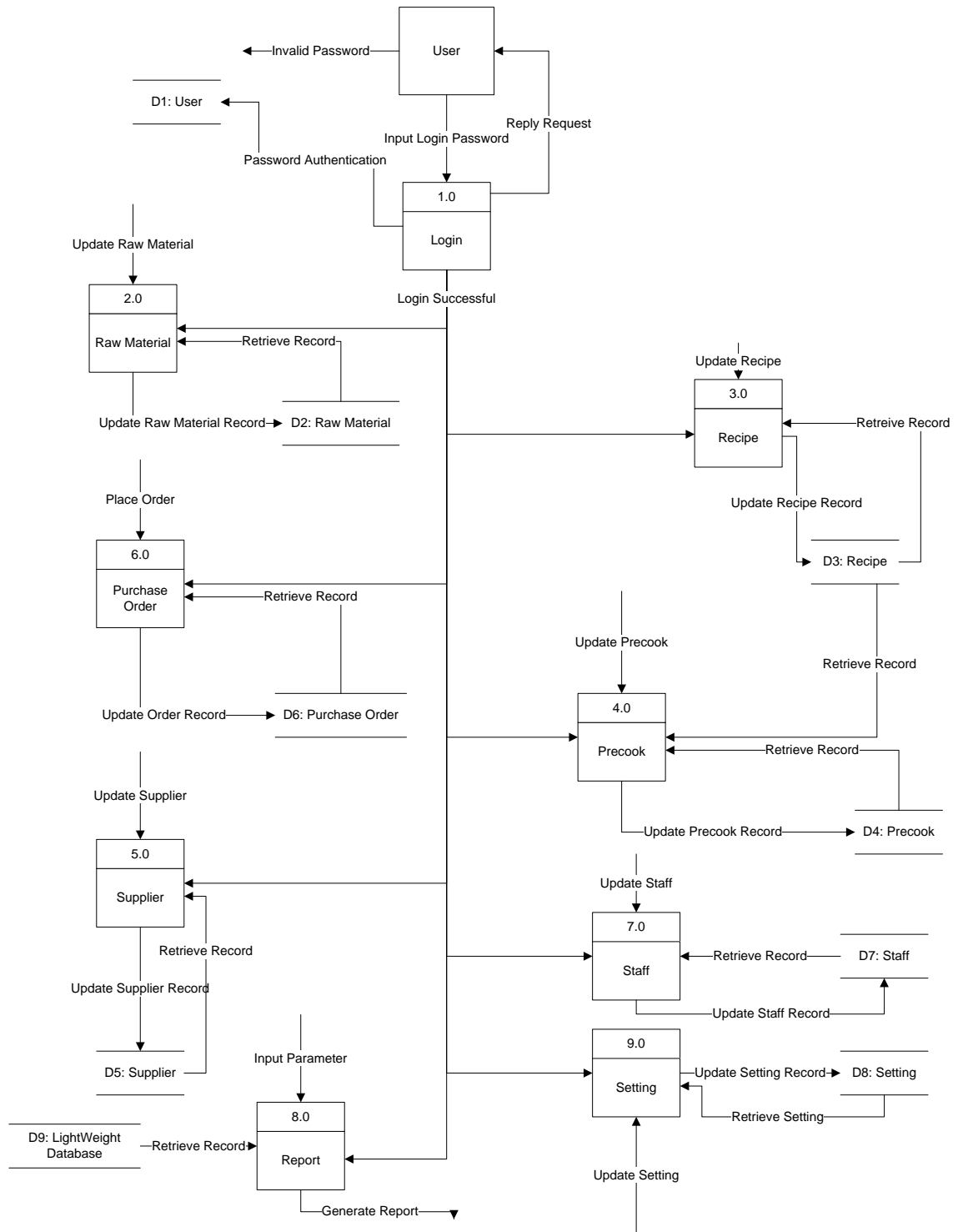
This section is describes the overall work flow and the data work flow of each module in this system.

#### 5-1-1 Overview of Data Flow Diagram



**Figure 5-1-1-F1 Level 0 Data Flow Diagram**

### 5-1-2 Level 1 Data Flow Diagram



**Figure 5-1-2-F1 Level 1 Data Flow Diagram**



### 5-1-3 Level 2 Data Flow Diagram – Login

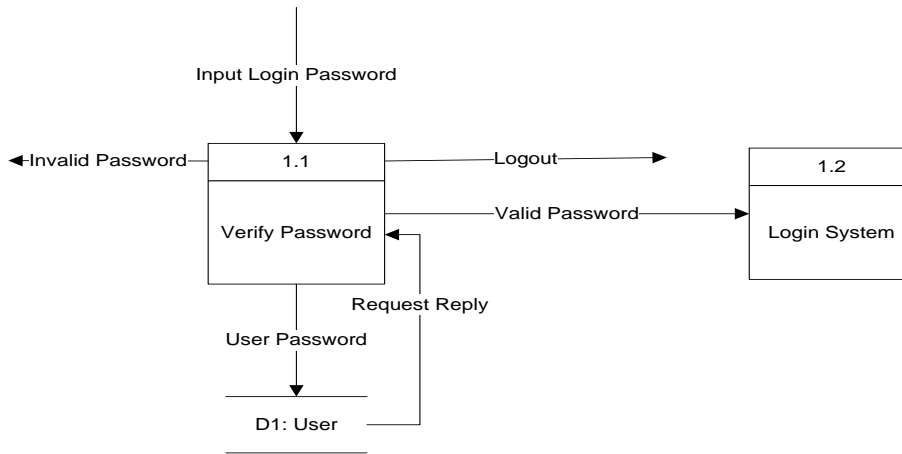


Figure 5-1-3-F1 Level 2 Data Flow Diagram – Login

### 5-1-4 Level 2 Data Flow Diagram – Raw Material

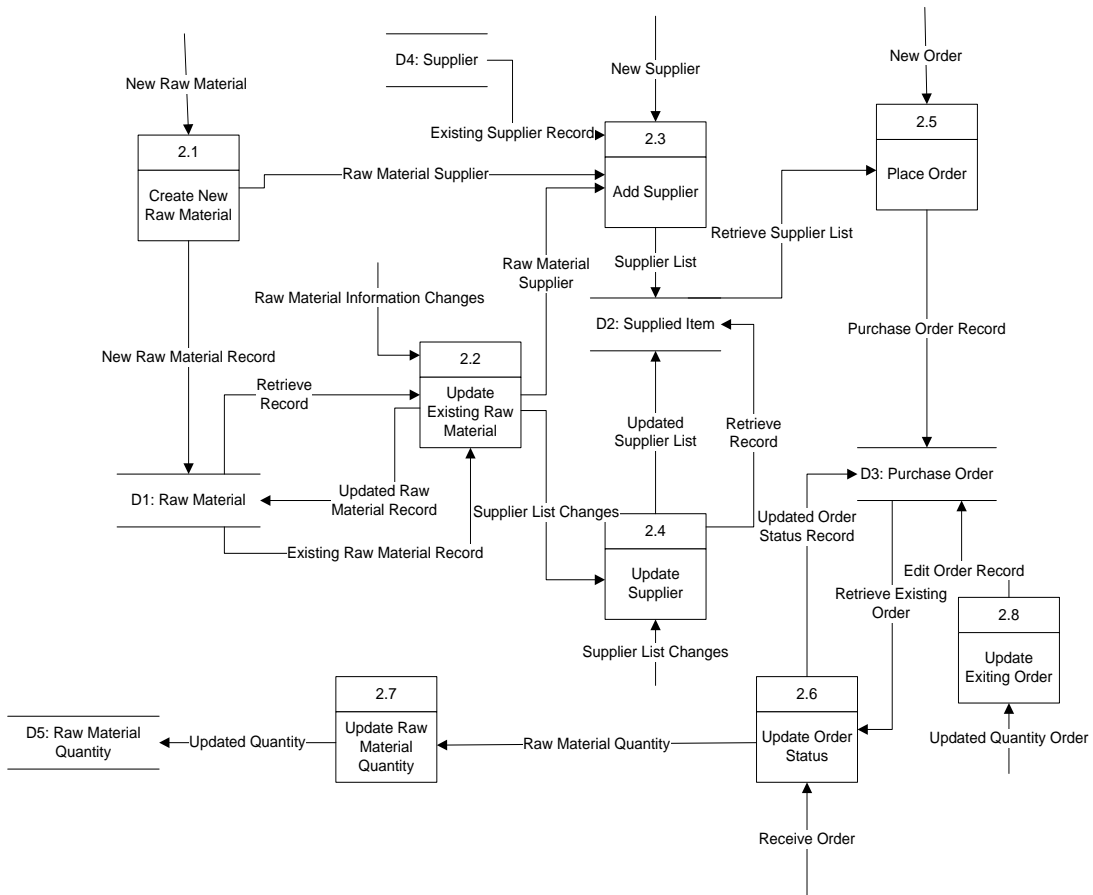


Figure 5-1-4-F1 Level 2 Data Flow Diagram – Raw Material

### 5.1.5 Level 2 Data Flow Diagram – Recipe

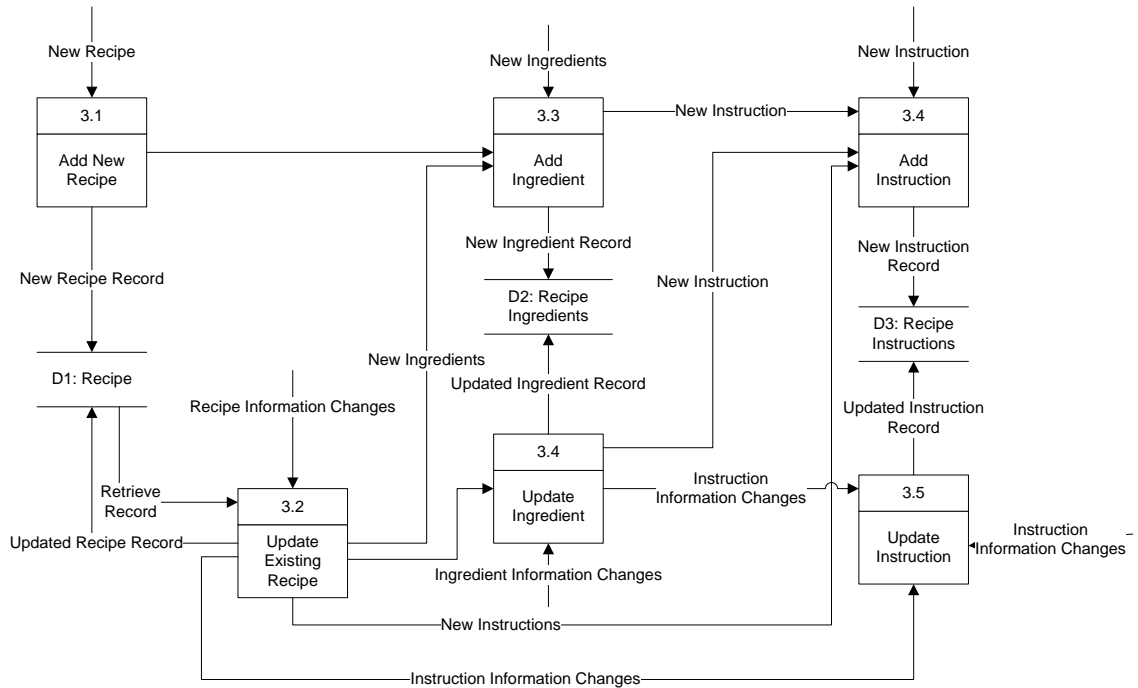


Figure 5-1-5-F1 Figure 5-1-4-F1 Level 2 Data Flow Diagram – Raw Material

### 5-1-6 Level 2 Data Flow Diagram – Precook

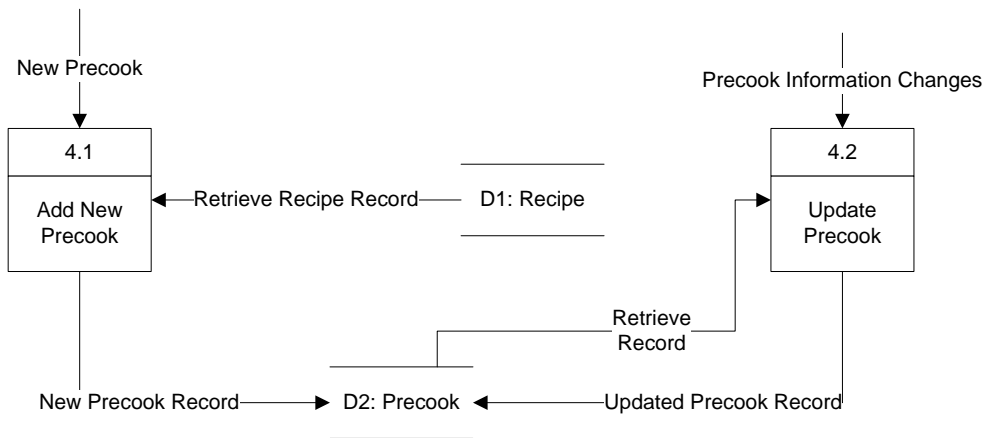
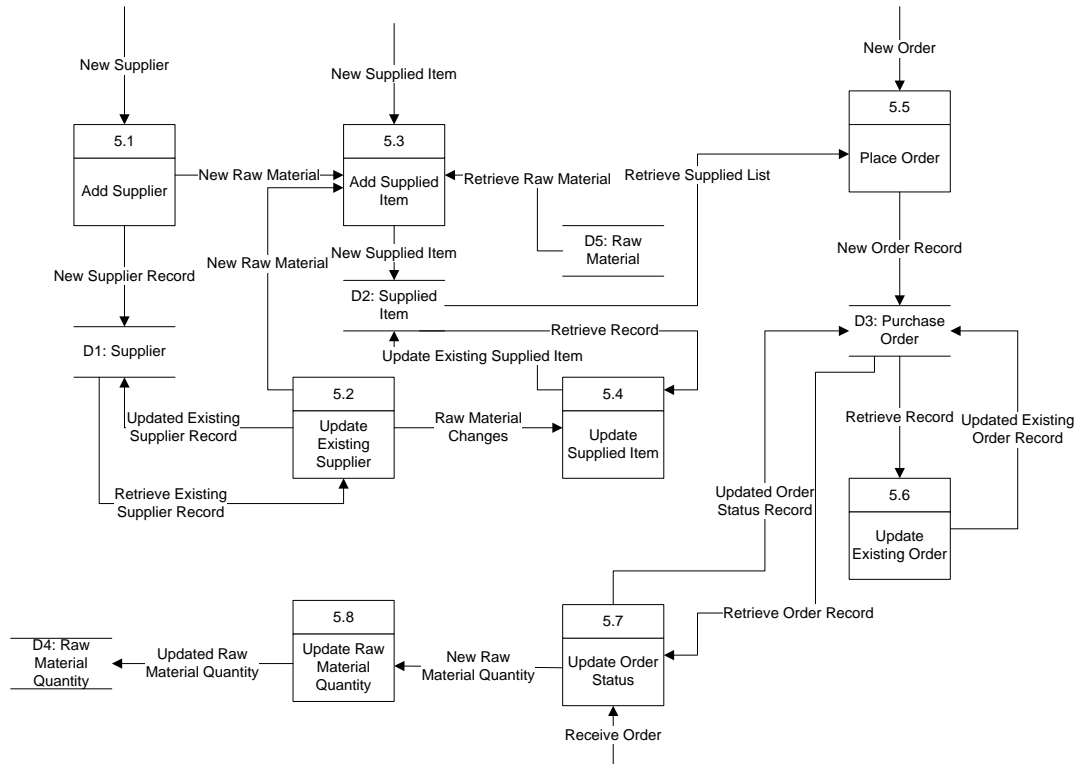


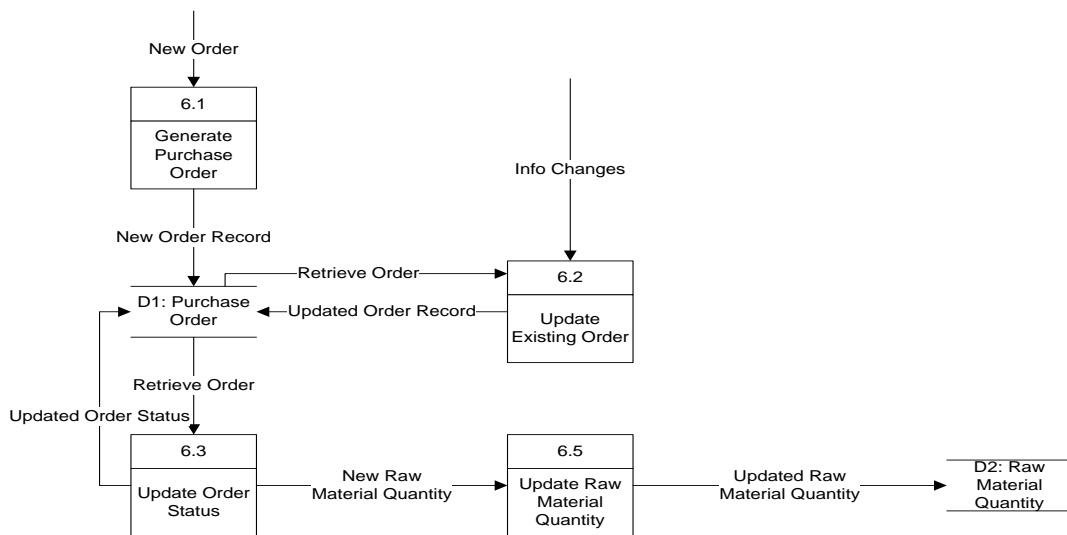
Figure 5-1-6-F1 Level 2 Data Flow Diagram – Precook

**5-1-7 Level 2 Data Flow Diagram – Supplier**



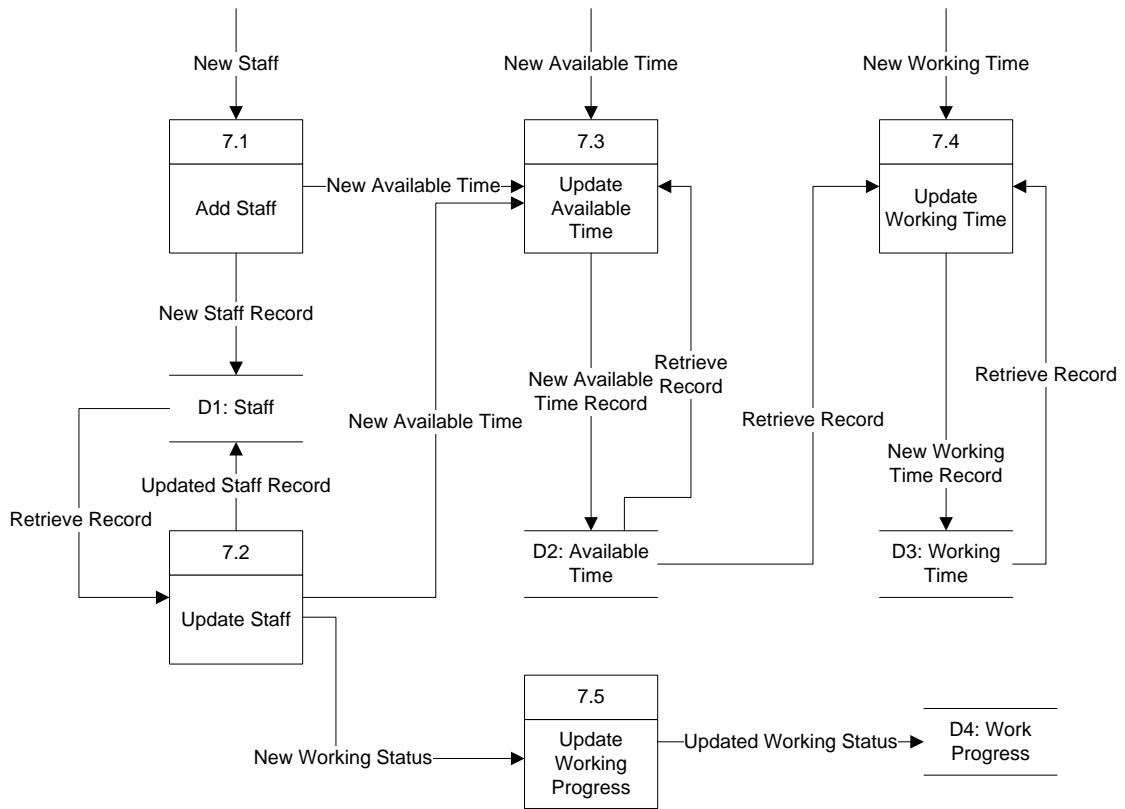
**Figure 5-1-7-F1 Level 2 Data Flow Diagram – Supplier**

**5-1-8 Level 2 Data Flow Diagram – Purchase Order**



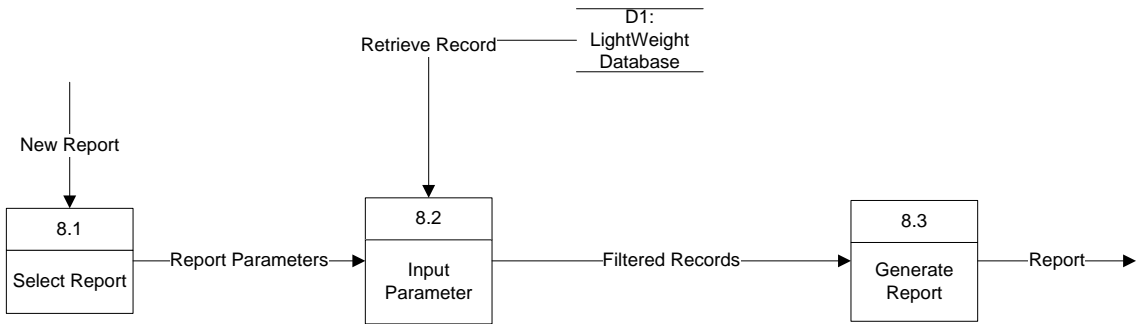
**Figure 5-1-8-F1 Level 2 Data Flow Diagram – Purchase Order**

**5-1-9 Level 2 Data Flow Diagram – Staff**



**Figure 5-1-9-F1 Level 2 Data Flow Diagram – Staff**

**5-1-10 Level 2 Data Flow Diagram – Report**



**Figure 5-1-10-F1 Level 2 Data Flow Diagram – Report**

**5-1-11 Level 2 Data Flow Diagram – Setting**

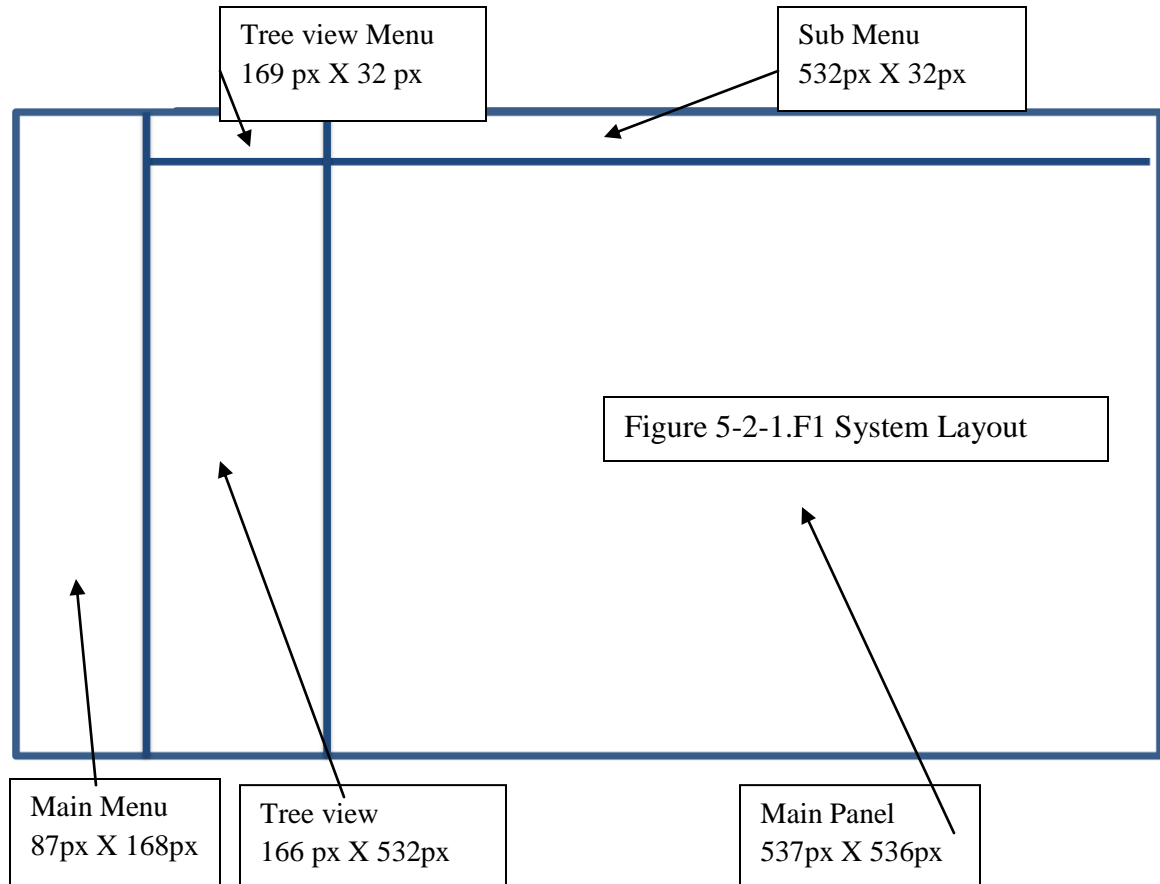


**Figure 5-1-11-F1 Level 2 Data Flow Diagram – Setting**

## 5-2 System Interface Design

This system is a backend system to maintain the data and records which are not visible to outsider. The design of a backend system is normally simple and consistent. The colours used in design This system is normally in dark colour and not colourful as the front end system.

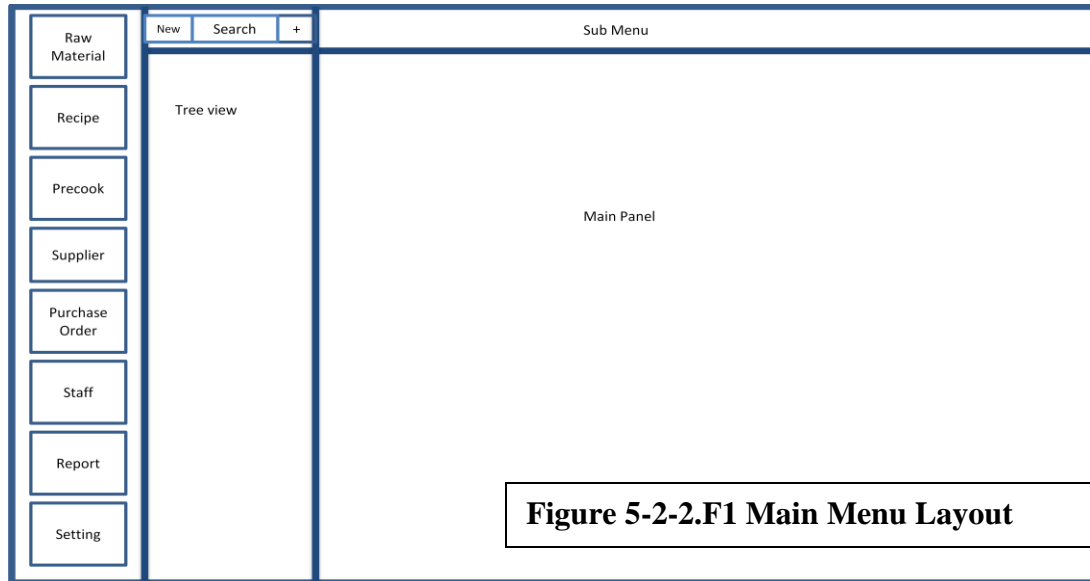
### 5-2-1 System Layout



**Table 5-2-1-T1 System Layout Description**

Name	Description
Main Menu	Menu category
Tree view Menu	Tools for control tree view (search, expand) and add new record.
Tree view	List of data or record arranged in tree view style
Sub Menu	Sub menu button for menu category
Main Panel	Details of the sub menu category in the menu category

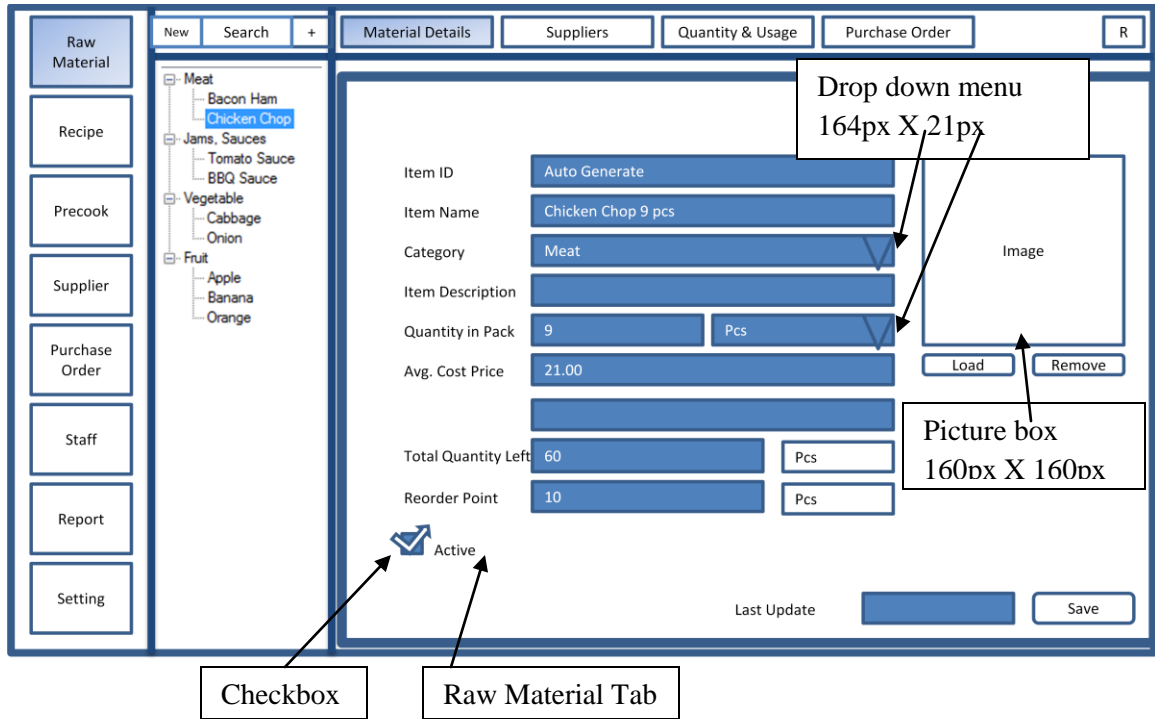
### 5-2-2 Main Menu Layout



**Table 5-2-2-T1 Main Menu Description**

Name	Description	Color	Size
Raw Material	Button link to Raw Material module	Orange	73px X 65px
Recipe	Button link to Recipe module	Orange	73px X 65px
Precook	Button link to Precook module	Orange	73px X 65px
Supplier	Button link to Supplier module	Orange	73px X 65px
Purchase Order	Button link to Purchase Order module	Orange	73px X 65px
Staff	Button link to Staff module	Orange	73px X 65px
Report	Button link to Report module	Orange	73px X 65px
Setting	Button link to Setting module	Orange	73px X 65px
New	Button to create new record	Transparent	51px X 23px
Search	Textbox to search specific record in tree view	Default	77px X 20px
Expand (+)	Button to expand/collapse records in tree view	Transparent	26px X 23px

### 5-2-3 Raw Material – Material Detail Layout



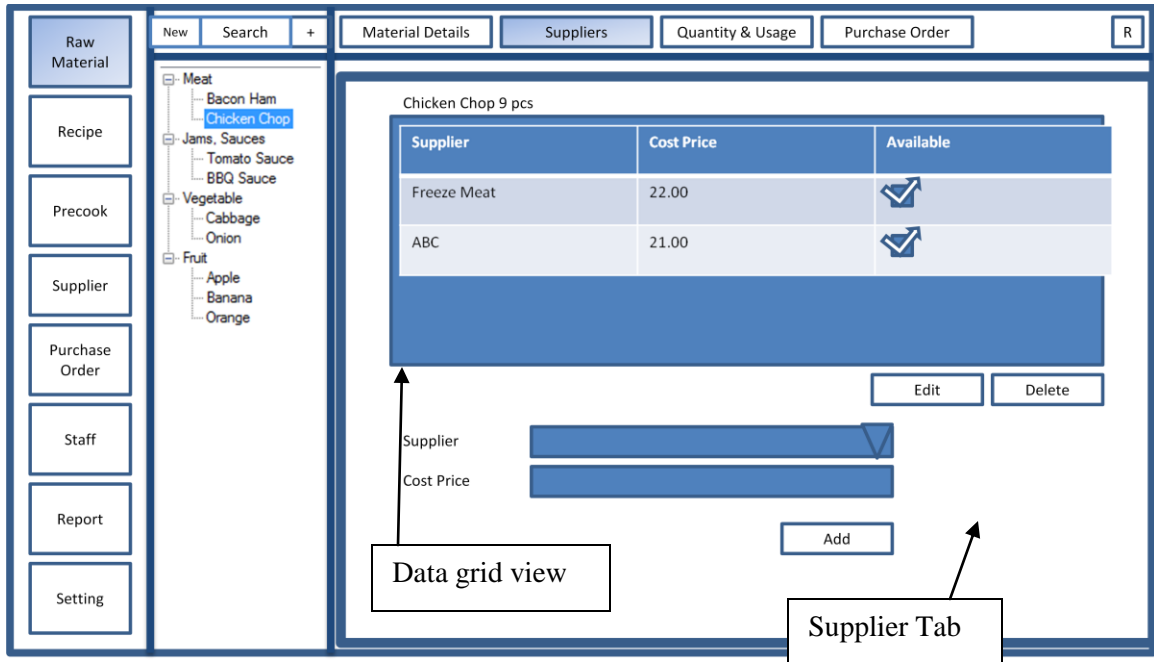
**Figure 5-2-2-F1 Raw Material Layout**

**Table 5-2-3-T1 Raw Material – Material Detail Layout Description**

Name	Description	Color	Size
Material Details	Button link to Raw Material Detail tab	Red	120px X 23px
Supplier	Button link to Supplier tab	Red	120px X 23px
Quantity and Usage	Button link to Quantity and Usage tab	Red	120px X 23px
Purchase Order	Button link to Purchase Order tab	Red	120px X 23px
R	Button to generate current raw material report	Image	23px X 23px
Raw Material Tab	Tab that includes textboxes, labels and picture box to enter the raw material details	Blue	537px X 536px



### 5-2-4 Raw Material – Supplier Layout



**Figure 5-2-4-F1 Supplier Layout**

**Table 5-2-4-T1 Raw Material - Supplier Layout Description**

Name	Description	Color	Size
Supplier Tab	Tab that contains data grid view, labels, textboxes, drop down menu and buttons and let user enter supplier detail of a raw material	Blue	537px X 536px
Data grid view	Data grid to display the list of supplier	Yellow	477px X 247px
R	Button to generate current raw material supplier	Image	23px X 23px

### 5-2-5 Raw Material – Quantity and Usage Layout

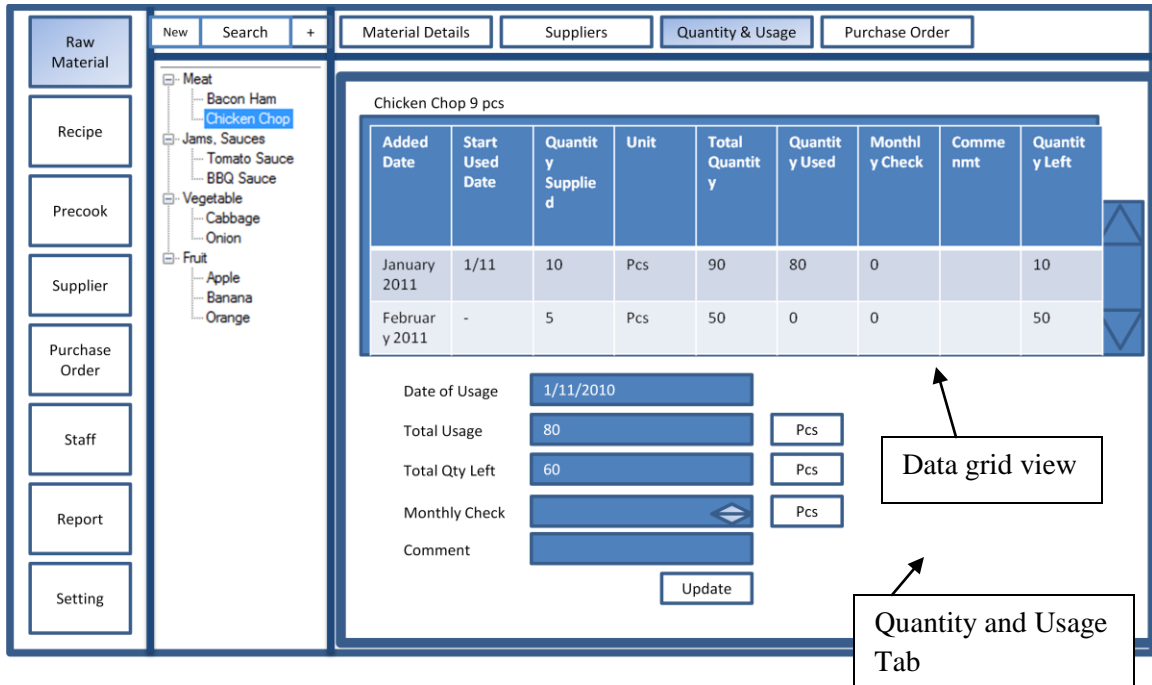


Figure 5-2-5-F1 Quantity & Usage Layout

Table 5-2-4-T1 Raw Material – Quantity & Usage Layout Description

Name	Description	Color	Size
Quantity and Usage Tab	Tab that contains data grid view, labels, textboxes and buttons and let user update quantity and usage detail of a raw material	Blue	537px X 536px
Data grid view	Data grid to display the list of supplier	Yellow	477px X 247px

### 5-2-6 Raw Material – Purchase Order Layout



**Figure 5-2-6-F1 Purchase Order Layout**

**Table 5-2-6-T1 Raw Material – Purchase Order Layout Description**

Name	Description	Color	Size
Purchase Order Tab	Tab that contains data grid view, labels, textboxes and buttons and let user enter and update purchase order of a raw material	Blue	537px X 536px
Data grid view	Data grid to display the list of supplier	Yellow	477px X 247px
R	Button to generate current purchase order report	Image	23px X 23px

### 5-2-7 Recipe – Recipe Details Layout

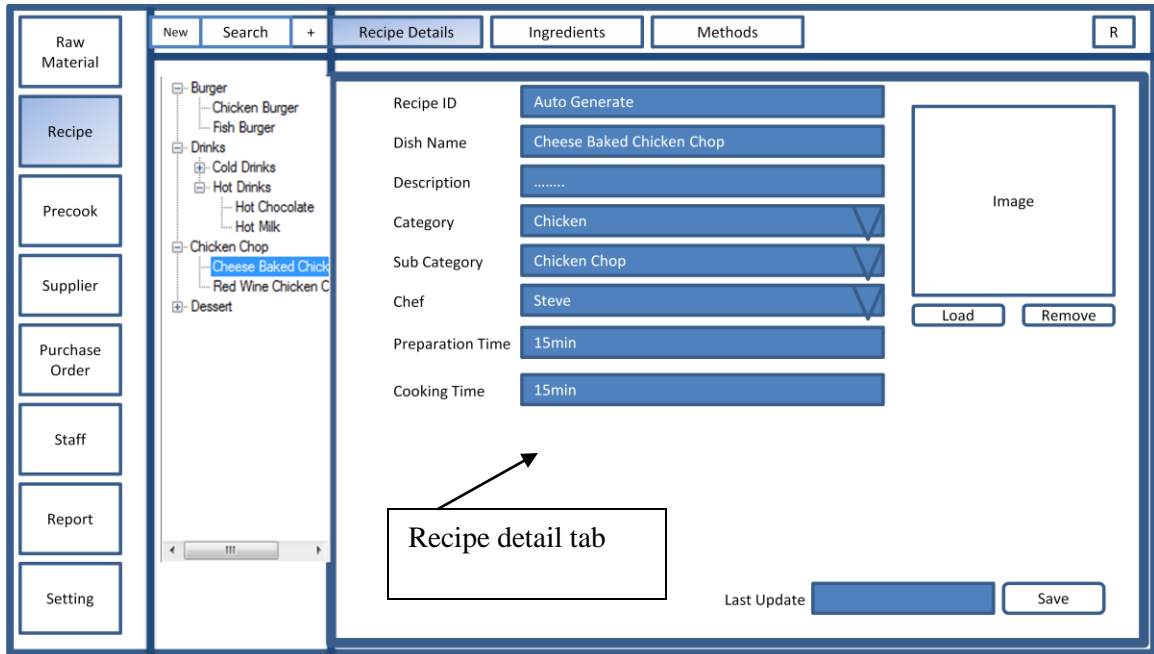
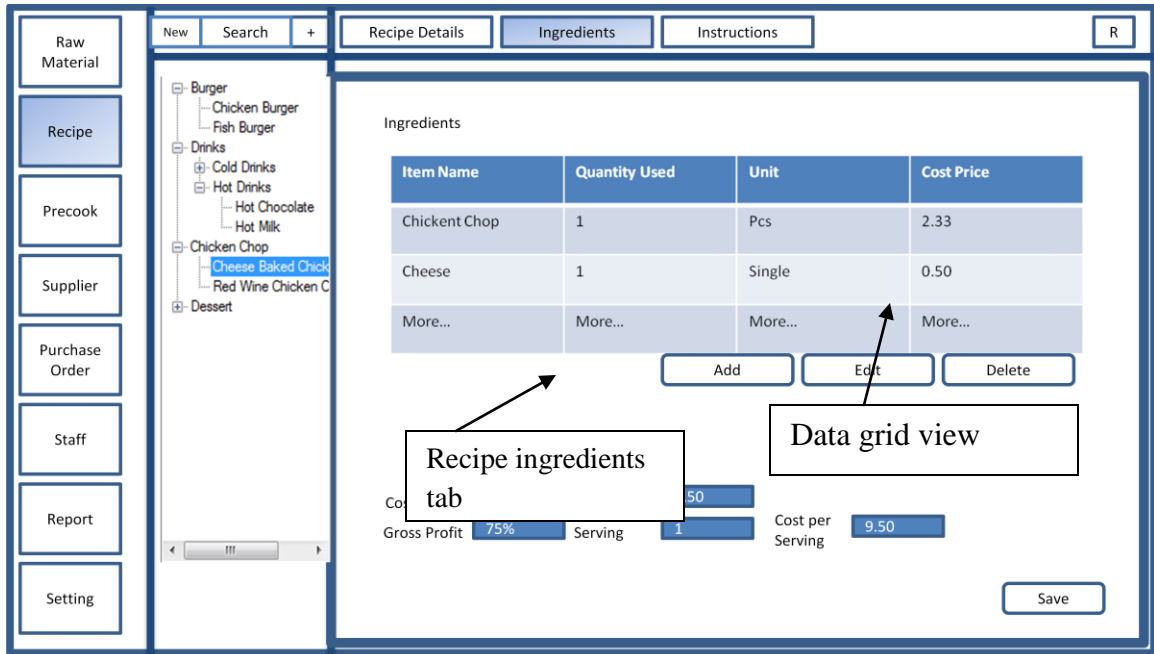


Figure 5-2-7-F1 Recipe Details Layout

Table 5-2-7-T1 Raw Material – Recipe Details Layout Description

Name	Description	Color	Size
Recipe Detail	Button link to Recipe Detail tab	Red	120px X 23px
Ingredients	Button link to Ingredients tab	Red	120px X 23px
Instructions	Button link to Instructions tab	Red	120px X 23px
Recipe Tab	Tab that contains labels, textboxes, drop down menu, picture box and buttons and let user update quantity and usage detail of a raw material	Blue	537px X 536px
R	Button to generate current recipe detail report	Image	23px X 23px

### 5-2-8 Recipe - Ingredients Layout

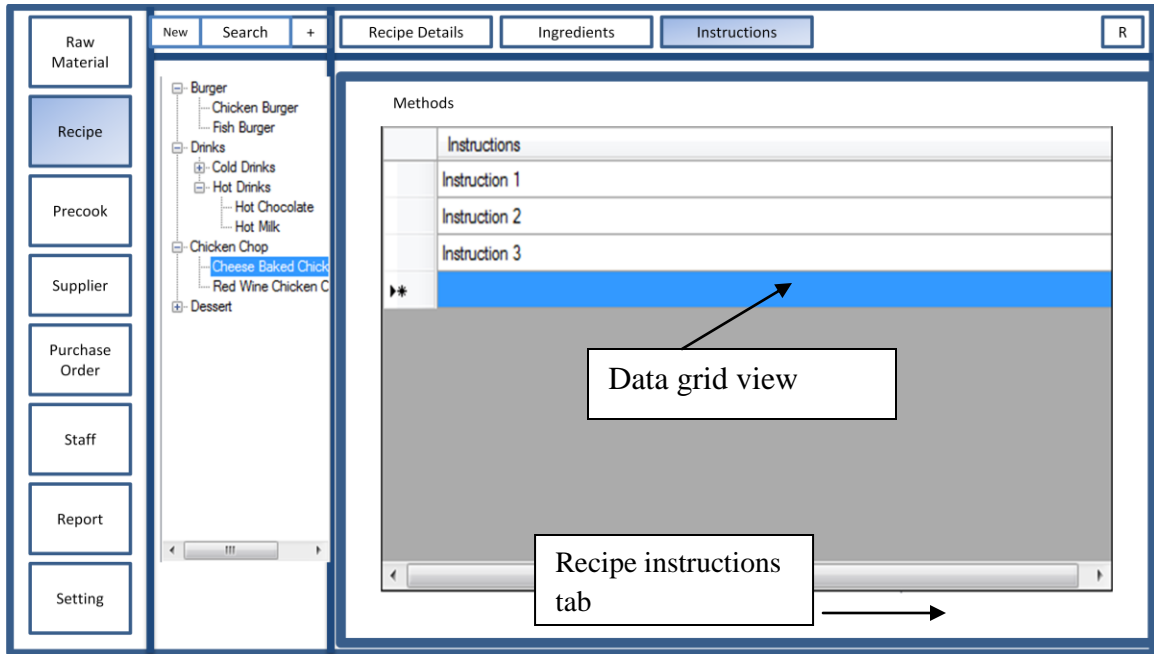


**Figure 5-2-8-F1 Ingredients Layout**

**Table 5-2-8-T1 Recipe - Ingredients Layout Description**

Name	Description	Color	Size
Ingredients Tab	Tab that contains data grid view, labels, textboxes and buttons and let user enter and update the ingredient information of a recipe	Blue	537px X 536px
Data grid view	Data grid to display the list of ingredients	Yellow	477px X 247px
R	Button to generate current recipe ingredients report	Image	23px X 23px

### 5-2-9 Recipe - Instructions Layout

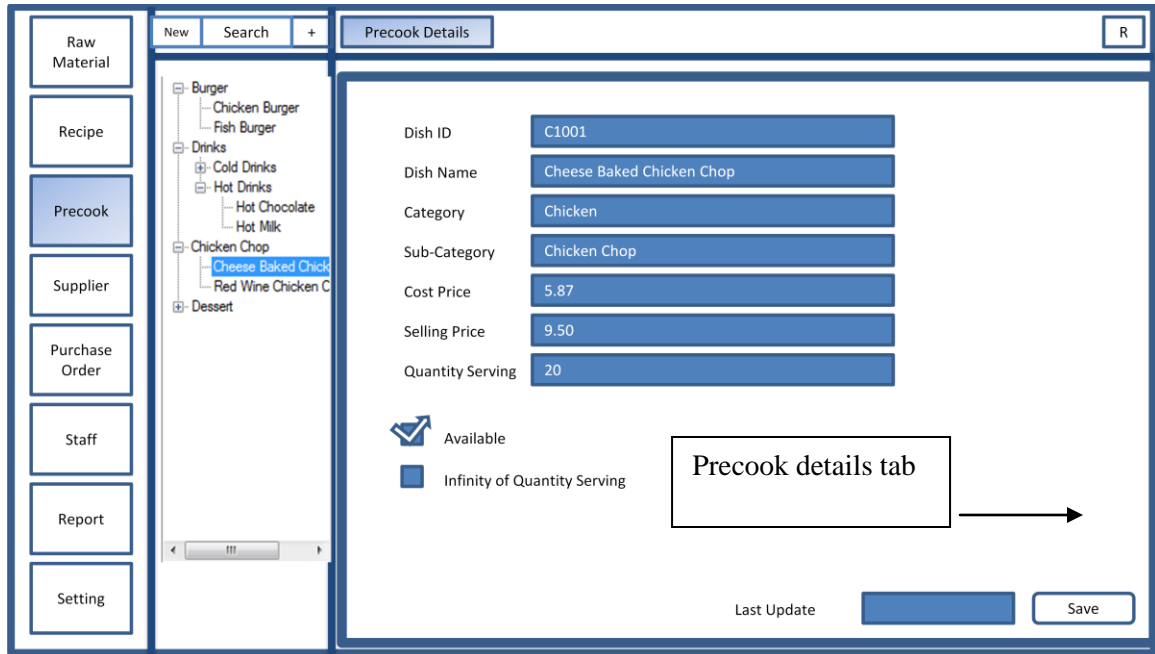


**Figure 5-2-9-F1 Instructions Layout**

**Table 5-2-9-T1 Recipe - Instructions Layout Description**

Name	Description	Color	Size
Quantity and Usage Tab	Tab that contains data grid view let user enter and update instruction of a recipe	Blue	537px X 536px
Data grid view	Data grid to display the instructions of a recipe	Yellow	477px X 247px
R	Button to generate current recipe instruction report	Image	23px X 23px

### 5-2-10 Precook – Precook Details Layout

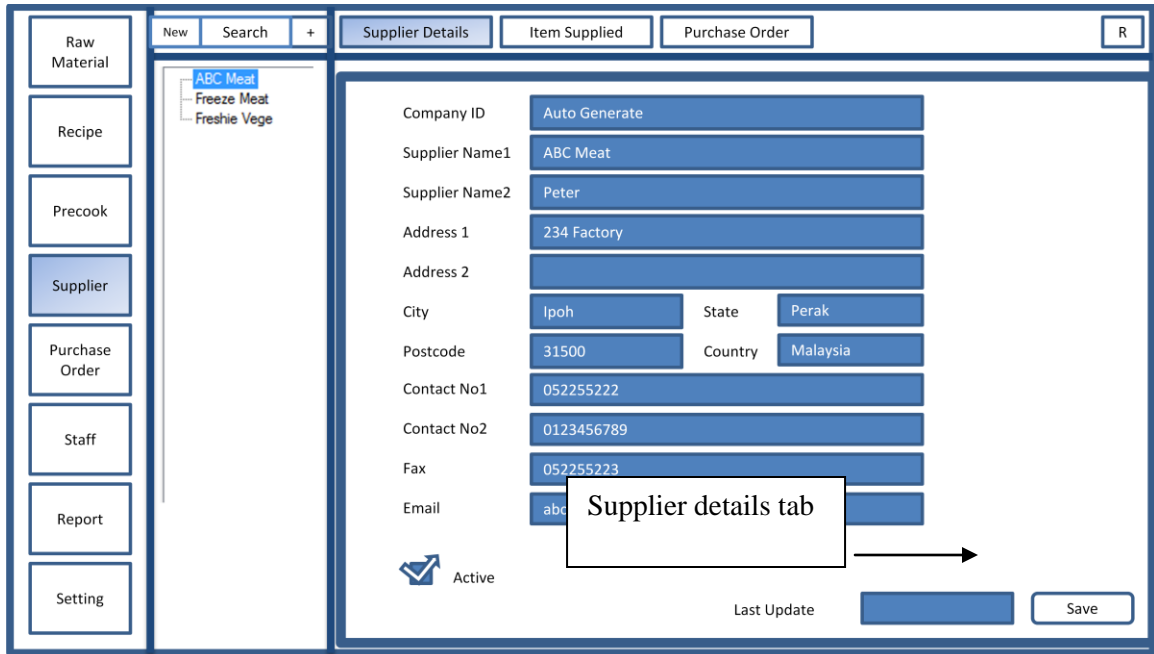


**Figure 5-2-10-F1 Precook Details Layout**

**Table 5-2-10-T1 Precook – Precook Details Layout Description**

Name	Description	Color	Size
Precook Details	Button link to precook details tab	Red	120px X 23px
Quantity and Usage Tab	Tab that contains labels, checkboxes, textboxes and buttons and let user update quantity of a precook	Blue	537px X 536px
R	Button to generate current recipe instruction report	Image	23px X 23px

### 5-2-11 Supplier – Supplier Details Layout



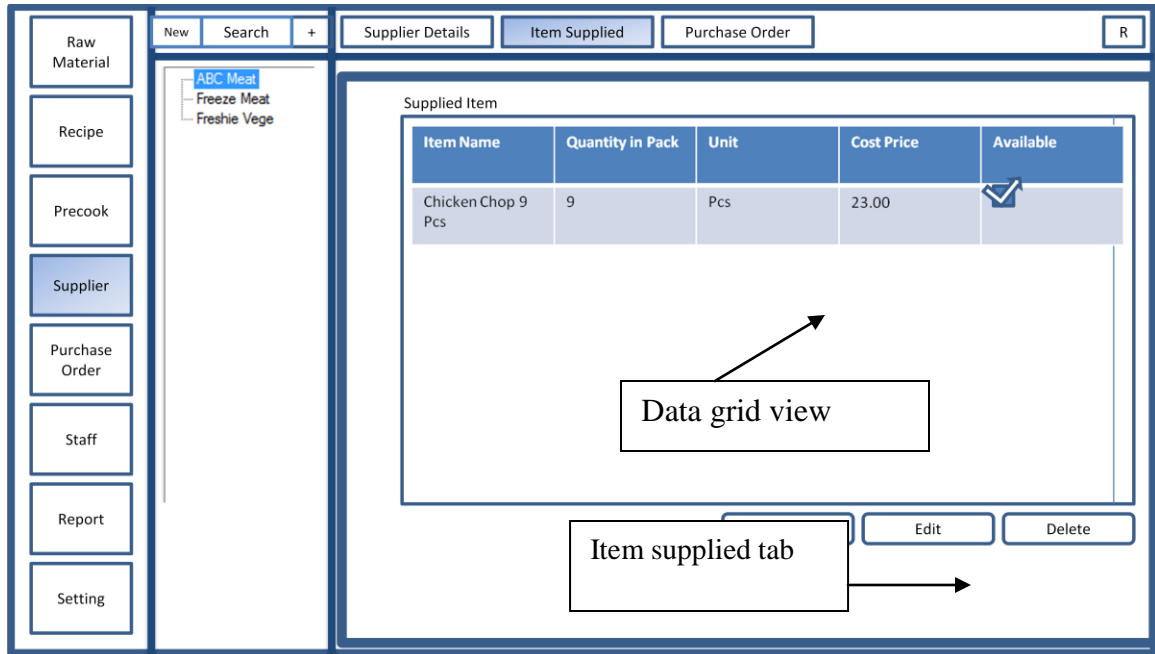
**Figure 5-2-11-F1 Supplier Details Layout**

**Table 5-2-11-T1 Supplier – Supplier Details Layout Description**

Name	Description	Color	Size
Supplier Details	Button link to supplier details tab	Red	120px X 23px
Item Supplied	Button link to item supplied tab	Red	120px X 23px
Purchase Order	Button link to purchase order tab	Red	120px X 23px
Supplier Details Tab	Tab that contains data grid view, labels, textboxes and buttons and let user update quantity and usage detail of a raw material	Blue	537px X 536px
R	Button used to generate report	Image	23px X 23px



### 5-2-12 Supplier – Supplied Item Layout

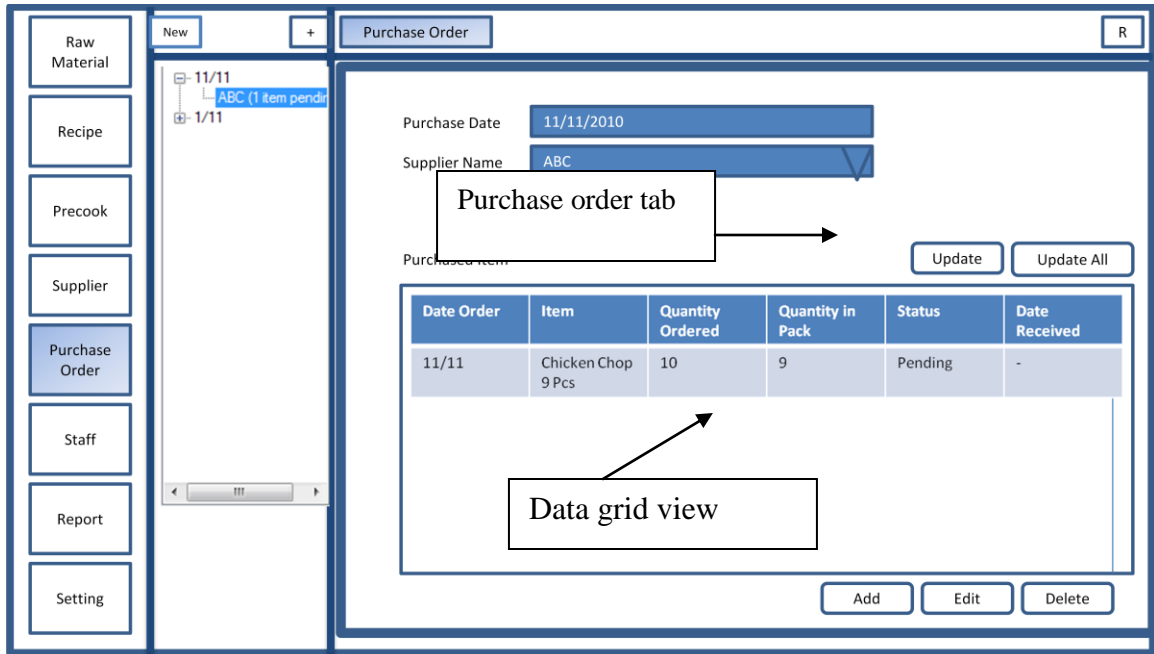


**Figure 5-2-12.F1 Supplied Item Layout**

**Table 5-2-12-T1 Supplier – Supplied Item Layout Description**

Name	Description	Color	Size
Item Supplied Tab	Tab that contains data grid view, labels and buttons and let user enter and update the supplied item of a supplier	Blue	537px X 536px
Data grid view	Data grid to display the list of supplied item	Yellow	486px X 399px
R	Button used to supplier details generate report	Image	23px X 23px

**5-2-13 Purchase Order – Purchase Order Details Layout**



**Figure 5-2-13-F1 Purchase Order Details Layout**

**Table 5-2-13-T1 Purchase Order – Purchase Order Details Layout Description**

Name	Description	Color	Size
Purchase Order Tab	Tab that contains data grid view, labels, drop down menu, textboxes and buttons and let user enter and update the purchase record	Blue	537px X 536px
Data grid view	Data grid to display the list of purchase order of a supplier on specific date	Yellow	471px X 294px
R	Button used to generate purchase order details report	Image	23px X 23px

### 5-2-14 Staff – Staff Details Layout

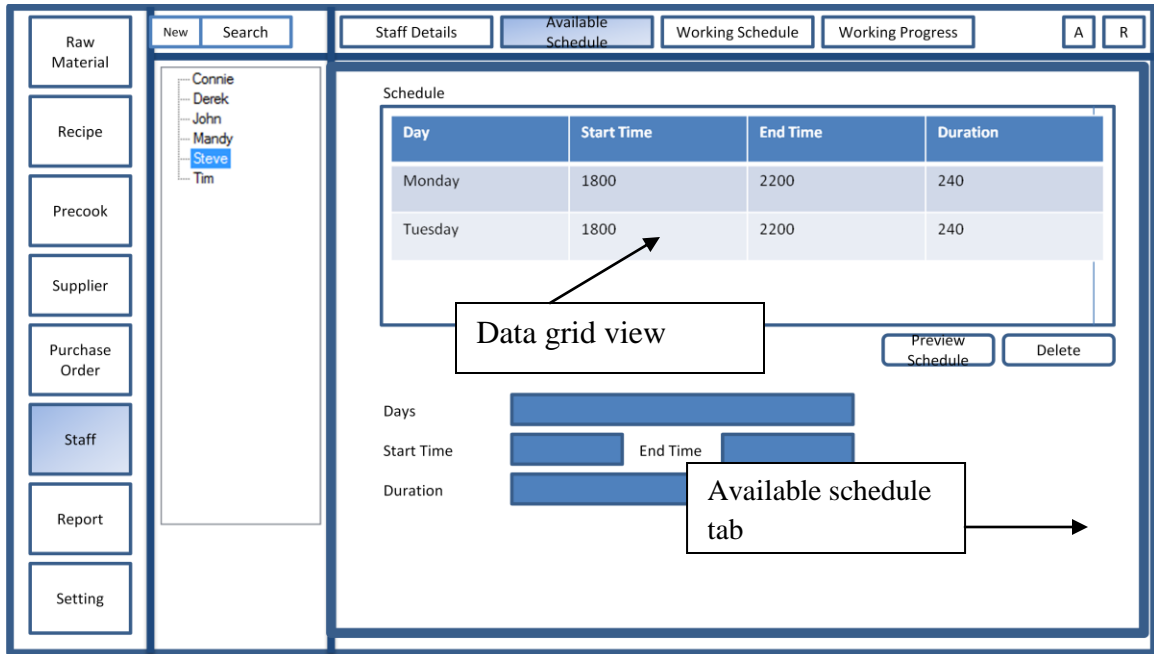


**Figure 5-2-14-F1 Staff Details Layout**

**Table 5-2-14-T1 Staff – Staff Details Layout Description**

Name	Description	Color	Size
Staff Detail Tab	Tab that contains labels, textboxes, drop down menu, checkbox and buttons and let user update supplier details	Blue	537px X 536px
R	Button to generate staff details report	Image	23px X 23px

**5-2-15 Staff – Available Schedule Layout**

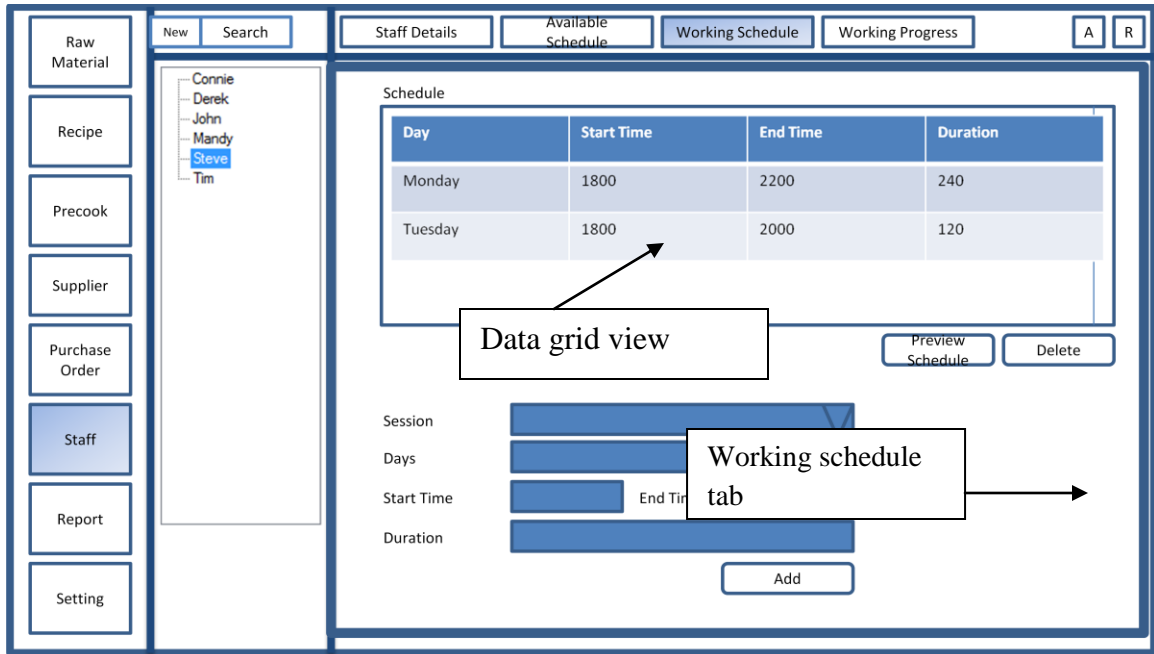


**Figure 5-2-15-F1 Available Schedule Layout**

**Table 5-2-15-T1 Staff – Available Schedule Layout Description**

Name	Description	Color	Size
Available schedule Tab	Tab that contains data grid view, labels, textboxes and buttons and let user update quantity and usage detail of a raw material	Blue	537px X 536px
Data grid view	Data grid to display the available schedule of a staff	Yellow	471px X 255px
Preview	Button to preview timetable of a staff	Transparent	120px X 23px
R	Button to generate available schedule timetable of a staff	Image	23px X 23px
A	Button to generate available schedule timetable of all staffs	Image	23px X 23px

**5-2-16 Staff – Working Schedule Layout**

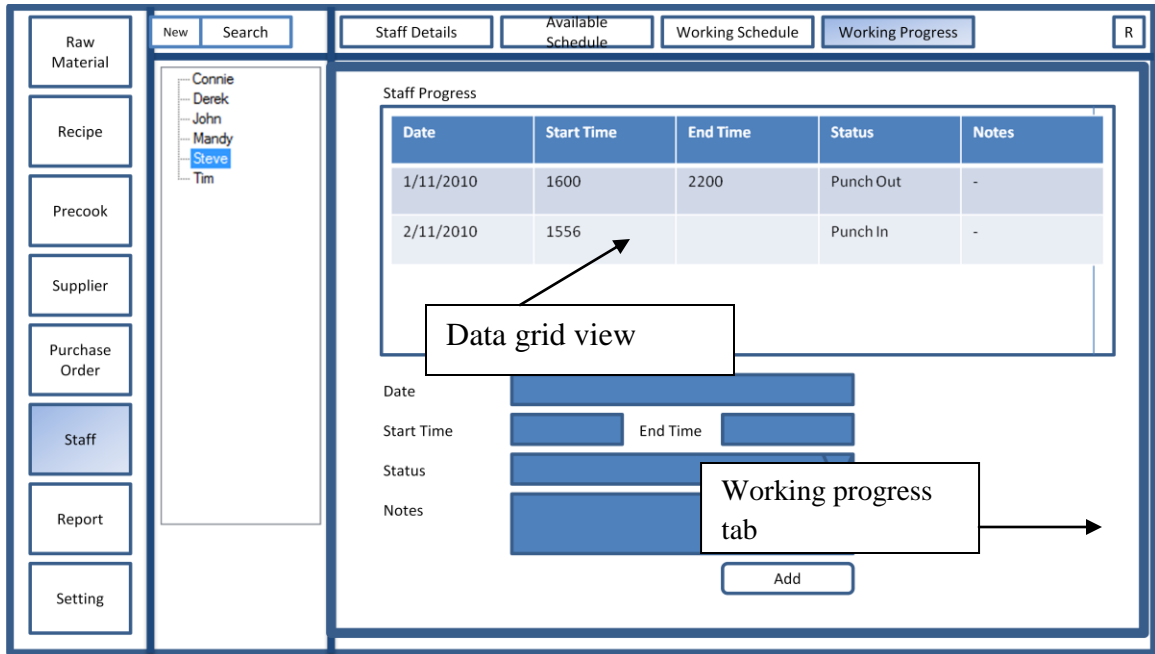


**Figure 5-2-16-F1 Working Schedule Layout**

**Table 5-2-16-T1 Staff – Working Schedule Layout Description**

Name	Description	Color	Size
Working Schedule Tab	Tab that contains data grid view, labels, textboxes and buttons and let user update quantity and usage detail of a raw material	Blue	537px X 536px
Data grid view	Data grid to display the working schedule of a staff	Yellow	471px X 255px
Preview	Button to preview timetable of a staff	Transparent	120px X 23px
R	Button to generate working schedule timetable of a staff	Image	23px X 23px
A	Button to generate working schedule timetable of all staffs	Image	23px X 23px

**5-2-17 Staff – Working Progress Layout**

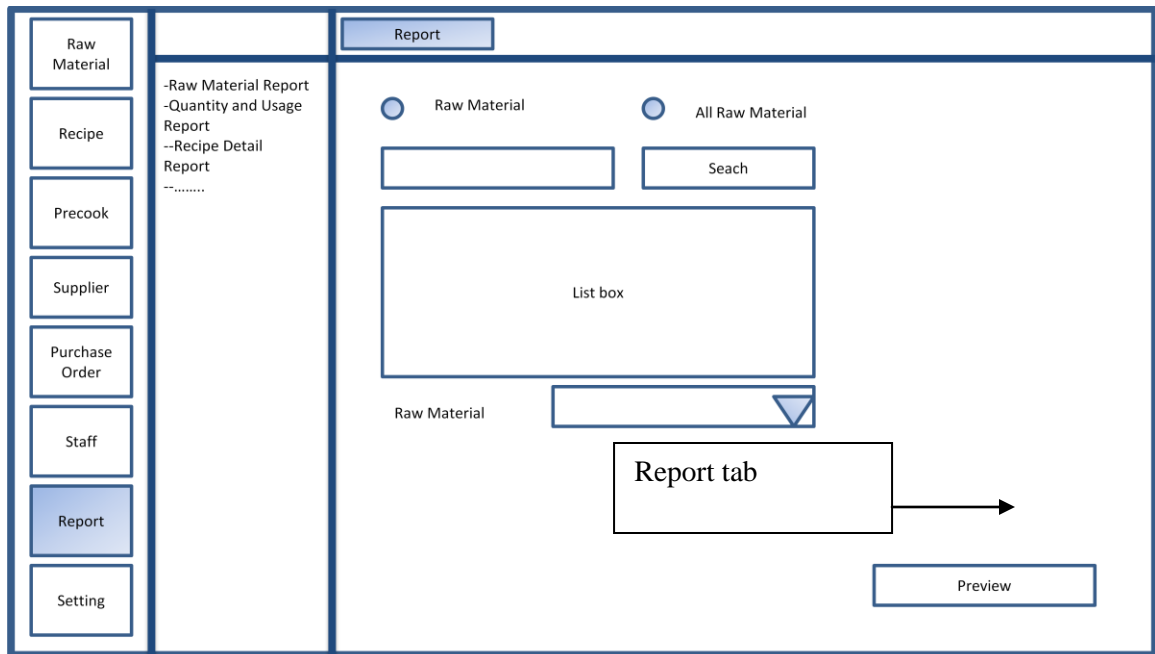


**Figure 5-2-17.F1 Working Progress Layout**

**Table 5-2-17-T1 Staff – Working Progress Layout Description**

Name	Description	Color	Size
Working Progress Tab	Tab that contains data grid view, labels, textboxes and buttons and let user update the working progress of a staff	Blue	537px X 536px
Data grid view	Data grid to display the working progress of a staff	Yellow	471px X 255px
R	Button to generate working progress of a staff	Image	23px X 23px

### 5-2-18 Report Layout

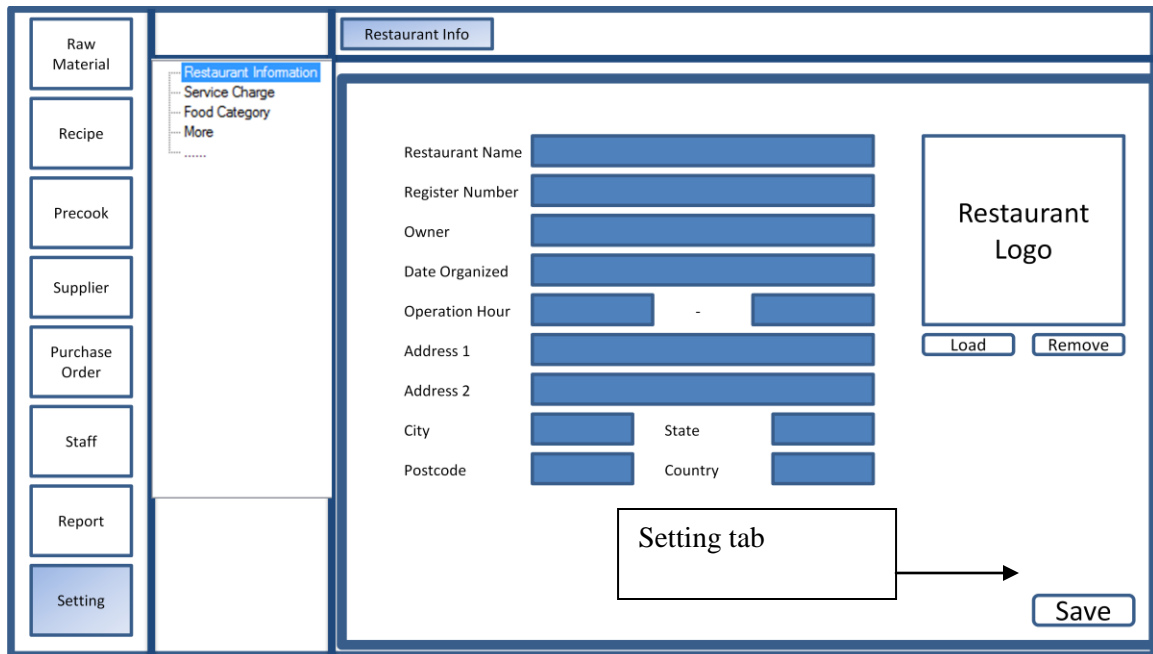


**Figure 5-2-18-F1 Report Layout**

**Table 5-2-18-T1 Report Layout Description**

Name	Description	Color	Size
Report Tab	Tab that contains labels, textboxes, list box, drop down menu and buttons and let user enter and select the record to generate the report	Blue	537px X 536px
Preview	Preview the report	Transparent	75px X 23px
Search	Search the specific record	Transparent	75px X 23px
List box	List of searched record	Default	274px X 121px

### 5-2-19 Setting Layout



**Figure 5-2-19-F1 Setting Layout**

**Table 5-2-19-T1 Setting Layout Description**

Name	Description	Color	Size
Setting Tab	Tab that contains picture box, labels, textboxes and buttons and let user update the information of the restaurant	Blue	537px X 536px



## *Chapter 6*

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# *Database Design*

### **Contents:**

- 6-1 ERD Diagram
- 6-2 Data Dictionary
- 6-3 Database Entities
- 6-4 Naming Convention

## **Chapter 6: Database Design**

This chapter describes the database used to develop this system. The ERD diagram and data dictionary of the system database will be included in this chapter.

After doing the research on all the database systems, the author had found that Microsoft SQL Compact is suitable for this system. This database system is able to support multiple connections within a network as this backend system is worked as server to provide data and information for front end system which is worked as the client computers. Besides, the space consumption is small compared to other database systems.

### 6-1 ERD Diagram

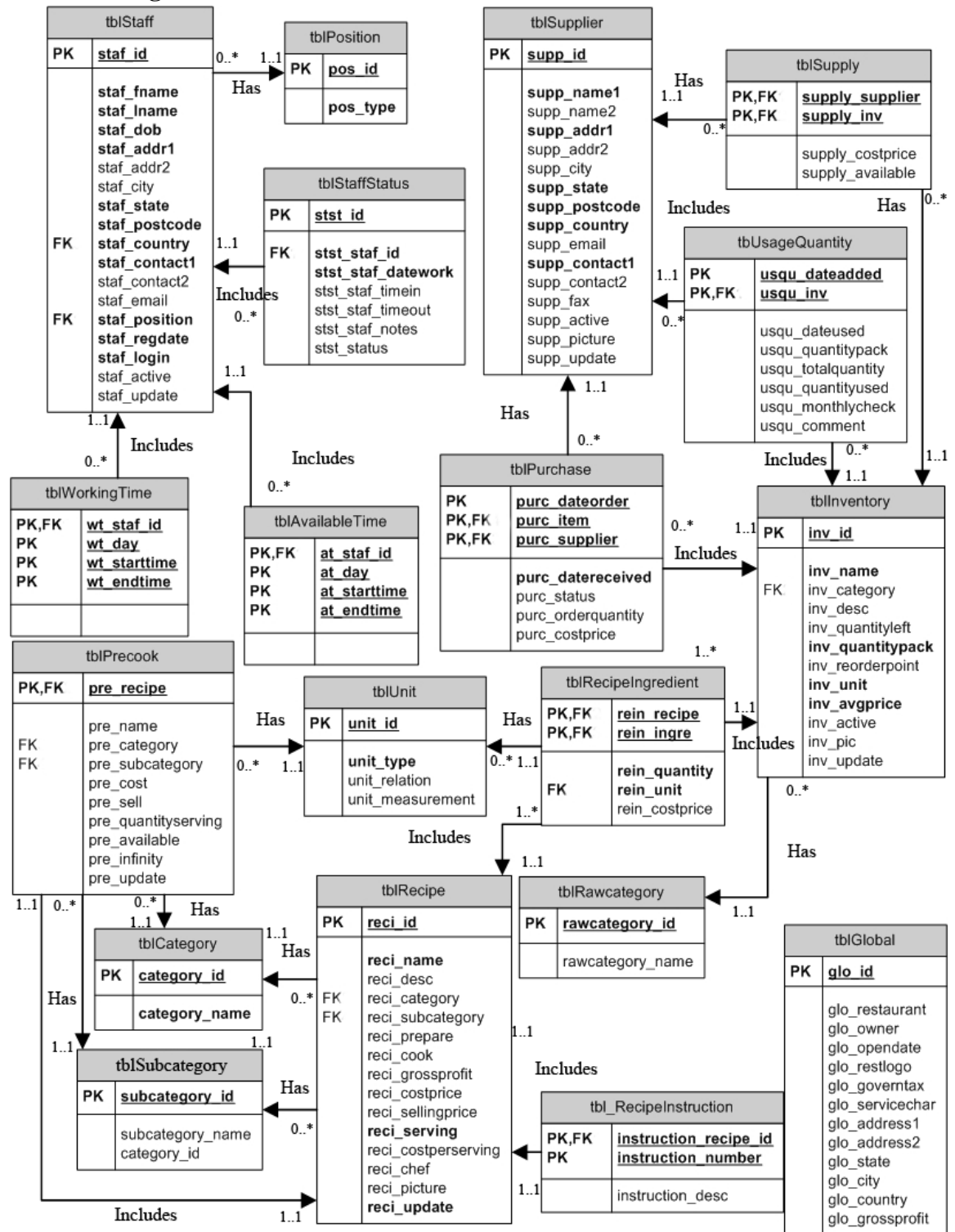


Figure 6-1-F1 ERD Diagram

## 6-2 Data Dictionary

**Table 6-2-T1 Available Time Table**

<b>tblAvailableTime</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
at_staf_id {PK,FK}	NVARCHAR(100)	Staff ID	tblStaff(staf_id)	YES
at_day	NVARCHAR(100)	Available Working day	-	YES
at_start_time	NVARCHAR(4)	Start Time	-	YES
at_end_time	NVARCHAR(4)	End Time	-	YES

**Table 6-2-T2 Category Table**

<b>tblCategory</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
category_id {PK}	NVARCHAR(100)	Main Category ID	-	NO
category_name	NVARCHAR(100)	Main Category Name	-	NO

**Table 6-2-T3 Global Table**

<b>tblGlobal</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
glo_id {PK}	NVARCHAR(100)	Global ID	-	NO
glo_restaurant	NVARCHAR(100)	Restaurant Name	-	YES
glo_owner	NVARCHAR(100)	Restaurant Owner Name	-	YES
glo_restlogo	NVARCHAR(100)	Restaurant logo (path)	-	YES
glo_governtax	NUMERIC(7)	Restaurant Logo(Path)	-	YES
glo_servicecharge	NUMERIC(7)	Restaurant Service Charge	-	YES
glo_addr1	NVARCHAR(100)	Restaurant Address 1	-	YES
glo_addr2	NVARCHAR(100)	Restaurant Address 2	-	YES
glo_state	NVARCHAR(100)	Restaurant State	-	YES
glo_city	NVARCHAR(100)	Restaurant City	-	YES

glo_country	NVARCHAR(100)	Restaurant Country	-	YES
glo_starttime	NVARCHAR(100)	Restaurant Operation Start Time	-	YES
glo_endtime	NVARCHAR(100)	Restaurant Operation End Time	-	YES

**Table 6-2-T4 Inventory Table**

<b>tblInventory</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
inv_id {PK}	NVARCHAR(100)	Inventory ID	-	NO
inv_name	NVARCHAR(100)	Inventory Name	-	NO
inv_category {FK}	NVARCHAR(100)	Inventory Category	tblRawCategory (rawcategory_id)	NO
inv_desc	NVARCHAR(100)	Inventory Description	-	YES
inv_quantityleft	NUMERIC(9,2)	Inventory Quantity Left	-	NO
inv_quantitypack	NUMERIC(9,2)	Inventory Quantity in Pack	-	NO
inv_reorderpoint	NUMERIC(9,2)	Inventory Reorder Point	-	NO
inv_unit {FK}	NVARCHAR(10)	Inventory Unit	tblUnit(unit_id)	NO
inv_avgprice	NUMERIC(9,2)	Inventory Average Price	-	NO
inv_active	BIT	Inventory Status(Active or Inactive)	-	NO
inv_pic	NVARCHAR(100)	Inventory Picture(Path)	-	YES
inv_update	DATETIME	Inventory Last Update Date and Time	-	NO

**Table 6-2-T5 Position Table**

<b>tblPosition</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
pos_id {PK}	NVARCHAR (100)	Position ID	-	NO
pos_type	NVARCHAR (100)	Position Type	-	NO

**Table 6-2-T6 Precook Table**

<b>tblPrecook</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
pre_recipe {PK}	NVARCHAR (100)	Precook ID	tblRecipe (reci_id)	NO
pre_name	NVARCHAR (100)	Precook Name	-	NO
pre_category {FK}	NVARCHAR (100)	Precook Main Category	tblCategory (category_id)	NO
pre_subcategory {FK}	NVARCHAR (100)	Precook Sub Category	tblSubcategory (subcategory_id)	NO
pre_cost	NUMERIC (9,2)	Precook Cost Price	-	NO
pre_sell	NUMERIC (9,2)	Precook Estimated Selling Price	-	NO
pre_quantity	NUMERIC (9,2)	Precook Quantity Serving	-	NO
pre_available	BIT	Precook Availability	-	NO
pre_infinity	BIT	Precook Infinity of Quantity Serving	-	NO
pre_update	DATETIME	Precook Last Update date and time	-	NO

**Table 6-2-T7 Purchase Table**

<b>tblPurchase</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
purc_dateorder {PK}	NUMERIC (10)	Purchase Order Date Time	-	NO
purc_item {PK,FK}	NVARCHAR (100)	Purchase Order Inventory	tblInventory (inv_id)	NO
purc_supplier {PK,FK}	NVARCHAR (100)	Supplier ID	tblSupplier (supp_id)	NO
purc_datereceived	DATETIME	Date Received of Purchase	-	YES
purc_status	NVARCHAR (100)	Purchase Order Status	-	NO
purc_orderquantity	NUMERIC (9,2)	Purchase Order Quantity	-	NO
purc_costprice	NUMERIC (9,2)	Purchase Order Cost Price	-	NO

**Table 6-2-T8 Raw Category Table**

<b>tblRawCategory</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
rawcategory_id {PK}	NVARCHAR (100)	Raw Category ID	-	NO
rawcategory_name	NVARCHAR (100)	Raw Category Name	-	NO

**Table 6-2-T9 Recipe Table**

<b>tblRecipe</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
reci_id {PK}	NVARCHAR (100)	Recipe ID	-	NO
reci_name	NVARCHAR (100)	Recipe Name	-	NO
reci_desc	NVARCHAR (100)	Recipe Description	-	YES
reci_category {FK}	NVARCHAR (100)	Recipe Main Category	tblCategory (category_id)	NO
reci_subcategory {FK}	NVARCHAR (100)	Recipe Sub Category	tblSubcategory (subcategory_id)	NO
reci_prepare	NUMERIC (7)	Recipe	-	YES

		Preparation Time		
reci_cook	NUMERIC (7)	Recipe Cooking Time	-	YES
reci_grossprofit	NUMERIC (3,2)	Recipe Gross Profit	-	YES
reci_costprice	NUMERIC (9,2)	Recipe Cost Price	-	YES
reci_sellingprice	NUMERIC (9,2)	Recipe Estimated Selling Price	-	YES
reci_costperserving	NUMERIC (9,2)	Recipe Cost Price (per Serving)	-	YES
reci_chef {FK}	NVARCHAR (100)	Recipe Chef	tblStaff(staf_id)	YES
reci_picture	NVARCHAR (100)	Recipe Picture	-	YES
reci_update	DATETIME	Recipe Last Update Date and Time	-	NO

**Table 6-2-T10 Recipe Ingredient Table**

<b>tblRecipeIngredient</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
rein_recipe {PK,FK}	NVARCHAR (100)	Recipe ID	tblRecipe (reci_id)	NO
rein_ingre {PK,FK}	NVARCHAR (100)	Inventory ID	tblInventory (inv_id)	NO
rein_quantity	NUMERIC (9,2)	Ingredient Quantity Used	-	NO
rein_unit {FK}	NVARCHAR (10)	Ingredient Unit	-	NO
rein_costprice	NUMERIC (9,2)	Ingredient Cost Price	-	NO



**Table 6-2-T11 Recipe Instruction Table**

<b>tblRecipeInstruction</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
instruction_recipe_id {PK,FK}	NVARCHAR (100)	Recipe ID	tblRecipe (reci_id)	NO
instruction_number {PK}	NUMERIC (7)	No. of Instruction	-	NO
instruction_desc	NVARCHAR (4000)	Instructions of Cooking Recipe	-	NO

**Table 6-2-T12 Staff Status Table**

<b>tblStaffStatus</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
stast_id {PK}	NVARCHAR (100)	Staff Status Number	-	NO
stst_staf_id {FK}	NVARCHAR (100)	Staff ID	tblStaff(staff_id)	NO
stst_workdate	DATETIME	Staff Working Date	-	NO
stst_timein	NVARCHAR (4)	Staff Clock In Time	-	NO
stst_timeout	NVARCHAR (4)	Staff Clock Out Time	-	YES
stst_notes	NVARCHAR (4000)	Staff Notes	-	YES
stst_status	NVARCHAR (100)	Staff Working Status	-	NO

**Table 6-2-T13 Staff Table**

<b>tblStaff</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
staf_id {PK}	NVARCHAR (100)	Staff ID	-	NO
staf_fname	NVARCHAR (100)	Staff First Name	-	YES
staf_lname	NVARCHAR (100)	Staff Last Name	-	NO
staf_dob	DATETIME	Staff Date of Birth	-	NO

staf_addr1	NVARCHAR (100)	Staff Address 1	-	YES
staf_addr2	NVARCHAR (100)	Staff Address 2	-	YES
staf_city	NVARCHAR (100)	Staff City	-	YES
staf_state	NVARCHAR (100)	Staff State	-	YES
staf_postcode	NUMERIC(5)	Staff Postcode	-	YES
staf_country	NVARCHAR (100)	Staff Country	-	YES
staf_contact1	NUMERIC (15)	Staff Contact Number 1	-	NO
staf_contact2	NUMERIC (15)	Staff Contact Number 2	-	YES
staf_email	NVARCHAR (100)	Staff Email	-	YES
staf_position {FK}	NVARCHAR (100)	Staff Position	tblPosition(pos_id)	YES
staf_login	NVARCHAR (6)	Staff Login ID	-	NO
staf_joindate	DATETIME	Staff Join Date	-	NO
staf_update	DATETIME	Staff Info Last Update Date and Time	-	NO

**Table 6-2-T14 Sub Category Table**

<b>tblSubCategory</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
subcategory_id {PK}	NVARCHAR (100)	Sub Category ID	-	NO
subcategory_name	NVARCHAR (100)	Sub Category Name	-	NO
category_id {FK}	NVARCHAR (100)	Main Category ID	tblCategory (category_id)	NO

**Table 6-2-T15 Supplier Table**

<b>tblSupplier</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
supp_id {PK}	NVARCHAR (100)	Supplier ID	-	NO
supp_name1	NVARCHAR (100)	Supplier Name 1	-	NO
supp_name2	NVARCHAR (100)	Supplier Name 2	-	YES
supp_addr1	NVARCHAR (100)	Supplier Address 1	-	NO
supp_addr2	NVARCHAR (100)	Supplier Address 2	-	YES
supp_city	NVARCHAR (100)	Supplier City	-	YES
supp_state	NVARCHAR (100)	Supplier State	-	NO
supp_postcode	NUMERIC (5)	Supplier Postcode	-	NO
supp_country	NVARCHAR (100)	Supplier Country	-	NO
supp_email	NVARCHAR (100)	Supplier Email	-	YES
supp_contact1	NUMERIC (15)	Supplier Contact Number 1	-	YES
supp_contact2	NUMERIC (15)	Supplier Contact Number 2	-	YES
supp_fax	NUMERIC (15)	Supplier Fax Number	-	YES
supp_active	BIT	Supplier Status(Active or Inactive)	-	NO
supp_city	NVARCHAR (100)	Supplier City	-	YES
supp_picture	NVARCHAR (100)	Supplier Picture(Path)	-	YES
supp_update	DATETIME	Supplier Last Update Date and Time	-	NO

**Table 6-2-T16 Supply Table**

<b>tblSupply</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
supply_supplier {PK,FK}	NVARCHAR (100)	Supplier ID	tblSupplier (supp_id)	NO
supply_inv {PK,FK}	NVARCHAR (100)	Inventory ID	tblInventory (inv_id)	NO
supply_costprice	NUMERIC (9,2)	Supplied Item Cost Price	-	NO
supply_available	BIT	Supplied Item Availability	-	NO

**Table 6-2-T17 Unit Table**

<b>tblUnit</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
unit_id {PK}	NVARCHAR (100)	Unit ID	-	NO
unit_type	NVARCHAR (100)	Unit Type	-	NO
unit_relation	NVARCHAR (100)	Unit Relationship between unit	-	NO
unit_measurement	NUMERIC (9,2)	Unit Measurement	-	NO

**Table 6-2-T18 Working Time Table**

<b>tblWorkingTime</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
wt_staf_id {PK,FK}	NVARCHAR (100)	Staff ID	tblStaff(staf_id)	NO
wt_day	NVARCHAR (100)	Staff Working Day	-	NO
wt_starttime	NVARCHAR (100)	Staff Working Start Time	-	NO
wt_endtime	NVARCHAR (100)	Staff Working End Time	-	NO

**Table 6-2-T19 Usage Quantity Table**

<b>tblUsageQuantity</b>				
<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>	<b>References</b>	<b>Null?</b>
usqu_dateadded {PK}	DATETIME	Inventory Added Date and Time	-	NO
usqu_inv {PK,FK}	NVARCHAR (100)	Inventory ID	tblInventory(inv_id)	NO
usqu_lastupdate	DATETIME	Inventory Last Update	-	YES
usqu_totalquantity	NUMERIC(9,2)	Inventory Total Quantity	-	NO
usqu_quantityused	NUMERIC(9,2)	Inventory Quantity Used	-	NO
usqu_monthlycheck	NUMERIC(9,2)	Inventory Monthly Check	-	NO
usqu_comment	NVARCHAR (4000)	Quantity and Usage Comment	-	YES

### 6-3 Database Entities

**Table 6-3-T1 Data Dictionary for Entities**

<b>Entity</b>	<b>Description</b>
tblAvailableTime	The records of the available time for each staff in specific day.
tblCategory	The list of recipe main category.
tblGlobal	The global information which do not have any relationship with other entities.
tblInventory	The records of raw materials details include the unit and quantity.
tblPosition	The list of staff position in restaurant.
tblPrecook	The list of precook details take from tblRecipe.
tblPurchase	The records of purchase order for each supplier with specific raw materials.
tblRawCategory	The list of raw material category.
tblRecipe	The records of recipe details include the cost price and selling price.
tblRecipeIngredient	The records of ingredient details used to prepare the recipe.
tblRecipeInstruction	The records of instructions on how to cook the recipe.
tblStaff	The records of staff in the restaurant.
tblStaffStatus	The records of the staff progress on staff working day.
tblSubCategory	The list of sub category for recipe.
tblSupplier	The records of the supplier details.
tblSupply	The records of raw materials supplied by each supplier.
tblUnit	The list of unit measurement used to measure the quantity of the raw material.
tblUsageQuantity	The records of usage and quantity left of each raw material in each month.
tblWorkingTime	The records of working time for each staff from which time to which time in specific day.

### 6-4 Naming Convention

Different tables will have different naming of the attributes and the table names. The author had used “tbl” as the starting name of each table in database system which means “table”. The following table is describing how the naming convention using on the attributes in each database table.

**Table 6-4-T1 Naming Convention Table**

Table	Name Convention	Example
tblAvailableTime	at_	at_day
tblCategory	category_	category_name
tblGlobal	glo_	glo_restaurant
tblInventory	inv_	inv_id
tblPosition	pos_	pos_id
tblPrecook	pre_	pre_name
tblPurchase	purc_	purc_quantityorder
tblRawCategory	rawcategory_	rawcategory_id
tblRecipe	reci_	reci_grossprofit
tblRecipeIngredient	rein_	rein_costprice
tblRecipeInstruction	instruction_	instruction_desc
tblStaff	staf_	staf_lname
tblStaffStatus	stst_	stst_staf_id
tblSupplier	supp_	supp_name1
tblSupply	supply_	supply_available
tblUnit	unit_	unit_type
tblUsageQuantity	usqu_	usqu_monthlycheck
tblWorkingTime	wt_	wt_start_time

## *Chapter 7*

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# *Implementation*

### **Contents:**

- 7-1 Software Development
- 7-2 Installation Plan
- 7-3 Deployment Plan



## **Chapter 7: Implementation**

This chapter describes how this system is going to develop and implement into the business operation and what are the system requirements are needed in order to install this system.

### **7-1 Software Development**

This system is developed by using Visual Basic language in Microsoft Visual Studio 2010. Visual Basic is divided into two platforms which are windows platform and web platform and windows platform is being used to develop this system in this project. Windows platform application does not need the web server to host the domain and it can be used in offline mode. Meanwhile in programming the system, code debugging and module testing are progressed concurrently to ensure the source code is work perfectly. On the hand, it also can help the author to guarantee the queries of retrieving and updating the database executed successfully when the connection is made between the system and the database system.

### **7-1 Installation**

Before the current system is going to install into user's computer, some hardware and software are needed to be included in operating the current system in order to achieve higher performance of the current system because missing one of the components will lead the system malfunctions in certain time. This system is separated into two systems which are front end and backend. The author's system is the backend system for this project.

#### **7-1-1 System Requirements**

System Requirements are divided into two parts, one is hardware requirements and the other one is software requirements. The backend system is requirement higher specifications to operate because backend system is used to support the front end system also. The following tables are describing the hardware requirements and software requirements.

**Table 7-1-1-T1 Hardware Best Requirements**

Processor	Intel® Pentium Core 2 Duo Processor
Memory (RAM)	2GB DDR2/ 667 RAM
Hard Disk Drive	160GB SATA Hard Disk Drive
Graphic Card	Built-in Intel® Graphics
Network Card	10/100Mbps Gigabit Ethernet
Monitor	Touch Screen/ Non Touch Screen Monitor
Printer	Inkjet Black and Color Printer

**Table 7-1-1-T2 Hardware Minimum Requirements**

Processor	Intel® Pentium 4
Memory (RAM)	1GB DDR2/ 667 RAM
Hard Disk Drive	80GB SATA Hard Disk Drive
Graphic Card	Built-in Intel® Graphics
Network Card	10/100Mbps Gigabit Ethernet
Monitor	Non Touch Screen Monitor
Printer	Inkjet Black and Color Printer

**Table 7-1-1-T3 Software Requirements**

Operating System	Microsoft ® Windows® XP Professionals / Microsoft ® Windows® Vista / Microsoft ® Windows® 7
Framework	Microsoft Visual Studio 2010 Crystal Reports for .NET Framework 4.0
Office Application (export Crystal Report)	Adobe Reader Microsoft Office 2005/2007/2010
Database System	Microsoft SQL Server 2008

### 7-1-2 Network Requirements

Some networking hardware is needed to support this system as front end and backend systems are used to operate. This system is playing the important role as a server to maintain and keep track of the records. The front end system can be installed into many computers and run as client computers and connect to backend system to retrieve and send the data. If there is no network hardware used in the operation, the front end system cannot retrieve any data such as food menu because database is installed into one place which is located in this backend system. The following are the networking hardware used to support the system.

- Wireless Router with 4 LAN ports
- LAN Cable (Cat5)

### 7-2 Installation Plan

There is some software needed to be installed before the current system is going to be installed into the computer. The following table is describing the steps how to install the software in order to let the current system fully operated.

**Table 7-2-T1 Instructions on Installing LightWeight BackOffice (Windows® 7)**

Step	Instructions
1	Install Microsoft Visual Studio 2010
2	Install Crystal Reports for .NET Framework 4.0
3	Run the setup file (.exe) to install LightWeight BackOffice to the server computer.
4	Go to C:\Program Files, right click on the LightWeight BackOffice folder.
5	Select Sharing tab, click on advanced Sharing. In the pop up windows dialog, tick the checkbox Share this folder and assign a Share Name and close it.
6	On the Advanced Sharing windows dialog, click on Permission button.
7	In the new pop up screen, select Everyone in the dropdown menu and click add.
8	Close all the pop up windows and the system is ready to use.

### **7-3 Deployment Plan**

Deployment is the process of implementing the software into the client site. Deployment is the second final stage in software development process follow by maintenance. Before the software is being implemented into customer site, some of the testing techniques needed to be done. The testing process will be discussed in next chapter. The documentation such as user manual will be delivered to client together with the software package. The user manual will include the instructions on how to use This system correctly and efficiency. This current software will be complied and burned into a compact disk together with the Microsoft Visual Studio 2010 and Crystal Report for .NET Framework 4.0 for the software installation. The user manual will be embedded with this system installer to guide the user how to use This system. After this current is deployed into client site, training and maintenance are needed to provide for the user to maintain the integrity in the business operation.

# *Chapter 8*

---

# *Testing*

## **Contents:**

- 8-1 Unit Test
- 8-2 Module Test
- 8-3 Integration Testing
- 8-4 System Integration Testing
- 8-5 Acceptance Test
- 8-6 Tester
- 8-7 Test Plan

## **Chapter 8: Testing**

This chapter describes how the testing process is done on the current system by using some testing techniques and the test plan used to test this system.

### **8-1 Unit Test**

While the system is developing, the author had test each of the function within a module such as inputting different parameter of the values to check the validation and the condition whether the outcome is correct regarding to the corresponding input. This can help the author reduce the workload of debugging and the error fixing before the system is growing bigger and complicated.

### **8-2 Module Test**

When a module is finish developed, the author will test that module by using artificial data to ensure the data output is consistent with the data input. This module test is includes the testing of all the functions within the module. This testing process is important because some functions within the module are dependent on other functions. If there is a module is finish developed, the author will test that module and check the bugs and errors before going to develop the next module.

### **8-3 Integration Testing**

Integration testing will take place after all the modules are successfully developed and tested in module testing stage. The author had prepared a set of artificial data to test all the modules within the system when all the modules are integrated together. In this system, some modules are dependent from each other, for example, raw material module and supplier module. The author had tested the modules which have the dependencies, for example, when a new material is added into the system in the raw material module, the supplier in the supplier module is able to add that new raw material as the new supplied raw material for that supplier.

### 8-4 System Integration Testing

The author had continued with the system integration testing after the integration testing is done. The system integration testing is includes the testing of using the hardware components such as printer and network switch with this system. The author had tested the report printing in the report module and the multiple connections between two computers using network switch. This testing can help the author to ensure this system is compatibles and supports other hardware components when this system is implemented into client side.

### 8-5 Acceptance Test

In this stage, this system will be tested by the target users and not released to client side. The author will take the responsibility of correcting the errors and bugs of this system when users had found any of them. The user involvement in acceptance test is important which can decide whether the author’s system can successfully implement into the business operation. This final version of this system will be delivered if This system is free from errors and This system is fulfilled the user requirements.

### 8-6 Tester

The testing of this system is involved two main characters which are the author and the user. The table below is describes their role in the system testing.

Character	Role
The author	The author is playing the important role in unit testing, module testing, system testing and system integration testing. Those testing can help the author to eliminate the possible bugs occurred while developing This system.
System User	The system user involved in acceptance testing which is test all the modules and decides whether the system is deliverable to their organization.

**Table 8-6-T1 Tester Role Description**

### 8-7 Test Plan

The author had prepared some scenario task to test this system for the user and observed their performed actions. The manager of the restaurant is playing the main character in testing this system because This system is a backend system and mostly monitored by the restaurant manager.

TEST NO: TEST01
MODULES: Setting Module (Raw Material Category)
ACTIVITY: The user is asked to configure and add the raw material category in Raw Material sub module located in Setting. The user is also asked to edit the raw material category name and delete the existing raw category in the list.
EXPECTED RESULT: The raw material category is successfully added to the list and is able to edit and remove from the list.
ACTUAL RESULT: The user is successfully entered the raw material category and also able to edit and delete the raw material category without any doubt.

**Table 8-7-T1 Test Case 1**

TEST NO: TEST02
MODULES: Setting Module (Recipe Category)
ACTIVITY: The user is asked to create a new recipe category in Recipe Category sub module located in Setting. The user is required to enter the recipe sub category corresponding to the recipe main category. The user is also asked to edit and delete the existing recipe category and recipe sub category in the list.
EXPECTED RESULT: The recipe category and recipe sub category is successfully added to the list and is able to edit and remove from the list
ACTUAL RESULT:



The user is able to enter new recipe category and new recipe sub category and also able to edit and remove any category from the list.

**Table 8-7-T2 Test Case 2**

TEST NO: TEST03
MODULES: Setting Module (Staff Position)
ACTIVITY: The user is asked to enter new staff position in Staff Position sub module located in Setting. The use is also asked to edit and remove the staff position from the list.
EXPECTED RESULT: The new staff position is successfully added to the list and is able to edit and remove from the list.
ACTUAL RESULT: The user is successfully performed those actions and new staff position is added, edited and deleted from the list.

**Table 8-7-T3 Test Case 3**

TEST NO: TEST04
MODULES: Raw Material Module and Supplier Module
ACTIVITY: The user is asked to enter new raw materials with the raw material name, category, related quantity, unit measurement and so on. After the new raw material is successfully added to database, the user is required to add the supplier in the Supplied Item in Raw Material module. If there is no supplier available in the list, the user is required to add new supplier information in Supplier module. In the supplier module, the user is asked to add the raw material to the supplier.
EXPECTED RESULT: The new raw material and new supplier is successfully added to the database. The new raw material is successfully added to the new supplier in Raw Material Module and Supplier Module.
ACTUAL RESULT:

The user is successfully added the new raw material and new supplier and successfully added the raw material to supplier in supply list.

**Table 8-7-T4 Test Case 4**

TEST NO: TEST05
MODULES: Recipe Module
<p>ACTIVITY:</p> <p>The user is asked to add a new recipe with the recipe name, category and sub category. After that, the user is asked to add the ingredient from the raw material list to the recipe in ingredient sub module. The user is also asked to enter the gross profit and the quantity serving to calculate the estimated selling price of the recipe. Next, the user is asked to enter the instructions in the instruction sub module. The user is also asked to edit and delete the instructions.</p>
<p>EXPECTED RESULT:</p> <p>The new recipe is successfully added to the database with the ingredient list and also the instructions.</p>
<p>ACTUAL RESULT:</p> <p>The user is successfully added the new recipe and allocated the ingredients to that recipe. The instructions are also successfully added to the database.</p>

**Table 8-7-T5 Test Case 5**

TEST NO: TEST06
MODULES: Precook Module
<p>ACTIVITY:</p> <p>The user is asked to add the precook item in the Precook Module from the recipe list created in Recipe Module.</p>
<p>EXPECTED RESULT:</p> <p>The new recipe is added to the precook module from the recipe list.</p>
<p>ACTUAL RESULT:</p> <p>The user is successfully added the new recipe to the precook module.</p>

**Table 8-7-T6 Test Case 6**

TEST NO: TEST07
MODULES: Staff Module
<p>ACTIVITY:</p> <p>The user is asked to enter a new staff with the information of last name, date of birth, address, contact number, login password and so on. After that, the user is required to add the available working time in the Available Schedule sub module by selecting the date and the time. Next, the user is asked to set the working time in the Working Schedule sub module for the staff by choosing the schedule made in the available working schedule. The user is asked to preview and print the schedule in both modules.</p>
<p>EXPECTED RESULT:</p> <p>New staff is successfully added to the database. The available schedule is successfully added to the list and the working schedule is successfully generated and chosen from the available schedule.</p>
<p>ACTUAL RESULT:</p> <p>The user is successfully added a new staff and schedule the available time and working time for the staff.</p>

**Table 8-7-T7 Test Case 7**

TEST NO: TEST08
MODULES: Report Module
<p>ACTIVITY:</p> <p>The user is asked to select some data or all data to generate and preview the report. The user is asked to print the report.</p>
<p>EXPECTED RESULT:</p> <p>The report is successfully generated and printed.</p>
<p>ACTUAL RESULT:</p> <p>The user is successfully generated and printed the report of the data in each module.</p>

**Table 8-7-T8 Test Case 8**

TEST NO: TEST09
MODULES: Purchase Order Module, (sub module in raw material module and supplier module)
ACTIVITY: The user is asked to place an order from a supplier by enter the quantity ordered for certain raw materials. The user is asked to update the status of the order. Besides, the user is required to place an order in the purchase order sub module in raw material module and supplier module.
EXPECTED RESULT: The order is successfully placed and the status is successfully updated in each module.
ACTUAL RESULT: The user is successfully performed all the actions.

**Table 8-7-T9 Test Case 9**

TEST NO: TEST10
MODULES: Precook Module
ACTIVITY: The user is asked to add the quantity serving for the precook item (if the quantity serving is not infinity and assume the quantity ingredients is sufficient).
EXPECTED RESULT: The quantity of serving is successfully added.
ACTUAL RESULT: The user is successfully added the quantity serving to the precook item.

**Table 8-7-T10 Test Case 10**

## *Chapter 9*

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# *Conclusion*

### **Contents:**

- 9-1 Conclusion of the Project
- 9-2 Limitations
- 9-3 Future Enhancements

## Chapter 9: Conclusion

### 9-1 Conclusion of the Project

At the end of this project, this system is developed and tested. This system is free from errors and all the bugs have been solved by the author. The author had compiled the setup file for this system which can be easily installed and used by the user. The functionality of all the modules in this system are fulfilled the user requirements. The objectives and solutions stated in the previous chapter are achieved in this project. This system is successfully implemented into client side and cooperated with their business operation.

However, there are some limitations of the features which cannot be done by the system. The following table is describing the features which cannot perform by the system and the future enhancement for this system.

### 9-2 Limitations

<b>Module</b>	<b>Description</b>
Purchase Order	The purchase order of a supplier cannot be generated at the same day with two different purchase records.
Recipe - Ingredients	The adding of recipe as the ingredients of a recipe is not provided if the user want to add the recipe as the ingredient.
Report	User cannot select the fields of the record they wanted to display in the report generation.

**Table 9-2-T1 Limitations**

### 9-3 Future Enhancements

Features	Description
Staff Salary Auto Generation	The staff salary especially for the part timer staff can be generated according to their working progress. It can be calculated by hour or day according to the user decision. It can reduce the time in manually calculating the salary for the staff.
Accounting Management	This feature can help the restaurant calculate the total expenses and the net profit in one month with the inputted rental fees, purchase order expenses, total net profit earned in operation and so on.
Report Designer	This feature can let the user design the report layout according to their desired format. This system only can provide fixed format of report and cannot be redesign by the user.
Customization	This feature can let the user change the system font style, font color, wallpaper and others customization options for user to customize a suitable display of the system to fulfilled their requirements.

**Table 9-3-T1 Future enhancements**



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## Appendix A

## Appendix B

# *User Manual*



## **LightWeight BackOffice**

### **Overview**

Lightweight BackOffice is a system used to manipulate the data and records of the restaurant which are only visible to the manager of the restaurant. This system contains nine modules including the setting of the system to help the manager operate the restaurant.

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**1. Installation**

**1.1. System Requirement**

**Table 1.1.T1 Hardware Best Requirements**

Processor	Intel® Pentium Core 2 Duo Processor
Memory (RAM)	2GB DDR2/ 667 RAM
Hard Disk Drive	160GB SATA Hard Disk Drive
Graphic Card	Built-in Intel® Graphics
Network Card	10/100Mbps Gigabit Ethernet
Monitor	Touch Screen/ Non Touch Screen Monitor
Printer	Inkjet Black and Color Printer

**Table 1.1.T2 Hardware Minimum Requirements**

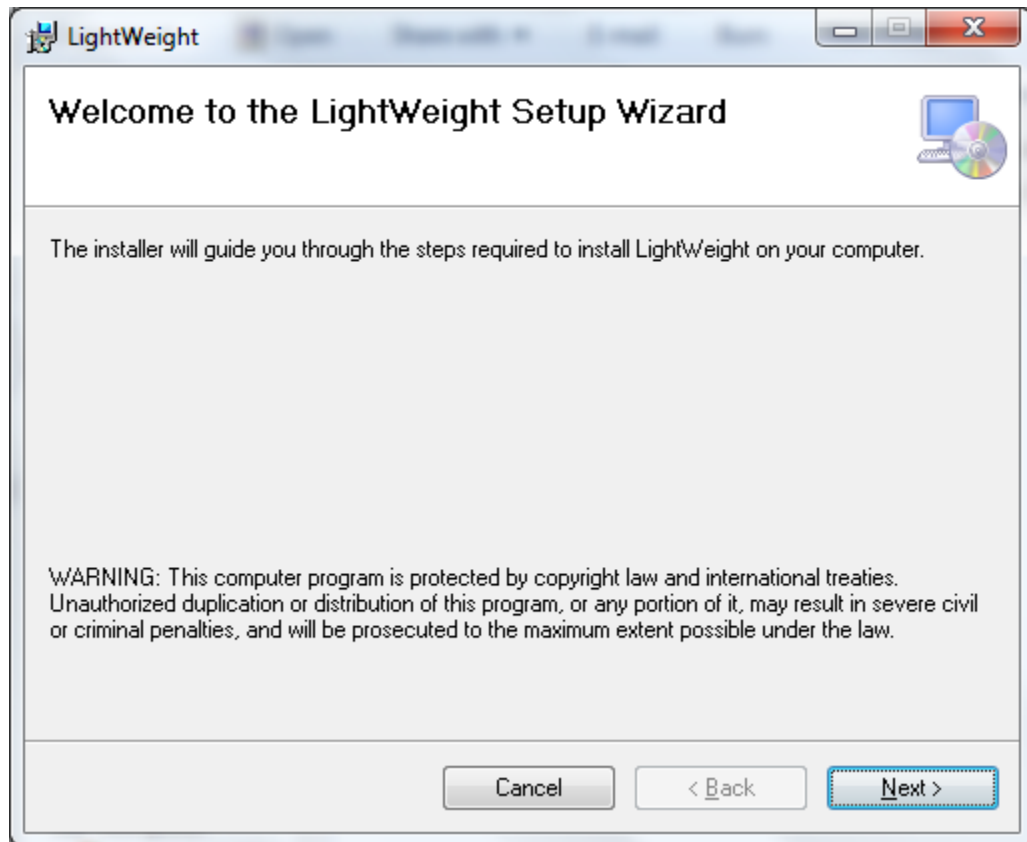
Processor	Intel® Pentium 4
Memory (RAM)	1GB DDR2/ 667 RAM
Hard Disk Drive	80GB SATA Hard Disk Drive
Graphic Card	Built-in Intel® Graphics
Network Card	10/100Mbps Gigabit Ethernet
Monitor	Non Touch Screen Monitor
Printer	Inkjet Black and Color Printer

**Table 1.1.T3 Software Requirements**

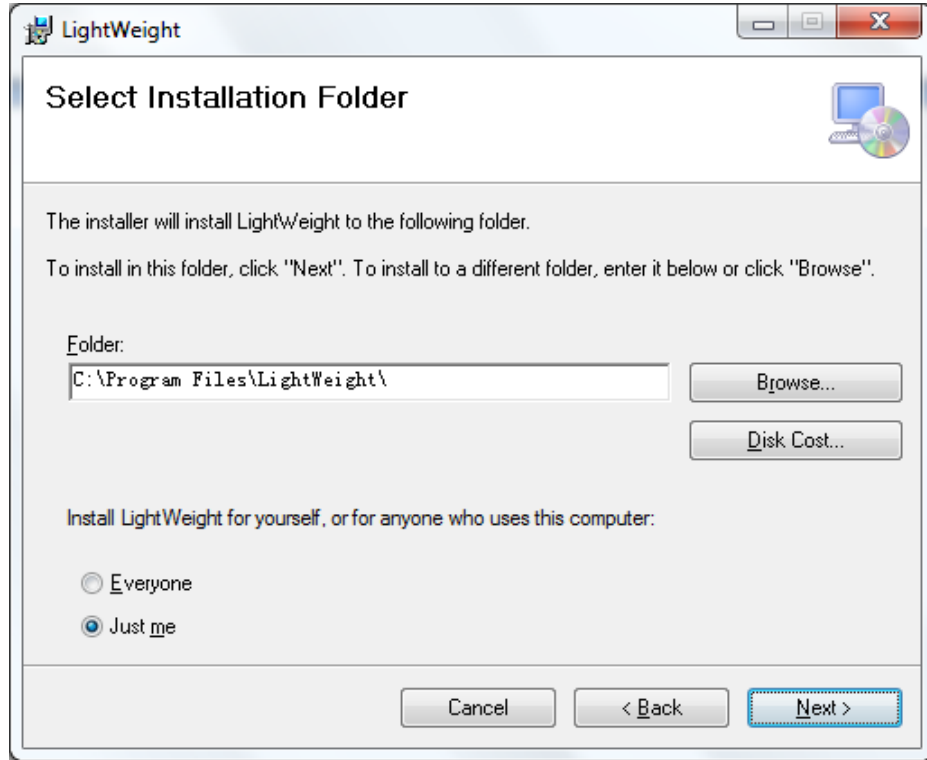
Operating System	Microsoft ® Windows® XP Professionals / Microsoft ® Windows® Vista / Microsoft ® Windows® 7
Framework	Microsoft Visual Studio 2010 Crystal Reports for .NET Framework 4.0
Office Application (export Crystal Report)	Adobe Reader Microsoft Office 2005/2007/2010
Database System	Microsoft SQL Server 2008

**1.2. Installation Steps**

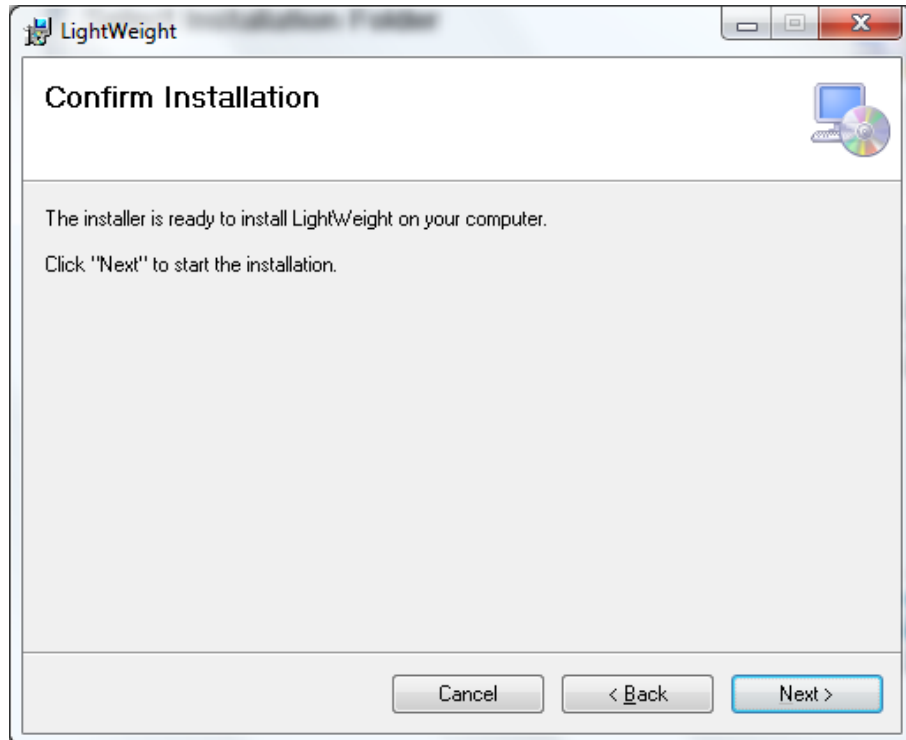
Step 1: Run the CD and execute the Setup.exe installer file and click *Next*.



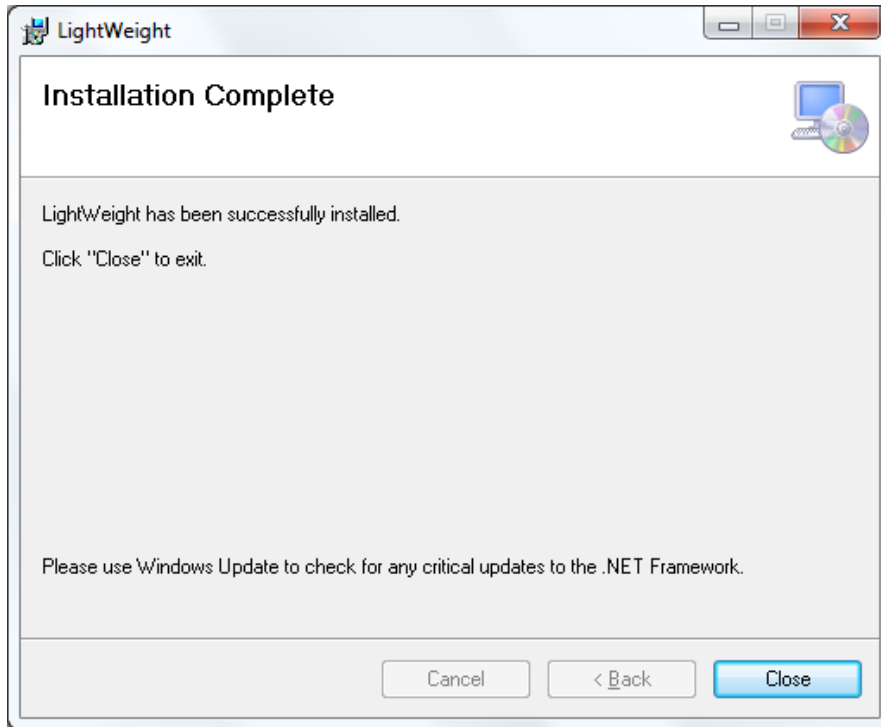
Step 2: Browse the install location if you want to change the installation path. Otherwise, skip it and click *Next*.



Step 3: Click *Next* to confirm the installation



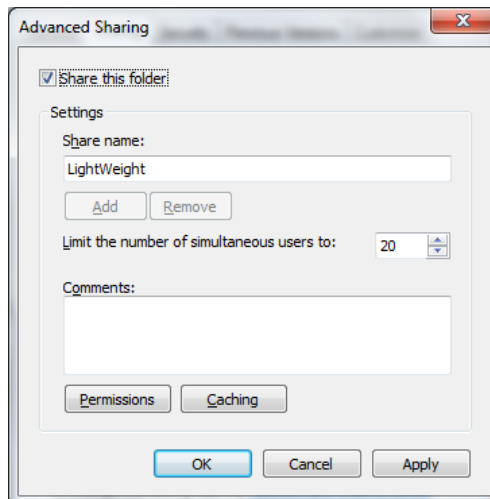
Step 4: After the system is installed, click *Close* to exit.



### 1.3. Database File Sharing

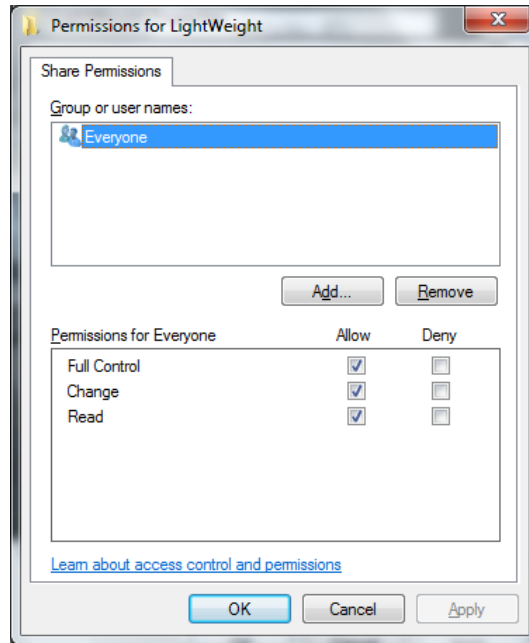
Step 1: Go to C:\Program Files, right click on the LightWeight folder and select properties.

Step 2: Select Sharing tab, click on the advanced sharing. In the pop up windows dialog, tick the checkbox *Share this folder* and assign a Share Name and close it.



Step 3: On the Advanced Sharing windows dialog, click on Permission button.

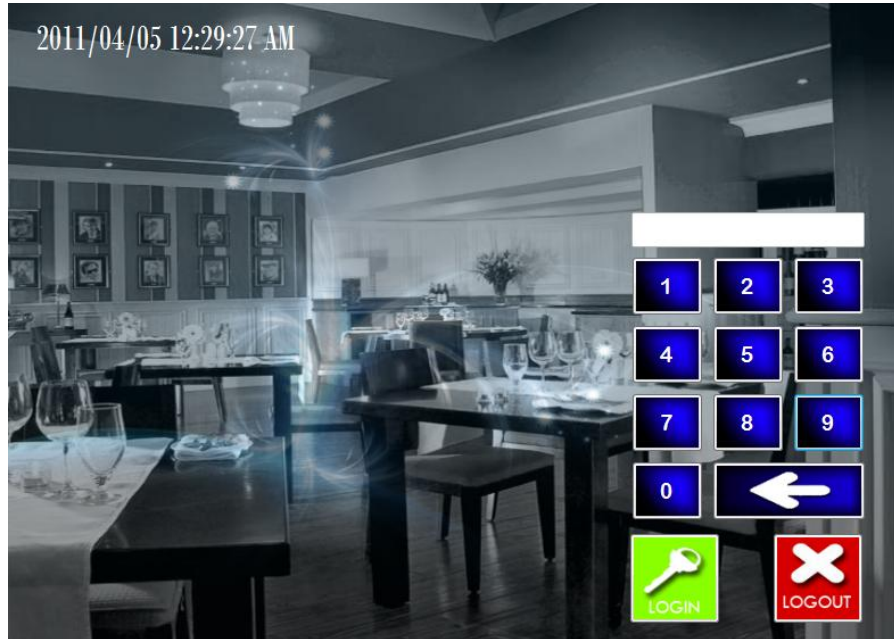
Step 4: In the new pop up screen, select Everyone in the dropdown menu and click add.



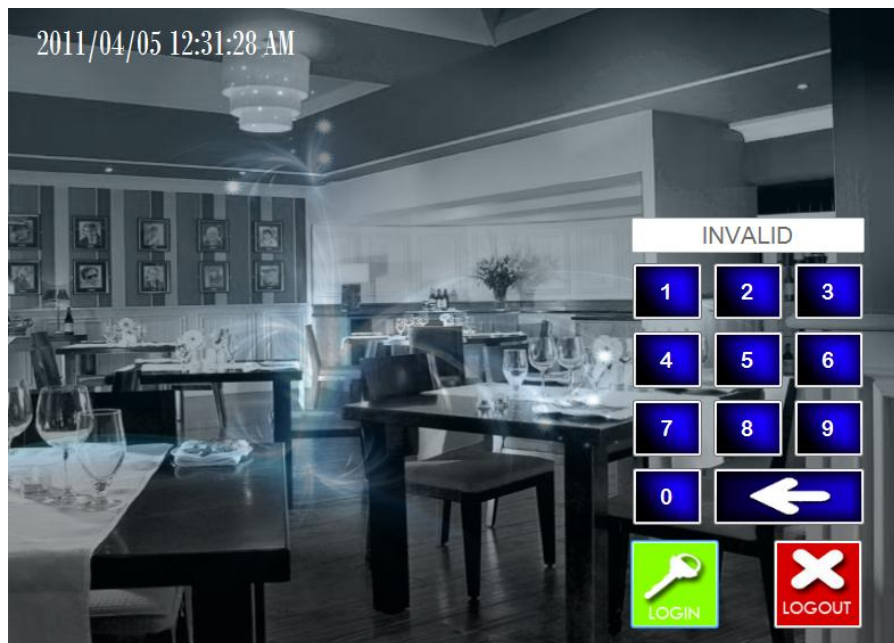
Step 5: Close all the pop up windows and the system is ready to use.

## 2. Getting Started

### 2.1. Login

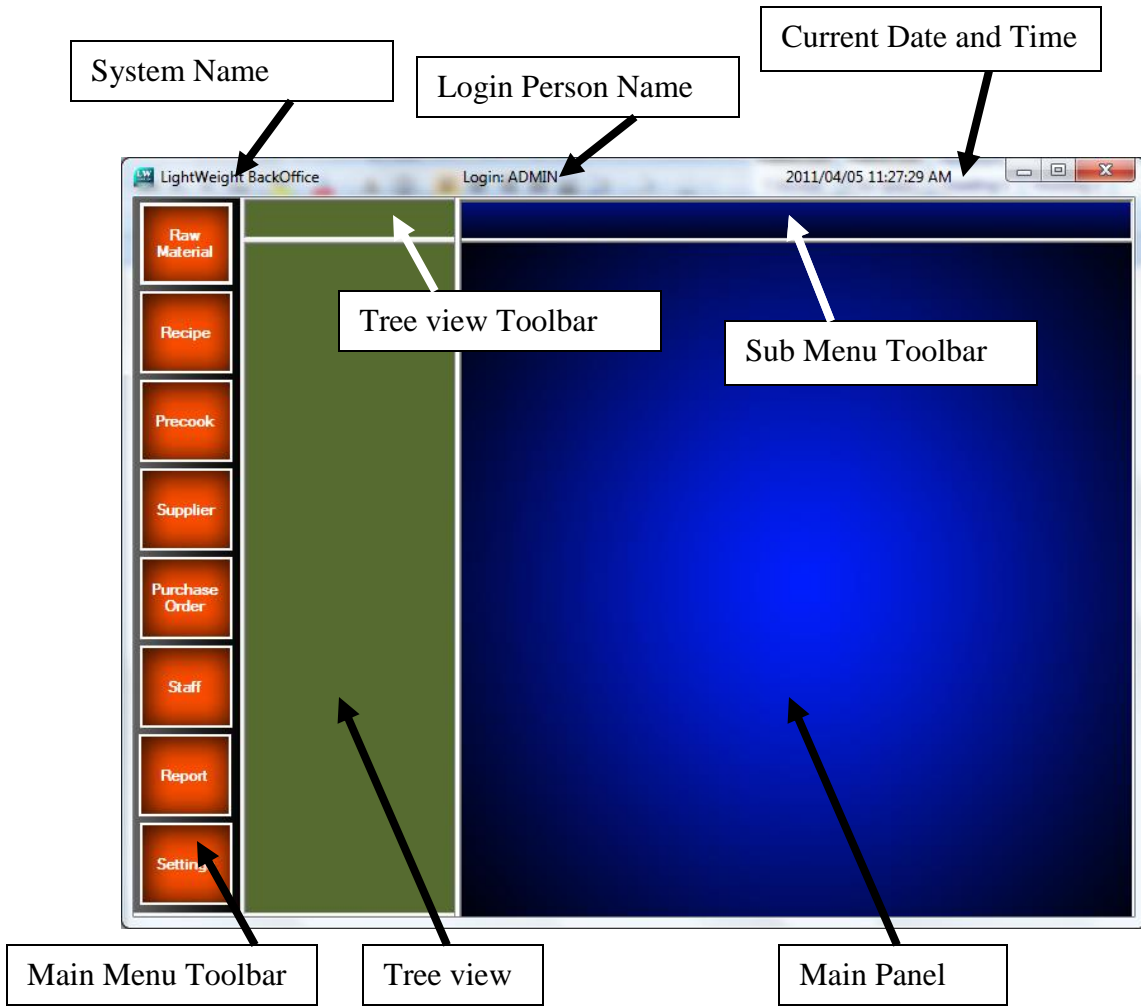


When the system is executed, a login screen will appear and prompt user the login password. The default login password for administrator is 000000 (six zeros)



If the password is invalid, the text *INVALID* will display on the screen.

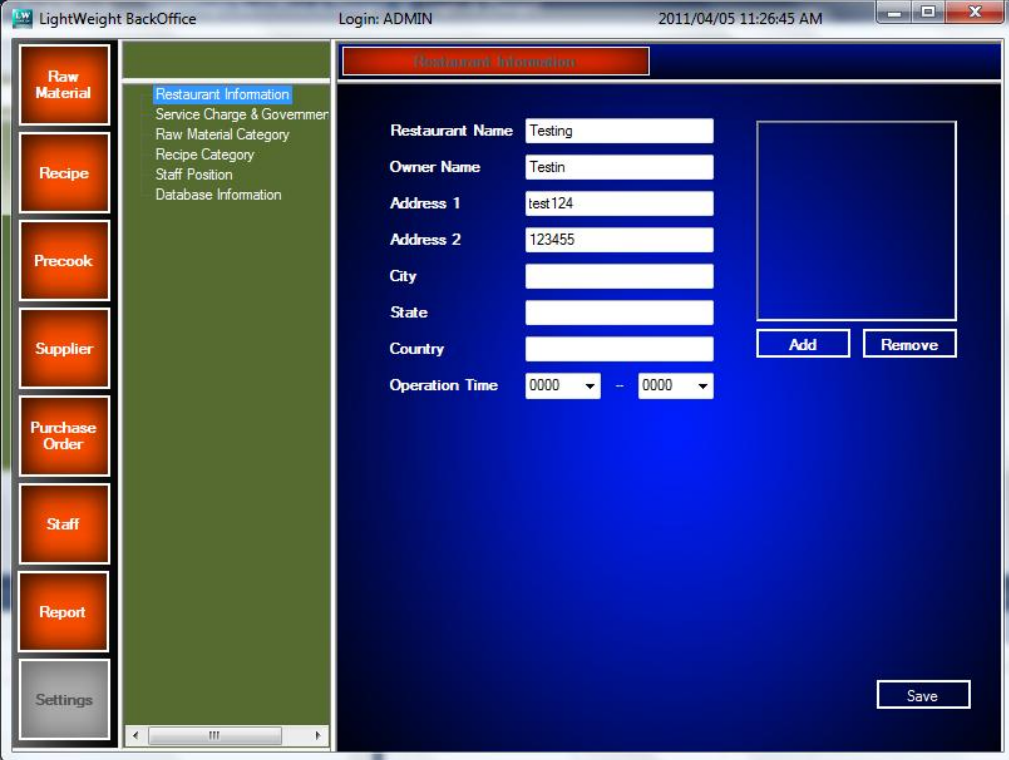
## 2.2. System Overview





## 2.3. Configure Restaurant Detail

Step 1: Click on the *Setting* button and select *restaurant information*.



The screenshot shows the 'LightWeight BackOffice' application window. The title bar includes 'Login: ADMIN' and the date '2011/04/05 11:26:45 AM'. On the left, a vertical menu contains buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The 'Settings' button is highlighted. The main content area is titled 'Restaurant Information' and contains the following fields:

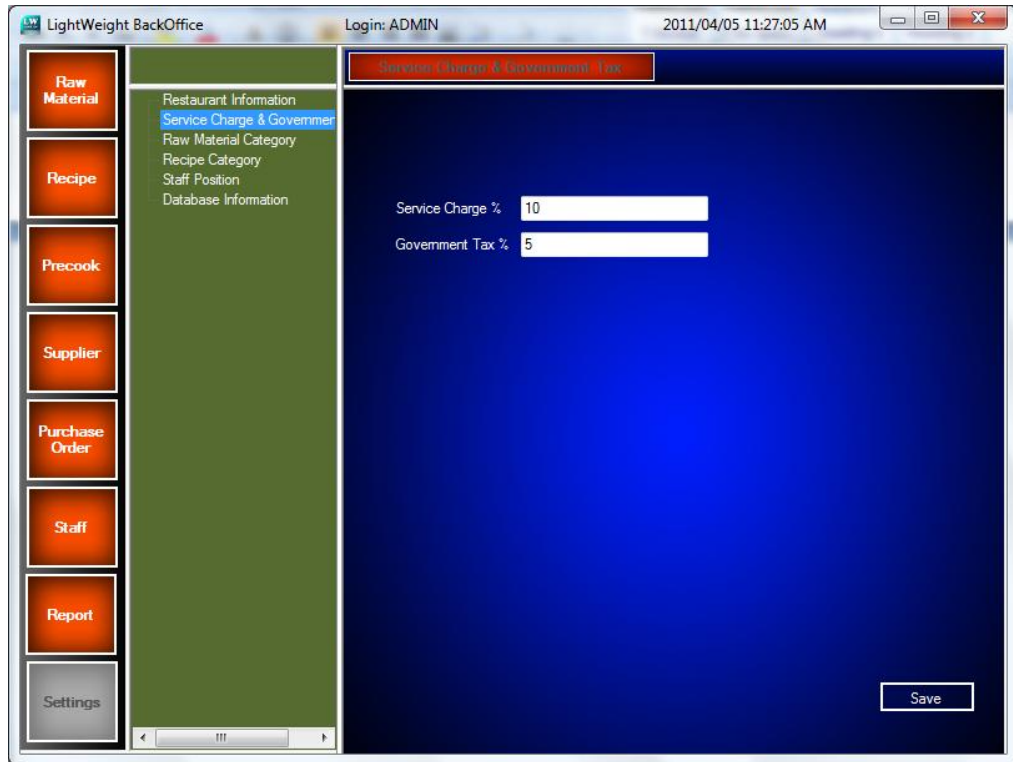
- Restaurant Name:
- Owner Name:
- Address 1:
- Address 2:
- City:
- State:
- Country:
- Operation Time:  -

There is a large empty rectangular box on the right side of the form, likely for a restaurant logo. Below the form are 'Add' and 'Remove' buttons. A 'Save' button is located at the bottom right of the window.

Step 2: Edit the information of the restaurant or add the restaurant logo. After that, click *Save*.

## 2.4. Configure Service Charge & Government Tax

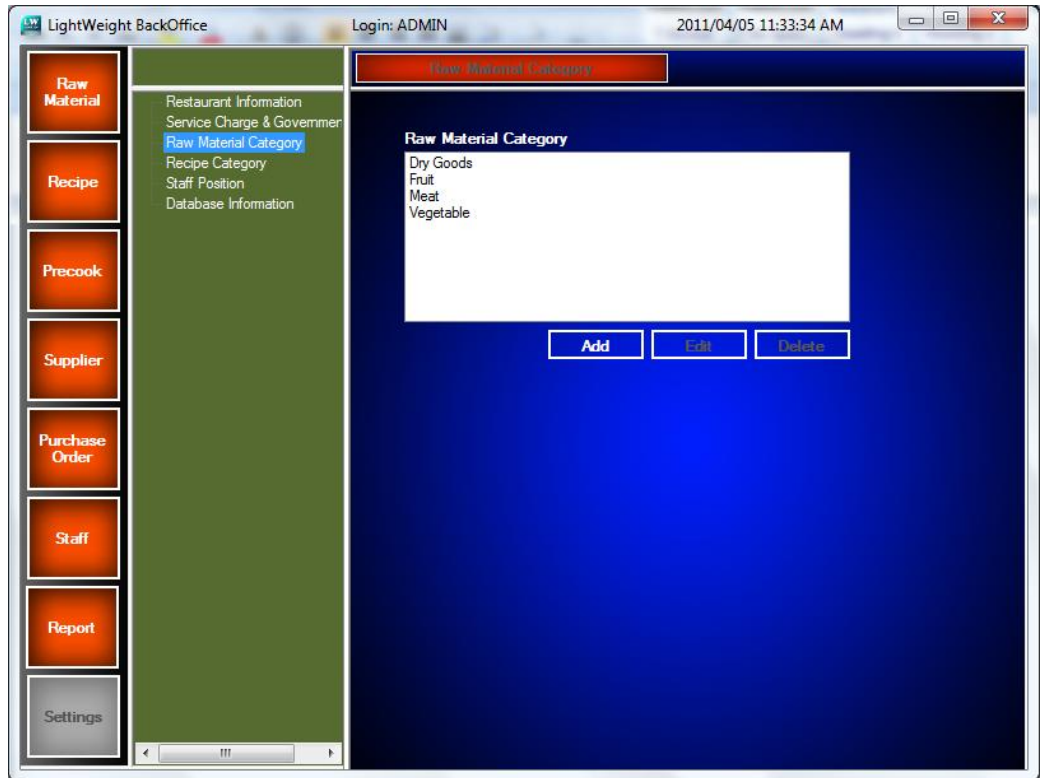
Step 1: Click on the *Service Charge & Government Tax* in the tree view.



Step 2: Edit the Service Charge & Government Tax Rate, and then click *Save*.

## 2.5. Configure Raw Material Category

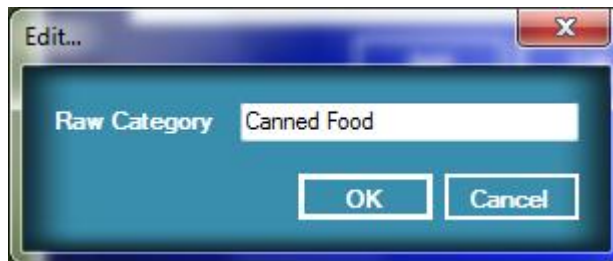
Step 1: Click on the *Raw Material Category* in the tree view.



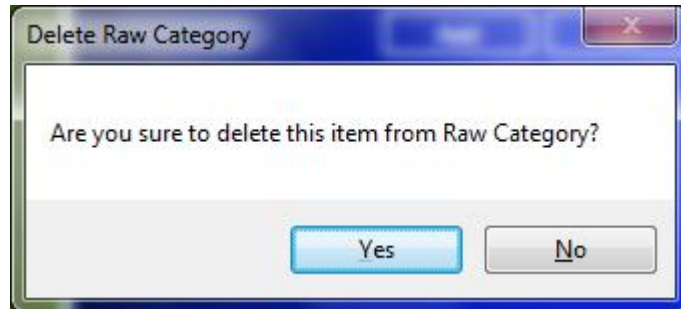
Step 2: Click *Add* if you want to add new raw material category.



Step 3: If you want edit the name of the raw material category, click on the raw material category name in list box and then click *Edit*.

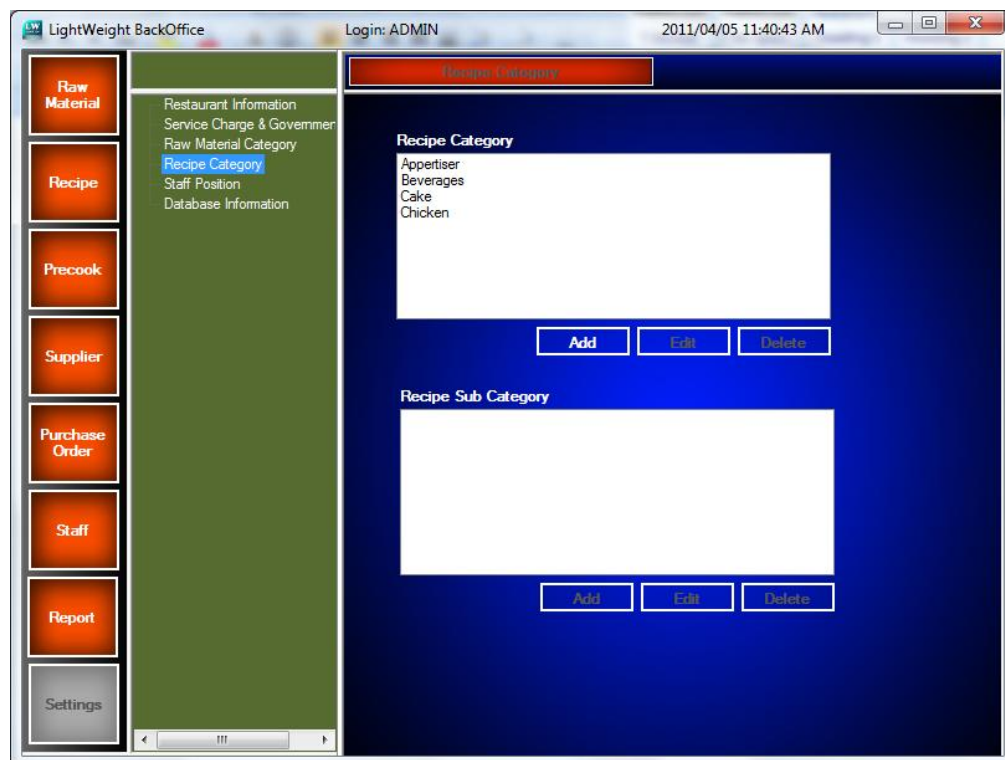


Step 4: If you want delete the raw material category, click on the raw material category name and click *Delete*. A confirm dialog windows will prompt user to confirm the delete. Click OK to proceed.

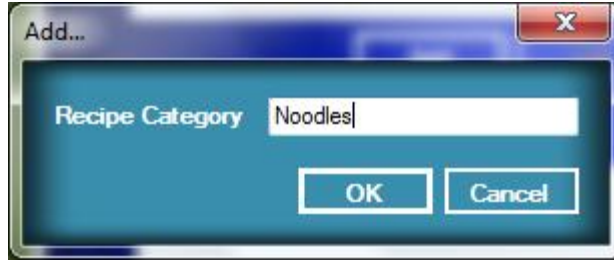


## 2.6. Configure Recipe Category

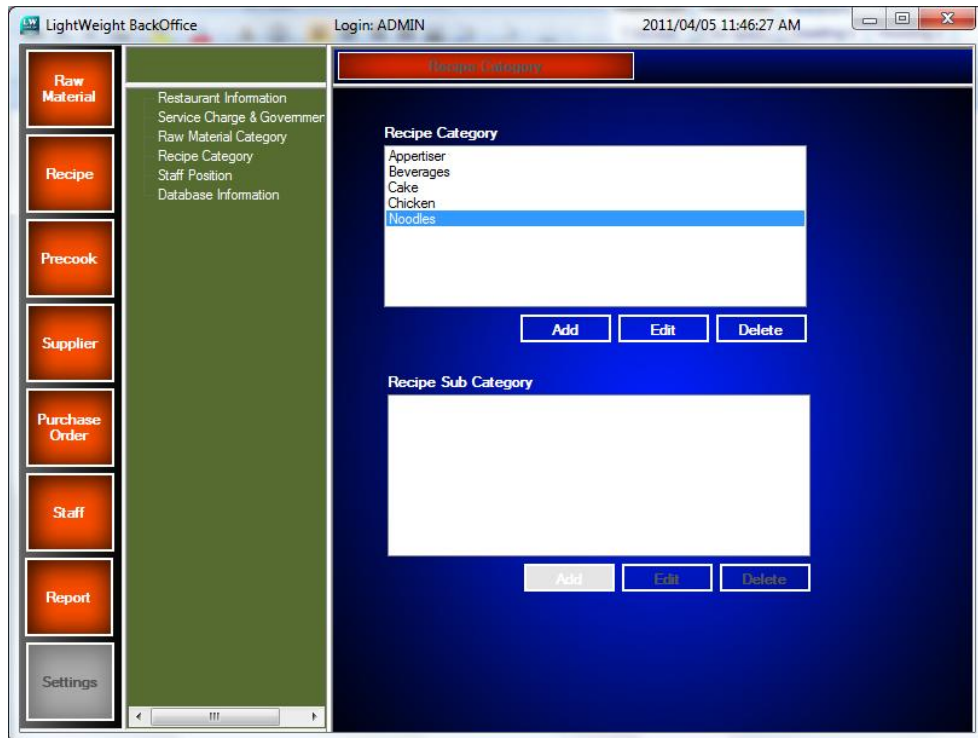
Step 1: Click on the *Recipe Category* in the tree view.



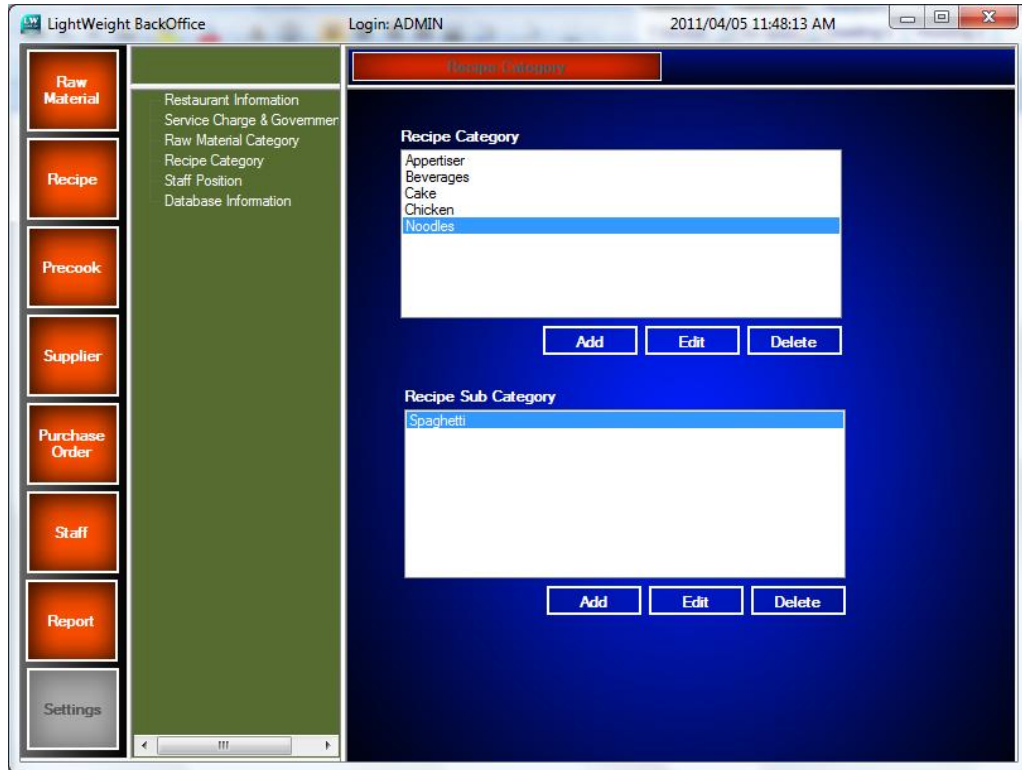
Step 2: Before adding a new recipe sub category, you must add a recipe category. Click *Add* for adding a new recipe category.



Step 3: After that, *Add* a new recipe sub category for the new inserted recipe category by clicking the new inserted recipe in the list box.



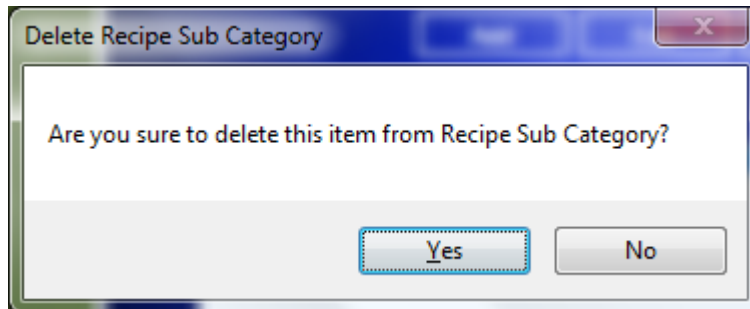
Step 4: A new recipe sub category will be inserted to the list box after adding the new recipe sub category.



Step 4: If user wish to edit the name of the recipe category and recipe sub category, they can click on the name and then click *Edit* to edit the name.

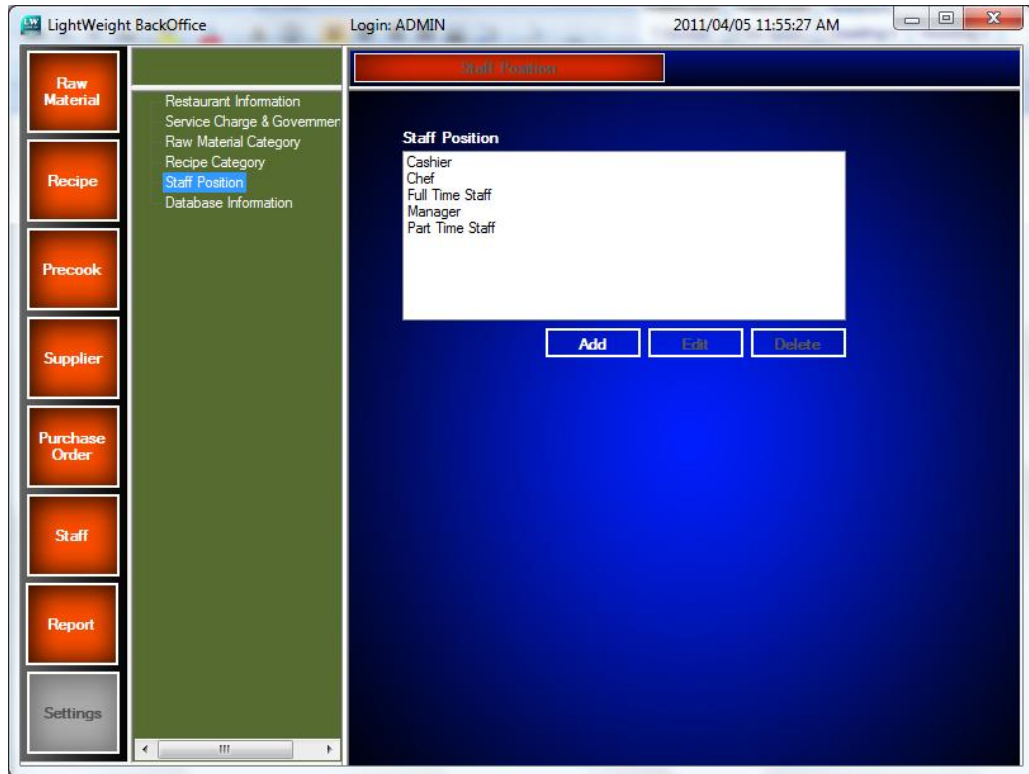


Step 5: If user wish to delete the category from the recipe category or the recipe sub category, they can click on the name they wanted to delete. A window dialog will pop up and prompt user for the confirmation. Click *OK* to proceed.

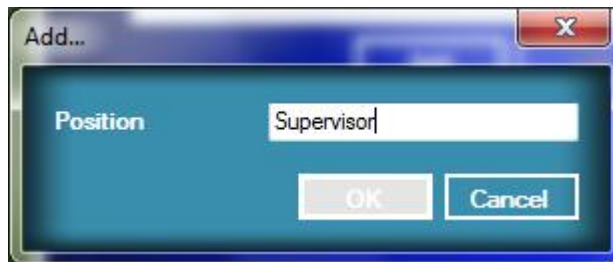


## 2.7. Configure Staff Position

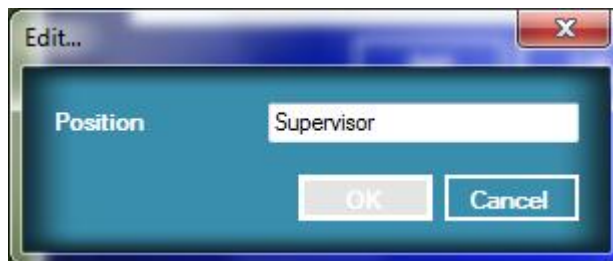
Step 1: Click on the *Staff Position* in the tree view



Step 2: Click *Add* to add a new staff position

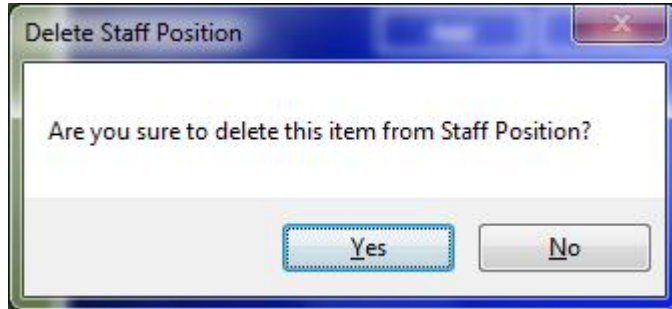


Step 3: If user want to edit the name of the staff position, user can click on the staff position name in the list box and then click *Edit*.



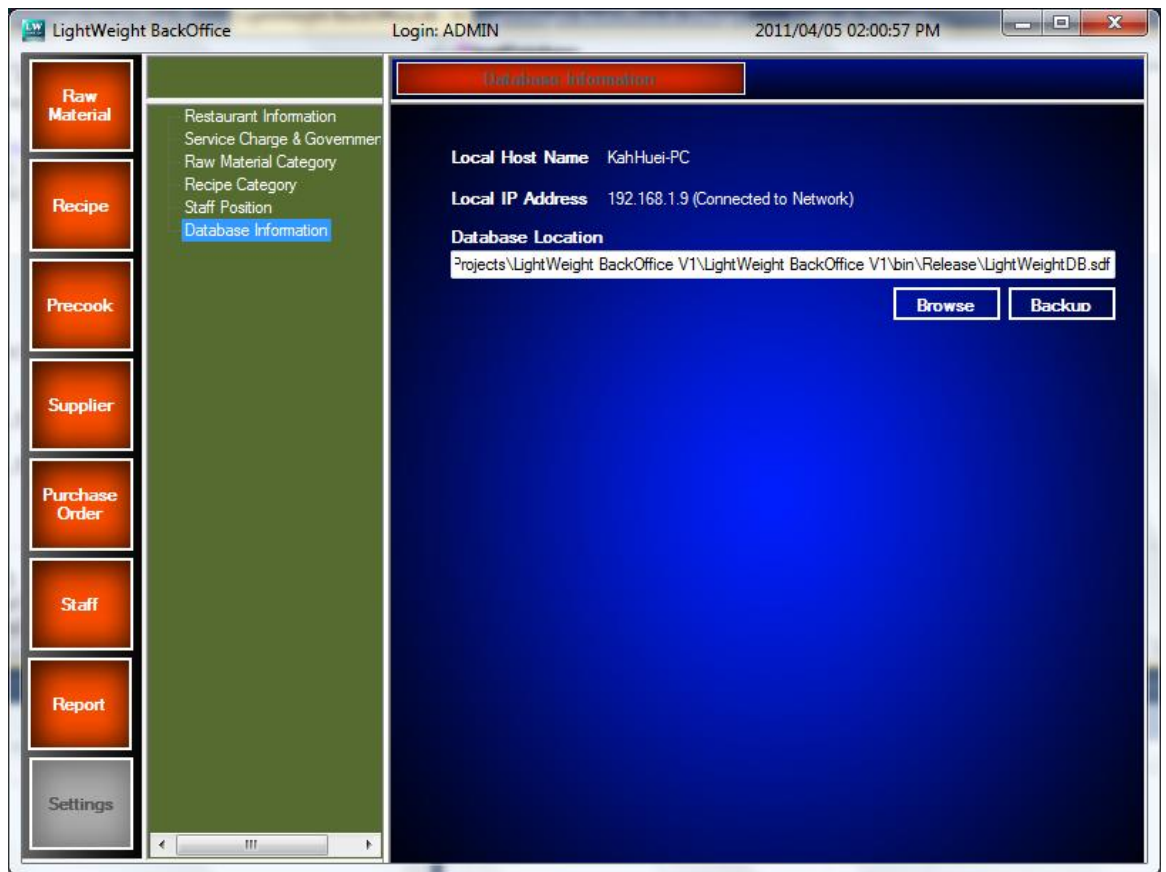


Step 4: If user wants to delete the staff position, user can select the staff position in list box and then click *Delete*. A popup windows dialog will show and prompt user for the confirmation. Click *OK* to proceed.



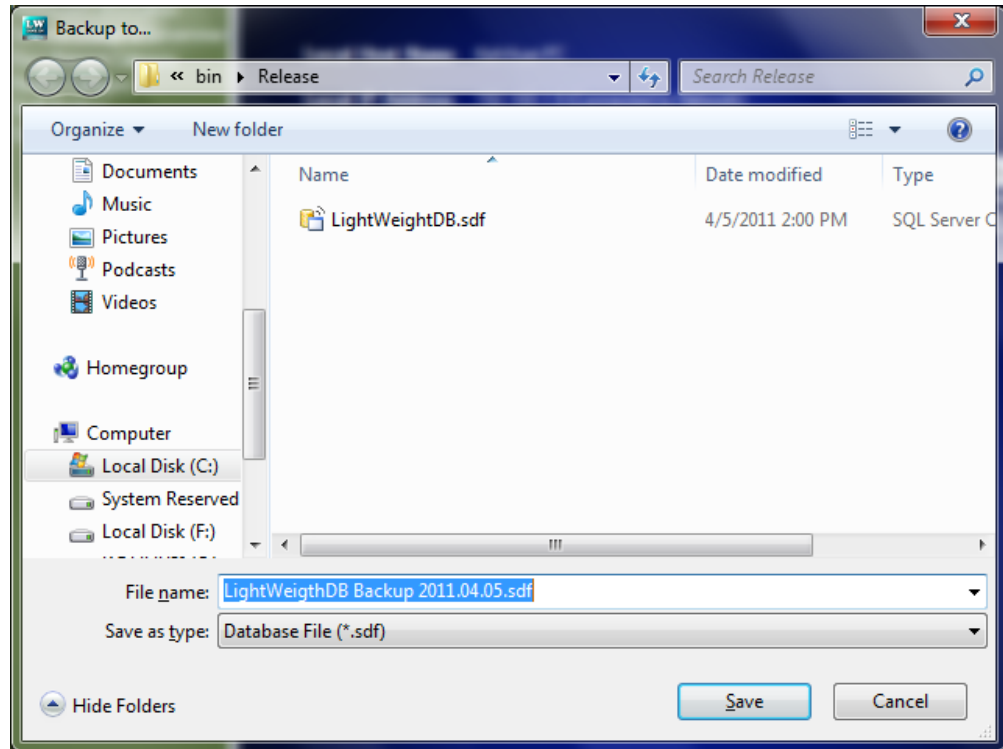
## 2.8. Database Backup

Step 1: Click on the *Database Information* in the tree view.



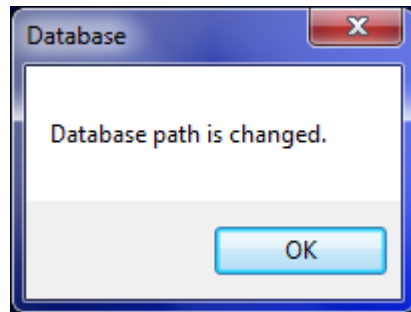
Step 2: Click the *Backup* button and choose the location of the database backup you wanted to save.





Step 3: User can *browse* the other database backup and select it as the system database. User can change the database path to retrieve the latest or oldest records.

Step 4: Click *OK* to proceed after changing the database path.



### 3.0. Raw Material

The screenshot displays the 'Raw Material' management interface in the 'LightWeight BackOffice'. The window title is 'LightWeight BackOffice' with a login of 'ADMIN' and a timestamp of '2011/04/05 03:13:59 PM'. The interface is divided into several sections:

- Navigation Bar:** Located at the top, it contains tabs for 'Material Detail', 'Supplier', 'Quantity & Usage', 'Purchase Order', and 'Report'. Below this, a secondary bar has buttons for 'Raw Material', 'Recipe', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'.
- Raw Material List:** A central list of materials categorized by 'Dry Goods', 'Fruit', 'Meat', and 'Vegetable'. 'Meehon' is selected under 'Dry Goods'. Other items include Bacon Ham, Chicken Chop, Cabbage, Chili, etc.
- Form Fields:** On the right, a form for 'Meehon' includes:
  - Category: Dry Goods
  - Item Description: Noddles, to cook noodles soup
  - Quantity in Pack: 6.00 (Unit: Single)
  - Avg. Cost Price (\$): 6.00
  - Total Quantity Left: 42.00 (Unit)
  - Reorder Point (in pack): 2 (Unit)
- Buttons:** 'Load' and 'Remove' buttons are positioned below the form fields. A 'Save' button is located at the bottom right.
- Footer:** A 'Last Update' field shows '2011/01/21 10:18:06 PM'.

Callouts with arrows point to the following elements:

- 'Material Detail', 'Supplier', 'Quantity & Usage', 'Purchase Order', and 'Report' (pointing to the top navigation bar).
- 'Create New Raw Material Record' (pointing to the 'New' button).
- 'Search Raw Material' (pointing to the search input field).
- 'Raw Material List' (pointing to the list of materials).
- 'Raw Material Tab' (pointing to the 'Raw Material' button in the secondary navigation bar).
- 'Latest Update Date and Time' (pointing to the 'Last Update' field).
- 'Save button' (pointing to the 'Save' button).

### 3.1. Add New Raw Material

Step 1: User can click the *New* button to create a new raw material in the Raw Material module.

The screenshot shows the 'LightWeight BackOffice' application window. The title bar indicates the user is logged in as 'ADMIN' and the date/time is '2011/04/05 03:50:38 PM'. The interface is divided into several sections:

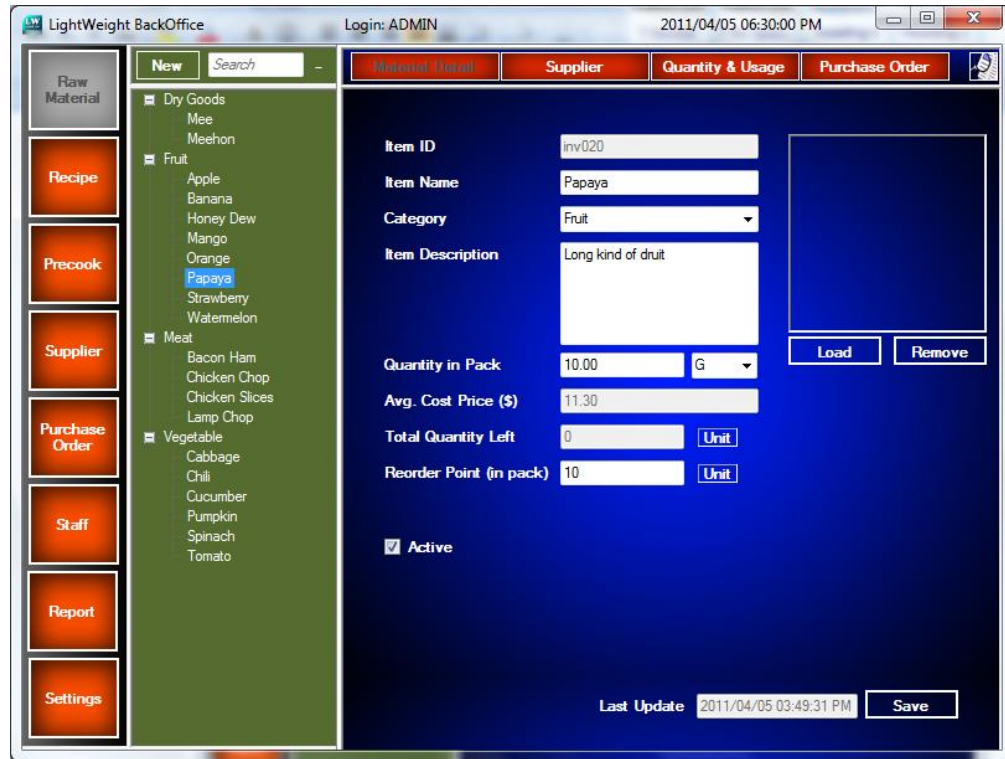
- Left Sidebar:** Contains navigation buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The 'Raw Material' button is highlighted.
- Top Navigation:** Includes a 'Del' button, a search box, and tabs for 'Raw Material', 'Supplier', 'Quantity & Usage', and 'Purchase Order'. The 'Raw Material' tab is active.
- Category List:** A tree view showing categories like 'Dry Goods', 'Fruit', 'Meat', and 'Vegetable'. Under 'Fruit', 'Papaya' is selected.
- Main Form:** Contains the following fields:
  - Item ID:** Text input with value 'inv020'.
  - Item Name:** Text input with value 'Papaya'.
  - Category:** Dropdown menu with 'Fruit' selected.
  - Item Description:** Text area with value 'Long kind of druit'.
  - Quantity in Pack:** Text input with value '10.00' and a unit dropdown set to 'G'.
  - Avg. Cost Price (\$):** Text input with value '0.00'.
  - Total Quantity Left:** Text input with value '0' and a 'Unit' button.
  - Reorder Point (in pack):** Text input with value '10' and a 'Unit' button.
  - Active:** A checked checkbox.
- Buttons:** 'Load' and 'Remove' buttons are located below the 'Item Description' field. A 'Save' button is at the bottom right.
- Footer:** Shows 'Last Update' as '2011/04/05 03:49:31 PM'.

Step 2: Enter the information of the new raw material. Item name, Category, Quantity in Pack, Unit and reorder point are the mandatory fields for this module. After that, click on *Save* button to proceed.

Step 3: Besides, user can load a picture for the new raw material by clicking the *Load* button. User also can remove the picture from the record by clicking on *Remove* button.

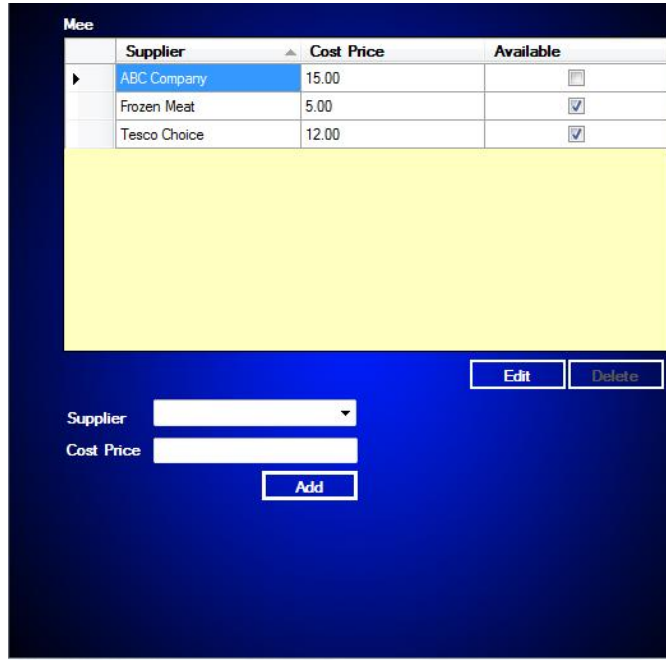
### 3.2. Update Existing Raw Material

User can edit the information of the existing raw material record by clicking on the raw material name in the tree view. After finish the editing, click the *Save* button to save the updated information.



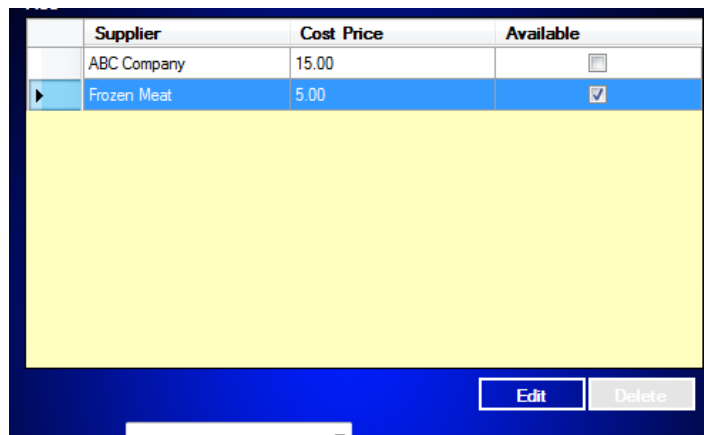
### 3.3. Supplier

Step 1: Click on the Supplier button at the top in raw material module.



Step 2: Select the supplier from the drop down menu, enter the supplier cost price and then click *Add* button to add the supplier.

Step 3: User also can edit the cost price and the status of the supplier by clicking on the *Edit* button. Click on *Save* button after editing the information.



Step 4: User can delete the record of the supplier by highlight the record that is wanted to delete. Click on the *Delete* button to delete the record after select the record which is wanted to delete.

### 3.4. Usage and Quantity

	Added Date	Last Update	Total Quantity	Quantity Used	Depletior	Quantity Left	Comment
▶	January,....		50.00	0.00	0.00	50.00	0
	March,2...		175.00	0.00	0.00	175.00	
	April,2011		50.00	0.00	0.00	50.00	

Last Update   
 Total Usage    
 Total Qty. Left    
 Depletion    
 Comment

When a new purchase order is received by the user, the new quantity will be updated and display in Quantity and Usage sub module. User can update the quantity lost or spoiled in the depletion field and add a comment to state the depletion of the inventory.

### 3.5. Purchase Order

Step 1: User can make a purchase order of the raw material by clicking on the purchase order button located in sub menu toolbar in the raw material module.

	Date Ordered	Supplier	Quantity Ordered (per pack)	Cost Price (\$)	Status	Date Received
▶	2011/04/05	Tesco ...	10	12.00	Pending	

Date Order   
 Supplier   
 Cost Price (\$)   
 Quantity    
 Status

Step 2: User can choose the supplier from the drop down menu to select the purchase that they wished to make purchase order from them.

The screenshot shows the 'Mee' application interface. At the top, there is a table with the following columns: Date Ordered, Supplier, Quantity Ordered (per pack), Cost Price (\$), Status, and Date Received. The first row of the table is highlighted in blue and contains the following data: 2011/04/05, Tesco ..., 10, 12.00, Pending, and an empty Date Received field. Below the table, there are three buttons: Update, Edit, and Delete. Underneath these buttons is a form with the following fields: Date Order (05/04/2011), Supplier (Frozen Meat), Cost Price (\$) (5.00), Quantity (10) with a multiplier of 5.00 and a 'Single' button, and Status (Pending). At the bottom of the form is an 'Add' button.

Step 3: After that, enter the quantity (in pack) that user wanted to order from the supplier, and then click *Add* to add the purchase order.

The screenshot shows the 'Mee' application interface after adding a new purchase order. The table now has two rows. The first row is highlighted in blue and contains the following data: 2011/04/05, Tesco ..., 10, 12.00, Pending, and an empty Date Received field. The second row contains the following data: 2011/04/05, Frozen ..., 10, 5.00, Receiv..., and 2011/04/05. Below the table, there are three buttons: Update, Edit, and Delete.

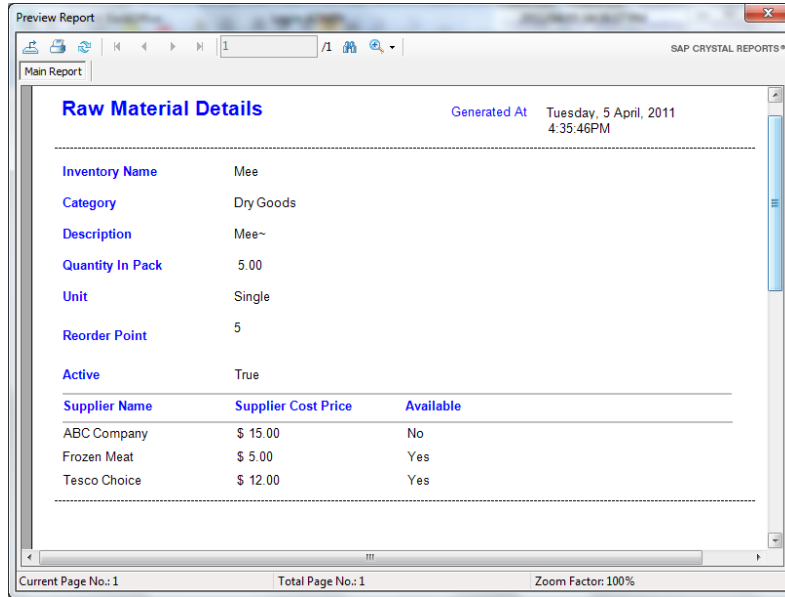
Step 4: When user received the purchase order from the supplier, user can select the record and click *Update* button to update the status of the purchase order.

### 3.6. View Report

Raw Material Module contains two type of report, one the raw material details report with supplier list and quantity & usage report at the top right in the sub

menu tool bar. 

#### Raw Material Details Report



Preview Report

Main Report

**Raw Material Details** Generated At Tuesday, 5 April, 2011 4:35:46PM

---

Inventory Name Mee  
 Category Dry Goods  
 Description Mee~  
 Quantity In Pack 5.00  
 Unit Single  
 Reorder Point 5  
 Active True

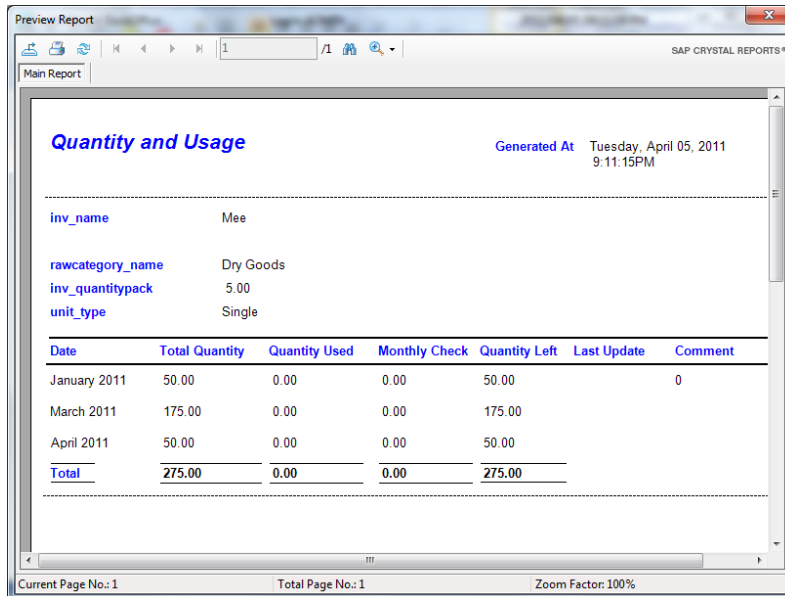
---

Supplier Name	Supplier Cost Price	Available
ABC Company	\$ 15.00	No
Frozen Meat	\$ 5.00	Yes
Tesco Choice	\$ 12.00	Yes

---

Current Page No.: 1 Total Page No.: 1 Zoom Factor: 100%

#### Quantity & Usage Report



Preview Report

Main Report

**Quantity and Usage** Generated At Tuesday, April 05, 2011 9:11:15PM

---

inv\_name Mee  
 rawcategory\_name Dry Goods  
 inv\_quantitypack 5.00  
 unit\_type Single

---

Date	Total Quantity	Quantity Used	Monthly Check	Quantity Left	Last Update	Comment
January 2011	50.00	0.00	0.00	50.00		0
March 2011	175.00	0.00	0.00	175.00		
April 2011	50.00	0.00	0.00	50.00		
<b>Total</b>	<b>275.00</b>	<b>0.00</b>	<b>0.00</b>	<b>275.00</b>		

---

Current Page No.: 1 Total Page No.: 1 Zoom Factor: 100%



## 4. Recipe

The screenshot displays the 'LightWeight BackOffice' application window. The top bar shows 'Login: ADMIN' and the date '2011/04/05 09:23:11 PM'. The interface is divided into several sections:

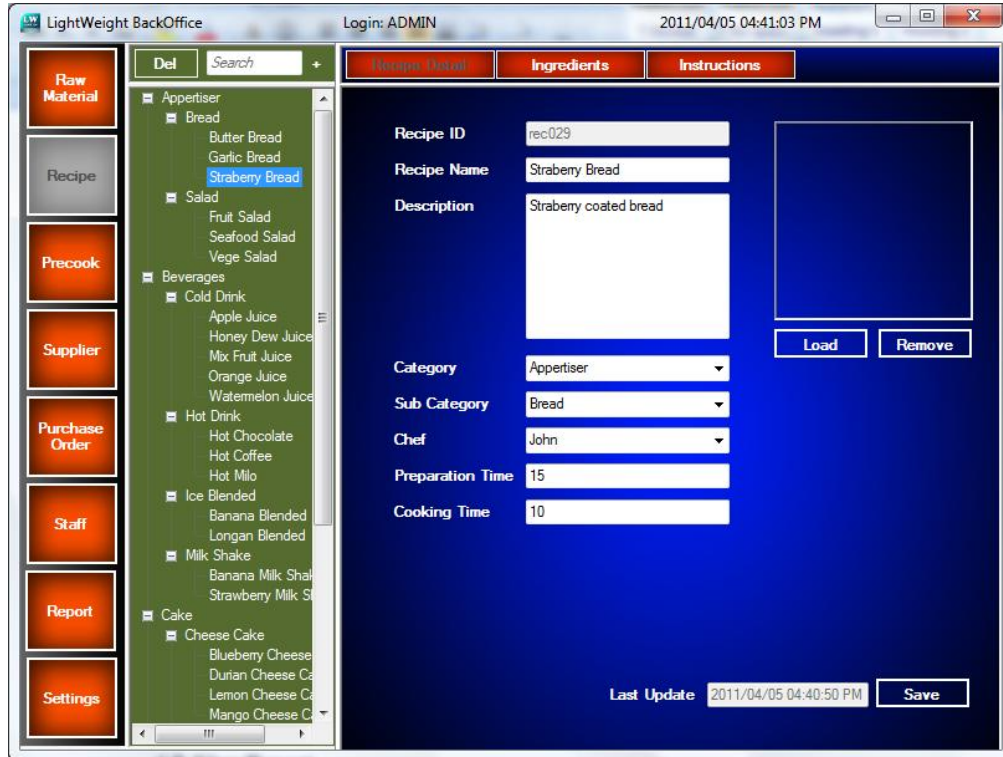
- Left Sidebar:** Contains navigation buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'.
- Central List:** A tree view of recipe categories. 'Appertiser' is expanded, showing sub-categories like 'Bread', 'Salad', 'Beverages', 'Hot Drink', 'Ice Blended', 'Milk Shake', and 'Cake'. 'Butter Bread' is selected under 'Bread'.
- Top Navigation:** Buttons for 'Recipe Detail', 'Ingredients', and 'Instructions' are visible. 'Recipe Detail' is the active view.
- Recipe Detail Form:** Fields for 'Recipe ID' (rec016), 'Recipe Name' (Butter Bread), and 'Description'. Below these are dropdown menus for 'Category' (Appertiser) and 'Sub Category' (Bread). A 'Cooking Time' field is also present. 'Load' and 'Remove' buttons are on the right.
- Bottom:** A 'Last Update' field and a 'Save' button.

Callout boxes with arrows point to the following elements:

- Recipe Detail:** Points to the 'Recipe Detail' button in the top navigation.
- Ingredient:** Points to the 'Ingredients' button in the top navigation.
- Instruction:** Points to the 'Instructions' button in the top navigation.
- Report:** Points to the 'Report' button in the top navigation.
- Main Category:** Points to the 'Appertiser' category in the list.
- Sub Category:** Points to the 'Bread' sub-category in the list.
- Recipe:** Points to the 'Butter Bread' item in the list.

#### 4.1. Add New Recipe

Step 1: User can add a new recipe in the recipe module by clicking the *Add* button located at the tree view toolbar.

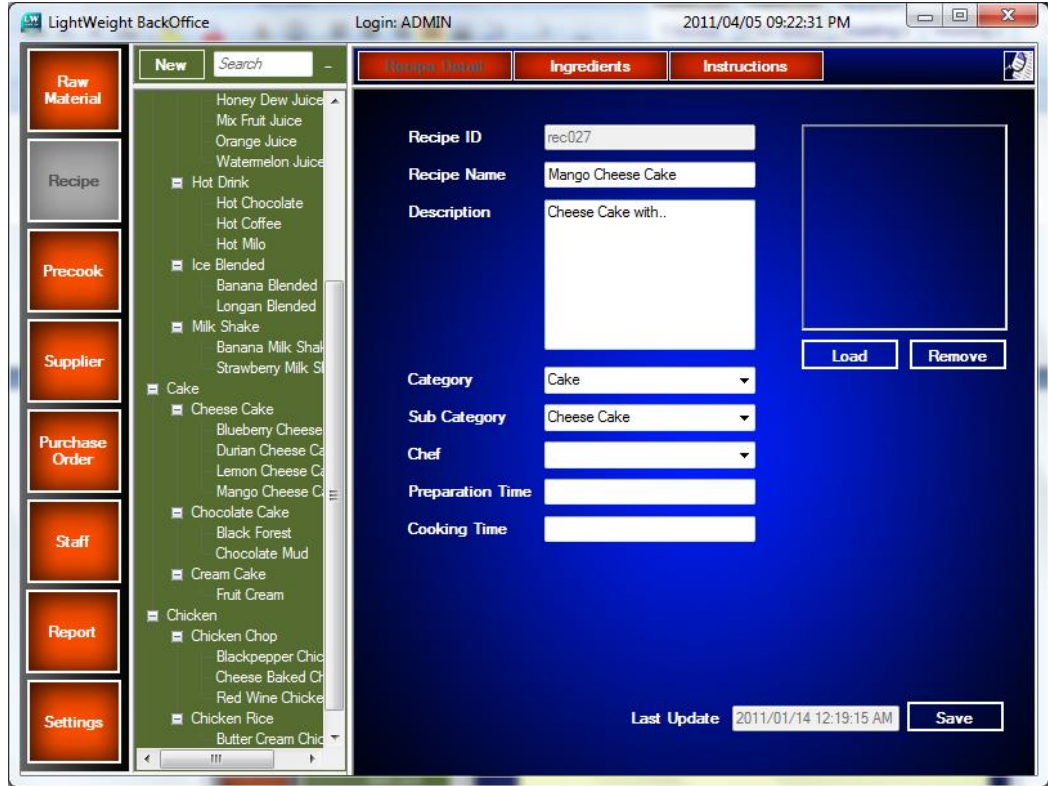


Step 2: User can enter the information of the recipe in the provided fields. Recipe name, Category and Sub Category are the mandatory fields in this form.

Step 3: Click on the *Save* button to save the record after all information is entered.

#### 4.2. Update Existing Recipe

User can click on the recipe listed in the tree view to update the information of the existing recipe records. Click *Save* button to save the current updated information after the updating process is done.

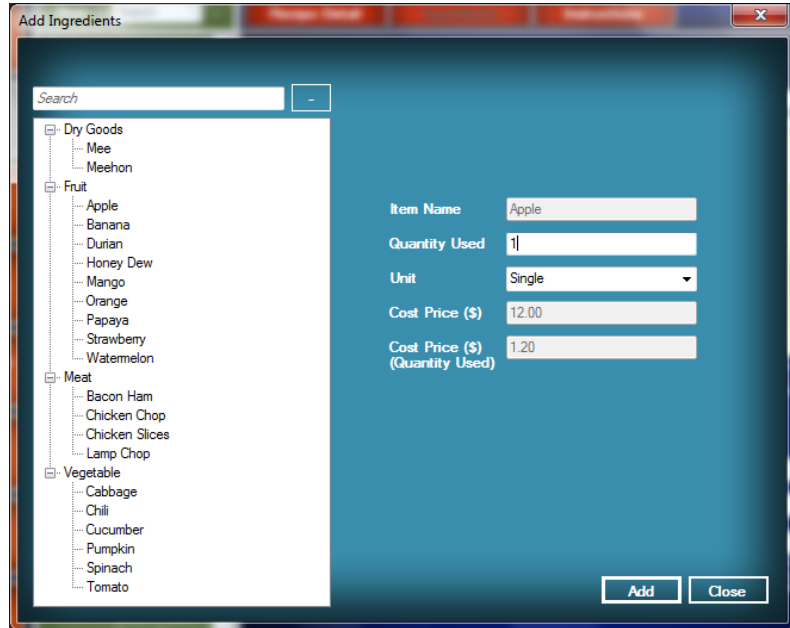


### 4.3. Ingredients

If user wants to add the ingredient for the recipe, user can click on the ingredients button and go to the ingredients tab to add the ingredients.



Step 1: Click on the *Add* button, a windows dialog box will pop up and ask user to select the ingredient from raw material list.



Step 2: The quantity used of the raw material is needed to be entered. User can change the unit measurement of the raw material used to prepare the recipe. The cost price of quantity used will show on the screen at the same time.

Step 3: After that, click on the add button to add the raw material as the ingredient of the recipe. If user wants to add other ingredients, user can choose the ingredient from the provided raw material list on the left side.

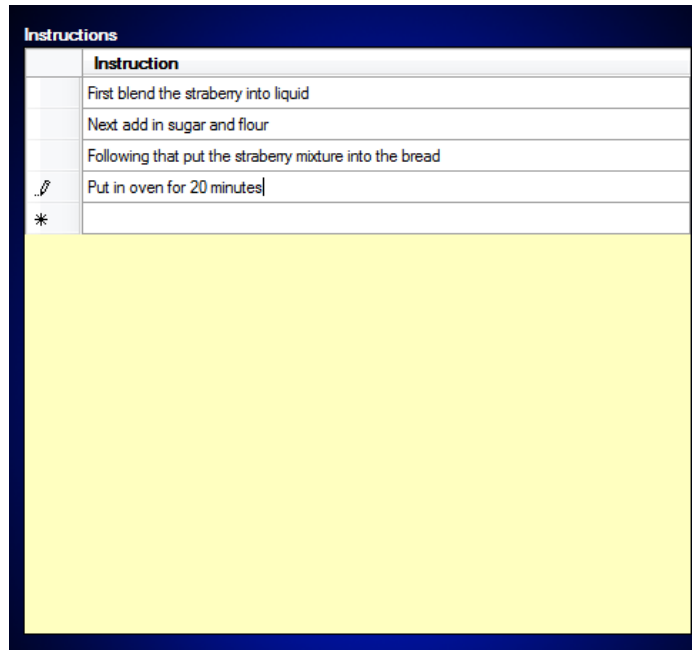


Step 4: After finish adding the ingredients, user can enter the gross profit and the serving to calculate the selling price and the selling price per serving.

Step 5: Next, click on the *Save* button to save the prices.

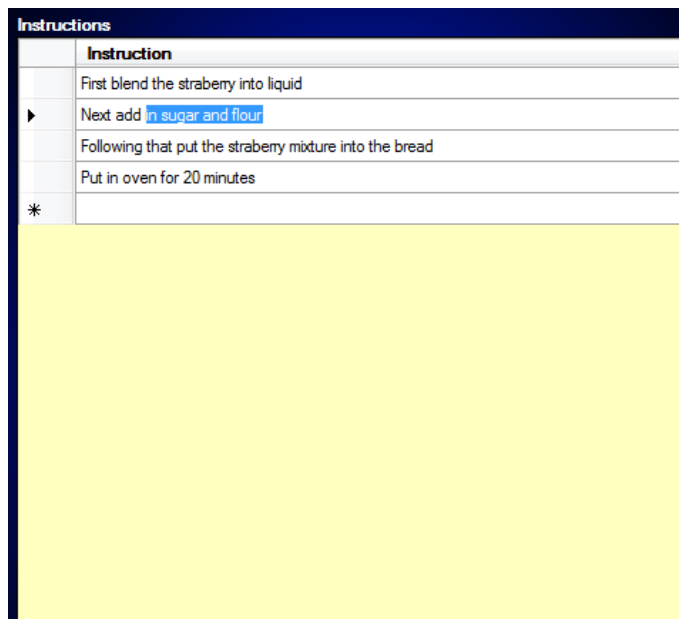
#### 4.4. Instruction

User can *Add* the instruction of the recipe in the instructions module. User can add the instruction into the table by clicking the cell and inputted by keyboard.



Instructions	
	Instruction
	First blend the strabery into liquid
	Next add in sugar and flour
	Following that put the strabery mixture into the bread
✎	Put in oven for 20 minutes!
*	

User also can *Edit* the instruction detail in specific rows by clicking the row to start editing. User also can *Delete* the rows by clicking the delete on keyboard.



Instructions	
	Instruction
	First blend the strabery into liquid
▶	Next add in sugar and flour
	Following that put the strabery mixture into the bread
	Put in oven for 20 minutes
*	

## 4.5. View Report

Recipe contains three kinds of reports which are recipe details report, ingredients report and instruction report.

### Recipe Details Report

The screenshot shows a 'Preview Report' window for 'SAP CRYSTAL REPORTS'. The report title is 'Recipe Details' and it was generated on Tuesday, 5 April, 2011 at 9:53:24PM. The report content is as follows:

<b>Recipe Name</b>	Straberry Bread		
<b>Description</b>	Straberry coated bread		
<b>Category</b>	Appertiser	<b>Sub-Category</b>	Bread
<b>Preparation Time (min)</b>	15	<b>Cooking Time (min)</b>	10
<b>Cost Price</b>	\$ 5.00	<b>Selling Price</b>	\$ 5.26
<b>Gross Profit</b>	5	<b>Serving(s)</b>	1
		<b>Cost Per Serving</b>	\$ 5.26

At the bottom of the window, it shows 'Current Page No.: 1', 'Total Page No.: 1', and 'Zoom Factor: 100%'.

### Ingredient Report

The screenshot shows a 'Preview Report' window for 'SAP CRYSTAL REPORTS'. The report title is 'Recipe Ingredients Details' and it was generated on Tuesday, 5 April, 2011 at 9:54:58PM. The report content is as follows:

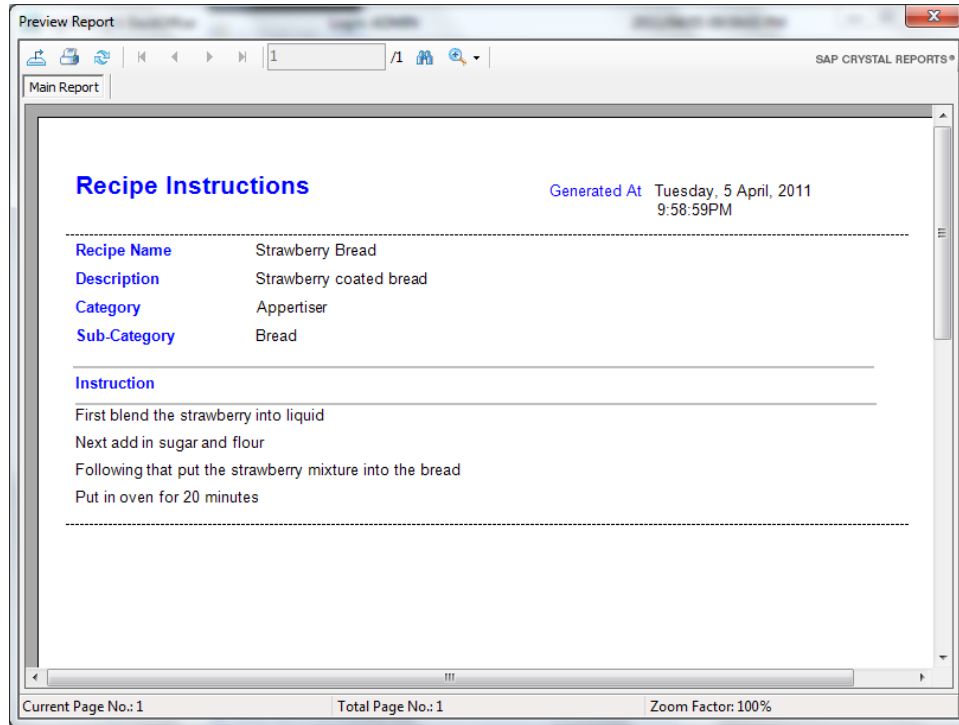
<b>Recipe Name</b>	Fruit Salad	<b>Preparation Time</b>	
<b>Description</b>		<b>Cooking Time</b>	
<b>Category</b>	Appertiser		
<b>Sub-Category</b>	Salad		

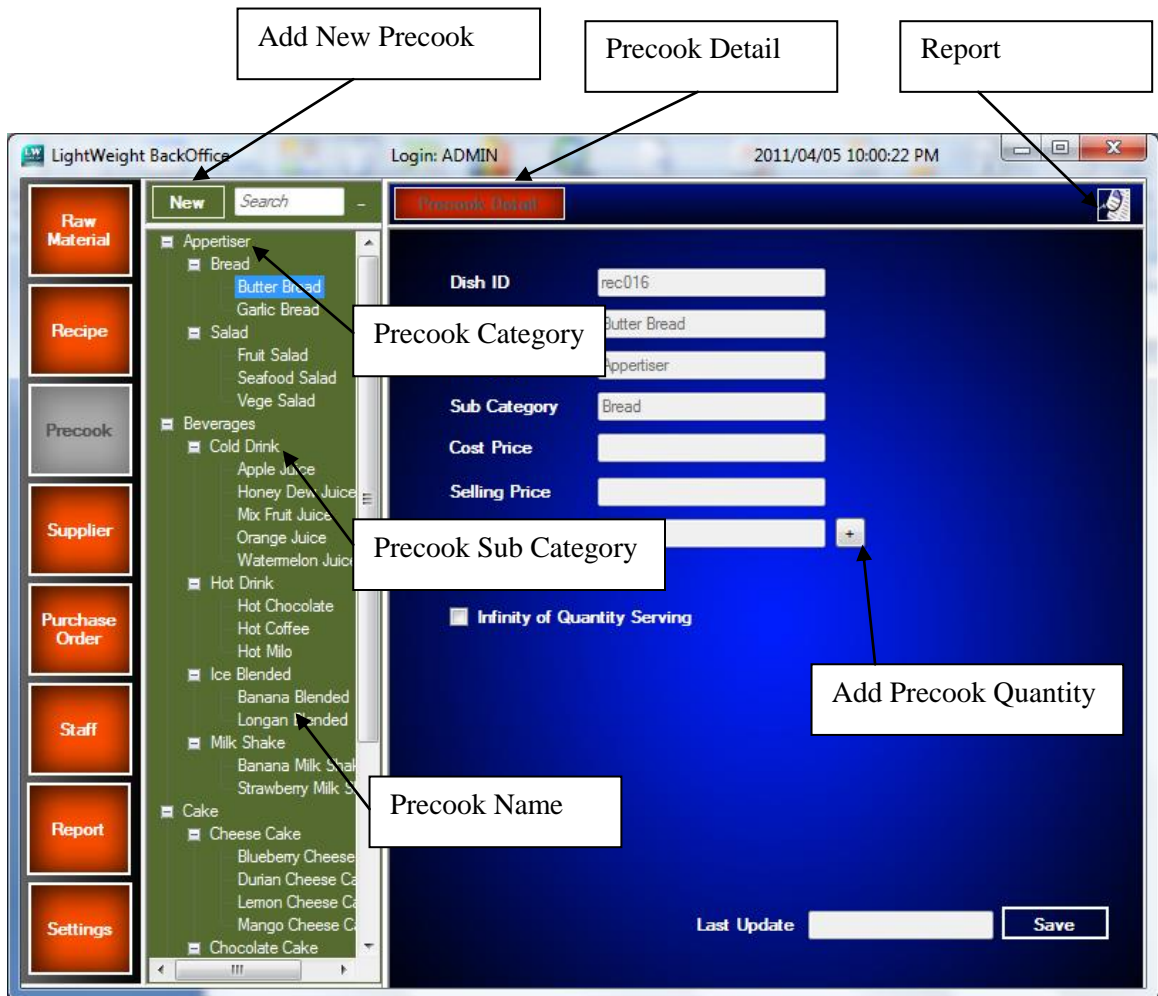
Ingredients	Quantity	Unit	Cost Price
Honey Dew	1	KG	\$ 5.00
Apple	10	Single	\$ 12.00
Watermelon	1	Single	\$ 2.50
		<b>Cost Price</b>	\$ 19.50
		<b>Gross Profit %</b>	75
		<b>Selling Price</b>	\$ 78.00
		<b>Serving(s)</b>	50
		<b>Cost Per Serving</b>	\$ 1.56

At the bottom of the window, it shows 'Current Page No.: 1', 'Total Page No.: 1', and 'Zoom Factor: 100%'.

## Instruction Report



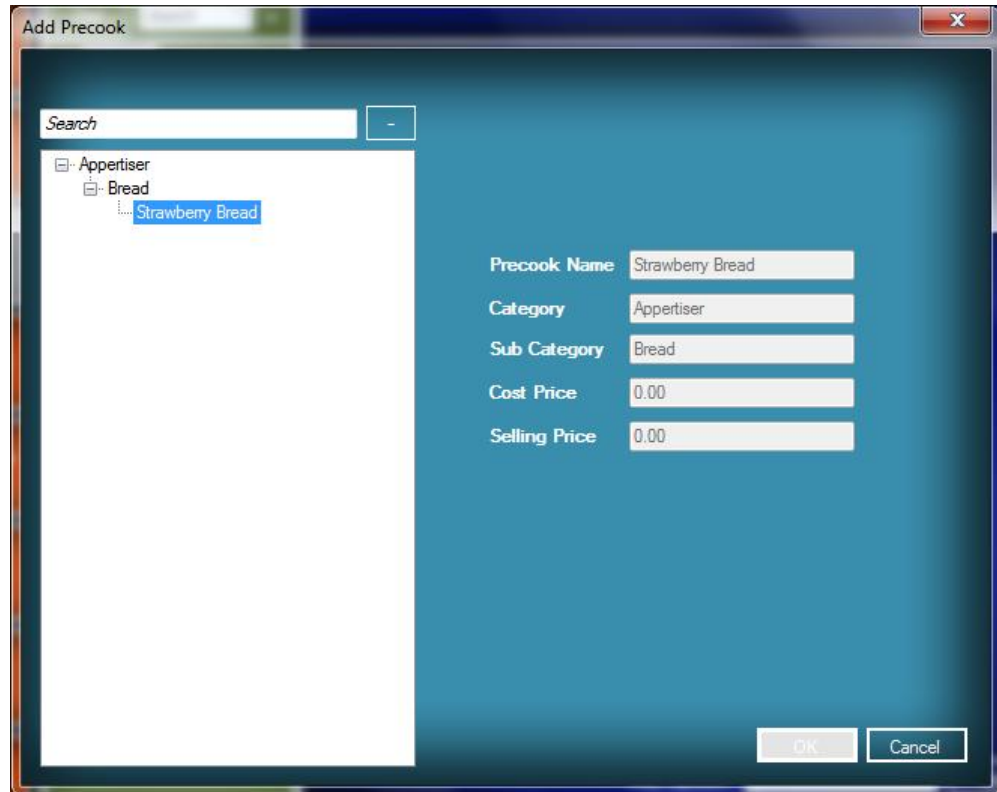
## 5. Precook





### 5.1. Add New Precook

Step 1: User can add the precook item by click the *New* button at the tree view toolbar. A windows dialog box will pop up and ask user to select the precook item from the recipe list.



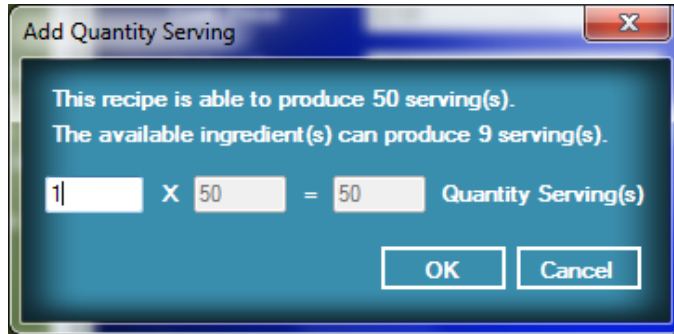
Step 2: Click ok the windows dialog box will close automatically.

Step 3: After adding the new precook item, click on the *Save* button to save the new precook item.

### 5.2. Update Existing Precook (Precook Quantity Serving)

Step 1: User can add or update the quantity serving of the precook item by

 clicking on the button to add the quantity.



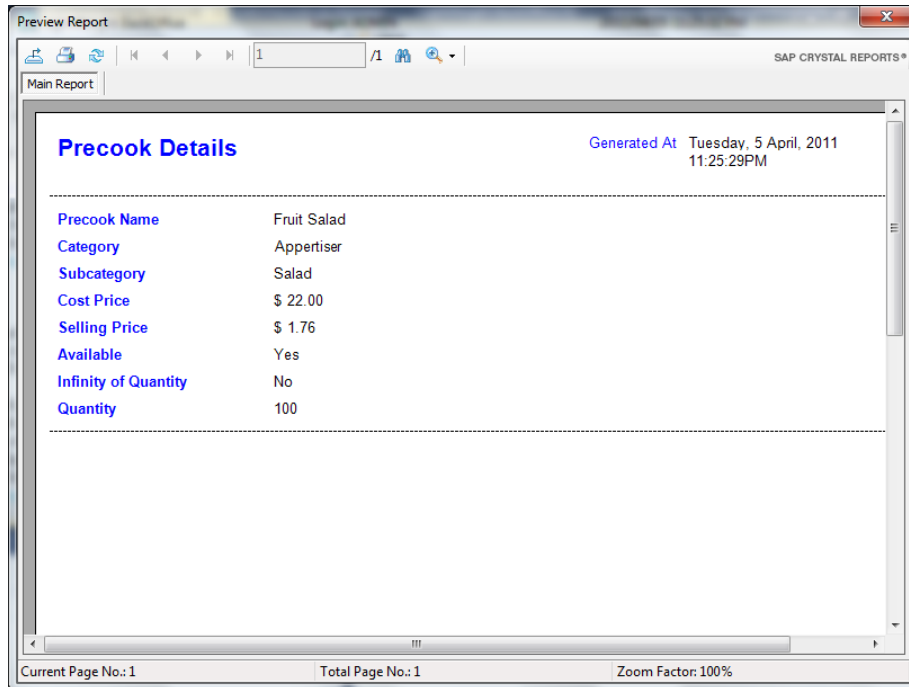
Step 2: A small windows dialog box will pop up and ask the user to enter the quantity. The system will auto calculate the total serving can be produced based of the available quantity of the raw material.

Step 3: After enter the quantity, click on *Save* button to save the record. The total quantity left of the raw material will be decreased and can be found in quantity & usage sub module located in raw material module.

### 5.3. View Report

This module provides one kind of report which is precook details report.

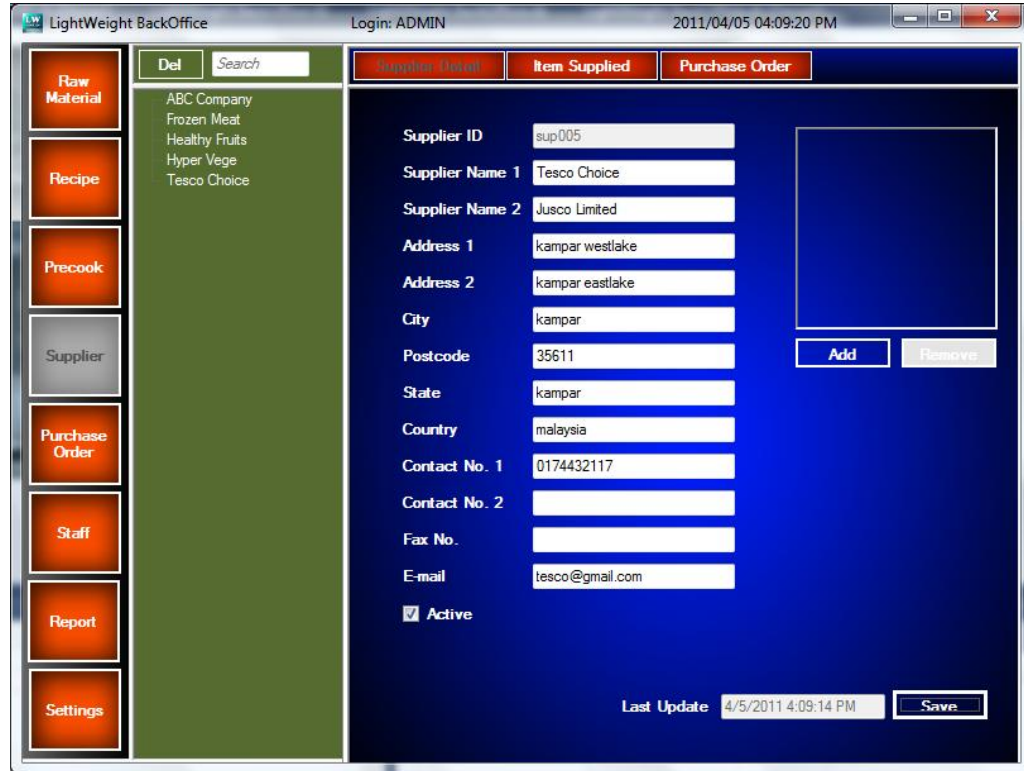
#### Precook Details Report



## 6. Supplier

### 6.1. Add New Supplier

Step 1: If user want to add a new supplier, user can go to supplier module and click on the *New* button at the tree view toolbar and add a new supplier.



The screenshot shows the 'Supplier Detail' form in the 'LightWeight BackOffice' application. The window title is 'LightWeight BackOffice' and the user is logged in as 'ADMIN' on '2011/04/05 04:09:20 PM'. The form is divided into several sections:

- Left Sidebar:** Contains navigation buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The 'Supplier' button is currently selected.
- Search Bar:** A 'Del' button and a 'Search' input field.
- Tree View:** A list of categories: 'ABC Company', 'Frozen Meat', 'Healthy Fruits', 'Hyper Vege', and 'Tesco Choice'.
- Supplier Detail Form:** Contains the following fields:
  - Supplier ID: sup005
  - Supplier Name 1: Tesco Choice
  - Supplier Name 2: Jusco Limited
  - Address 1: kampar westlake
  - Address 2: kampar eastlake
  - City: kampar
  - Postcode: 35611
  - State: kampar
  - Country: malaysia
  - Contact No. 1: 0174432117
  - Contact No. 2: (empty)
  - Fax No.: (empty)
  - E-mail: tesco@gmail.com
  - Active
- Image Upload:** A large empty box for the supplier logo, with 'Add' and 'Remove' buttons below it.
- Footer:** 'Last Update' field showing '4/5/2011 4:09:14 PM' and a 'Save' button.

Step 2: After user entered the details of the supplier, click on the *Save* button to save the record. If user wants to add image or the logo of the supplier, they can click on the *Add* button and select the image file from their machine. User also can remove the image from the system by clicking the *Remove* button.

## 6.2. Update Existing Supplier

User can update the existing supplier information by clicking on the supplier name in the tree view.

LightWeight BackOffice Login: ADMIN 2011/04/05 11:35:01 PM

New Search

Supplier Detail Item Supplied Purchase Order

Raw Material  
Recipe  
Precook  
Supplier  
Purchase Order  
Staff  
Report  
Settings

ABC Company  
Frozen Meat  
Healthy Fruits  
Hyper Vege

Supplier ID: sup002  
 Supplier Name 1: Frozen Meat  
 Supplier Name 2:   
 Address 1: 323 L434  
 Address 2: Gogo Road  
 City:   
 Postcode: 00100  
 State: NY  
 Country: US  
 Contact No. 1: 12412412412  
 Contact No. 2:   
 Fax No.:   
 E-mail:   
 Active

Add Remove

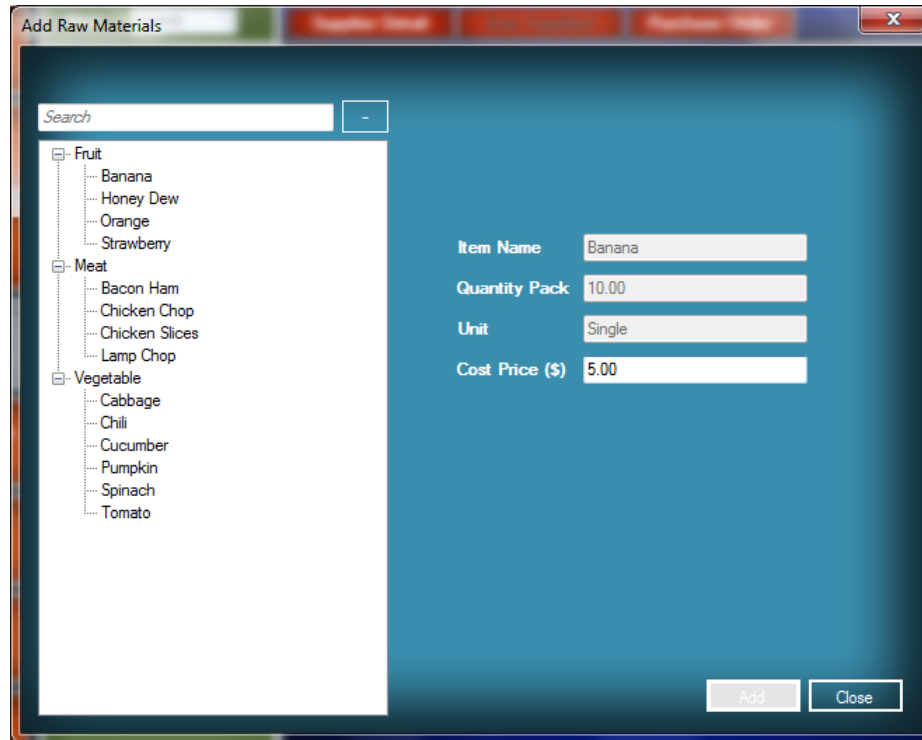
Last Update 12/21/2010 8:26:41 PM Save

## 6.3. Supplied Item

Step 1: User can add the supplied item for the supplier by clicking on the supplied item module.

Item Name	Quantity In Pack	Unit	Cost Price (\$)	Available
Apple	10.00	Single	12.00	<input checked="" type="checkbox"/>
Mango	5.00	Single	23.00	<input type="checkbox"/>
Mee	5.00	Single	5.00	<input checked="" type="checkbox"/>
Meehon	6.00	Single	6.00	<input checked="" type="checkbox"/>

Step 2: A windows dialog box will pop up after clicking on the *Add* button. A list of raw material will list at the left side and let user to select and add to the supplied item list.



Step 3: User need enter the cost price of the raw material. Next, click on Add button to add in supplied item list. User can add more raw materials by choosing the other raw materials which are provided in the list.

Step 4: Click on *Close* button when finish adding the raw material.

#### 6.4. Purchase Order

User can make a purchase order for the supplier in this module same as the purchase module in raw material module. A windows dialog box will pop up and ask user to select the raw material to add in the purchase order. User can add other raw material which is not duplicated with the previous one to the purchase order at the same time.

The 'Add Purchase Materials' dialog box contains the following elements:

- Search:** A text input field with a search icon.
- Tree View:**
  - Dry Goods
    - Mee
    - Meehon
  - Fruit
    - Apple
    - Watermelon
- Form Fields:**
  - Date Order: 2011/04/05
  - Item Name: Apple
  - Cost Price (\$): 12.00
  - Quantity: 12 (with a multiplier of x 10.00)
  - Status: Pending (dropdown menu)
- Buttons:** Add, Close

User can click on the *Edit* button to edit the quantity ordered in the record which is record status in *Pending* status and also delete the purchase order record. The purchase order with *Received* status cannot be edited and deleted by the user.

Purchase Order							
	Date Ordered	Item Name	Quantity Ordered	Quantity in Pack	Cost Price (\$)	Status	Date Received
▶	2011/01...	Chicken ...	1	10.00	0.00	Received	05/04/2...
	2011/03...	Tomato	5	1.00	0.00	Pending	

Buttons: Add, Update, Edit, Delete

After user received the order from the supplier, user can update the status of the purchase order in this module. The quantity of raw material will be updated and the new quantity will be found in quantity & usage module located in raw material module.

### 6.5. View Report

Supplier module has provided one kind of report which is supplier details report with supplied item list.

#### Supplier Details Report

Preview Report

SAP CRYSTAL REPORTS®

Main Report

**Supplier Details** Generated At Tuesday, 5 April, 2011 11:50:09PM

<b>Supplier Name 1</b>	Frozen Meat	<b>Supplier Name 2</b>	
<b>Address 1</b>	323 L434		
<b>Address 2</b>	Gogo Road		
<b>City</b>		<b>State</b>	NY
<b>Post Code</b>	00100	<b>Country</b>	US
<b>Contact 1</b>	12412412412	<b>Contact 2</b>	
<b>Email Address</b>		<b>Fax No.</b>	
<b>Active</b>	Yes		

Supplied Item(s)	Category	Cost Price	Available
Apple	Fruit	\$ 12.00	Yes
Watermelon	Fruit	\$ 6.00	Yes
Meehon	Dry Goods	\$ 6.00	Yes
Mee	Dry Goods	\$ 5.00	Yes
Mango	Fruit	\$ 23.00	No

Current Page No.: 1 Total Page No.: 1 Zoom Factor: 100%

## 7. Purchase Order

The screenshot shows the 'Purchase Order' section of the 'LightWeight BackOffice' application. The interface includes a sidebar with navigation buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The main area displays a tree view of purchase orders, a 'Purchased Items' table, and a 'New' button. Callouts point to specific elements: 'Create new purchase order' points to the 'New' button; 'Purchase Order' points to the 'Purchase Order' button in the sidebar; 'Month and Year' points to the date selection dropdowns; 'Date and Month' points to the date selection dropdowns; and 'Supplier' points to the supplier selection dropdown.

LightWeight BackOffice Login: ADMIN 2011/04/05 11:59:04 PM

Raw Material  
Recipe  
Precook  
Supplier  
Purchase Order  
Staff  
Report  
Settings

New

Purchase Order

Month and Year

Date and Month

Supplier

Purchased Items

Item Name	Quantity Ordered	Quantity in Pack	Status	Date Received
Watermelon	10	1.00	Received	2011/04/05
Honey Dew	10	1.00	Received	2011/04/05

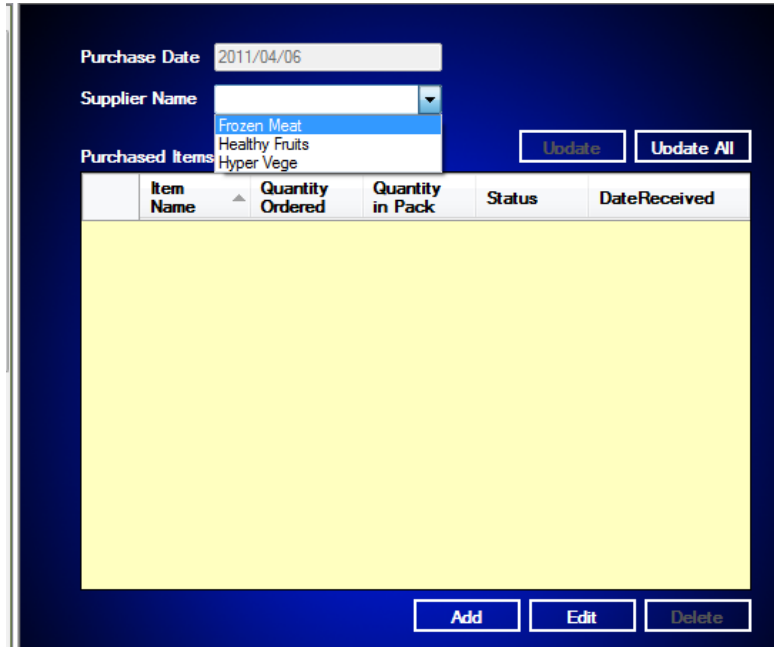
Update Update All

Add Edit Delete

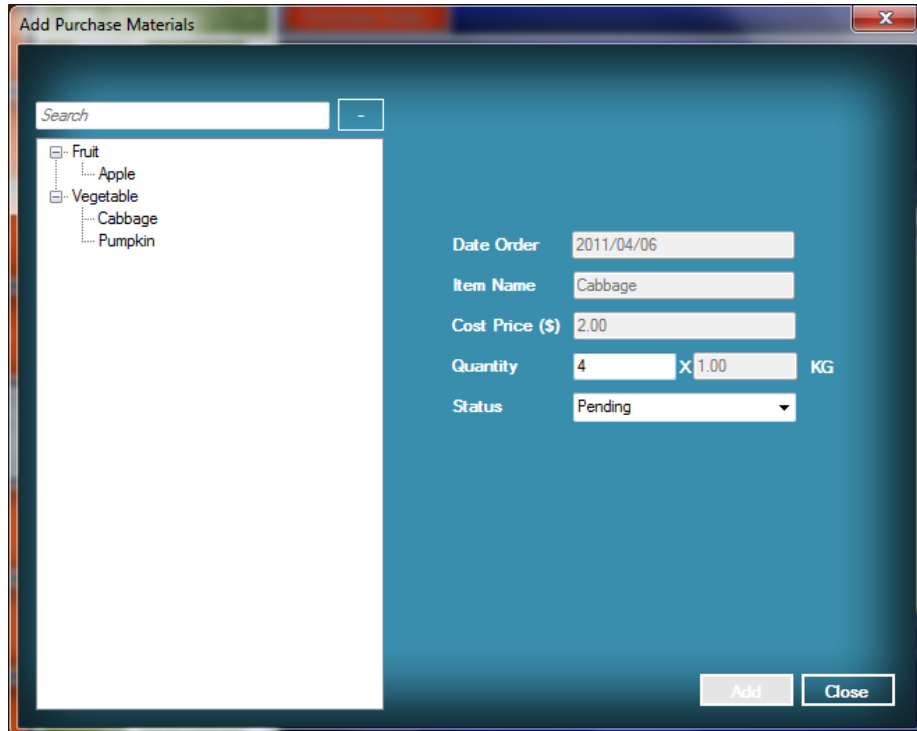


### 7.1. Add New Purchase Order


Step 1: User can create a new purchase order by clicking the *New* button at the tree view toolbar. The purchase date will be defaulted by today date and user can choose the supplier from the drop down menu.



Step 2: Next, click on the *Add* button to add the purchase item. A windows dialog box will pop up and ask user to select the purchasing item.



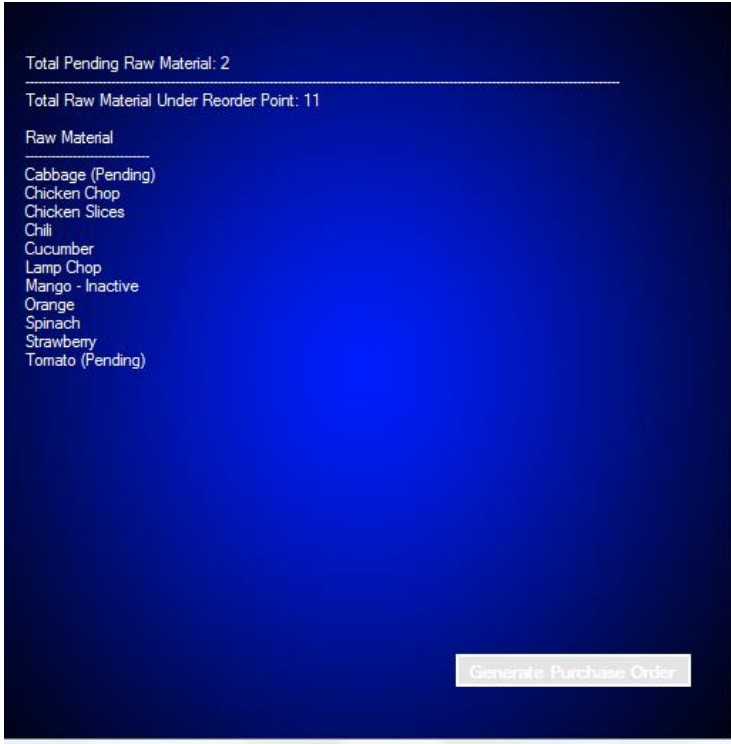
## 7.2. Update Existing Purchase Order

When user received the raw material from the supplier, user can click on the *Update* button to update the record one by one or click on the *Update All* button to update all the  records.

User also can *Edit* and *Delete* the purchase order records which are in the pending status. User cannot edit and delete any purchase order record which is in received status.

## 7.3. Generate Purchase Order below Reorder Point

User can generate the purchase order of the raw material which the quantity of raw material is below the reorder point. The *Generate Purchase Order* button can be found in the form when clicking into the purchase order button in the menu bar. There is a list of raw material which is below the reorder point according to the corresponding reorder point value will be display on this form.



The screenshot displays a software interface with a dark blue background. At the top, it shows 'Total Pending Raw Material: 2' and 'Total Raw Material Under Reorder Point: 11'. Below this, a section titled 'Raw Material' lists the following items: Cabbage (Pending), Chicken Chop, Chicken Slices, Chili, Cucumber, Lamp Chop, Mango - Inactive, Orange, Spinach, Strawberry, and Tomato (Pending). A 'Generate Purchase Order' button is located at the bottom right of the interface.

After clicking on the *Generate Purchase Order* button, a windows dialog form will pop up and ask user to fill in the quantity ordered and supplier.

	Raw Material	Supplier	Quantity in Pack	Unit	Cost Price	Current Quantity	Quantity Order	Total Quantity
▶	Chicken Chop	Click to add Su...	10.00	Piece		10.00		
	Chicken Slices	Click to add Su...	1.00	KG		0.00		
	Chili	Click to add Su...	1.00	KG		0.00		
	Cucumber	Click to add Su...	5.00	Single		0.00		
	Lamp Chop	Click to add Su...	3.00	Piece		15.00		
	Orange	Click to add Su...	5.00	Single		23.00		
	Spinach	Click to add Su...	5.00	Single		29.00		
	Strawbery	Click to add Su...	1.00	Single		1.00		

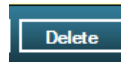
Below the table is a large yellow rectangular area. At the bottom of the dialog box are three buttons: OK, *Delete*, and Cancel.

User can click on the supplier cells to add a supplier from the list. A cost price will be shown in the dialog box and will be changed according to the supplier cost price.

The 'Select Supplier' dialog box contains a 'Supplier Name' dropdown menu with a blue arrow on the right. Below it is a text field displaying 'Healthy Fruits'. At the bottom are 'OK' and 'Cancel' buttons.


User also can click on the *Delete* button by selecting the record in the list to

remove it from being put into the purchase order.




## 7.4. View Report

The purchase order module contains one report which is purchase order report.

User can click on the *Report* button  to generate the report.

### Purchase Order Report



Preview Report

SAP CRYSTAL REPORTS®

Main Report

**Purchase Order Details** Generated At Wednesday, 6 April, 2011 12:22:28AM

Purchased Date Wednesday, April 6, 2011

Supplier Name Hyper Vege

Item(s) Name	Category	Order Quantity	Unit	Cost Price	Status	Date Received
Cabbage	Vegetable	4	KG	\$ 2.00	Pending	

Current Page No.: 1 Total Page No.: 1 Zoom Factor: 100%

## 8. Staff

The screenshot displays the 'LightWeight BackOffice' application window. The title bar shows 'LightWeight BackOffice', 'Login: ADMIN', and the date/time '2011/04/06 12:23:39 AM'. The interface features a left-hand navigation menu with buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The 'Staff' button is highlighted. The main content area is divided into a top navigation bar with 'New', 'Search', 'Staff Detail', 'Available Schedule', 'Working Schedule', and 'Working Progress'. The 'Available Schedule' button is selected. Below this, a list of staff names is shown, with 'Honson Morrison' selected. A callout box labeled 'Staff Name' points to this list. To the right, a detailed form for 'Honson Morrison' is visible, including fields for 'Date Joined', 'Login' (233322), 'First Name' (Morrison), 'DOB' (11 Apr 1988), 'Job Title' (Chef), and various address and contact fields. A 'Save' button is at the bottom right, and the 'Last Update' timestamp is '2011/03/18 12:07:58 AM'. Several callout boxes with arrows point to specific elements: 'Create New Staff' points to the 'New' button; 'Staff Detail' points to the 'Staff Detail' button; 'Working Schedule' points to the 'Working Schedule' button; 'Working Progress' points to the 'Working Progress' button; 'Generate Report' points to the 'Report' button in the navigation menu; and 'Available Schedule' points to the 'Available Schedule' button.

## 8.1. Add New Staff

Step 1: User can click on the *New* button to add a new staff if they want to add a new staff.

The screenshot shows the 'LightWeight BackOffice' application window. The title bar indicates 'Login: ADMIN' and the date/time '2011/04/06 12:31:37 AM'. The interface has a sidebar on the left with buttons for 'Raw Material', 'Recipe', 'Precook', 'Supplier', 'Purchase Order', 'Staff', 'Report', and 'Settings'. The 'Staff' button is highlighted. The main area shows a 'New' button and a search box. Below the search box is a list of staff names: 'Gigi Wong', 'Hanson Morrison', 'John Sean', 'Michelle Wong', 'Steve Johnson', and 'Susan Lee'. The 'Gigi Wong' entry is selected. The main form displays the details for 'Gigi Wong' with the following fields: Staff ID (staff006), Date Joined (2011/04/06), Last Name (Gigi), Login (122211), First Name (Wong), DOB (2 Dec 1988), Position (Full Time Staff), Base Salary, Address 1 (Kampar Street 12), Address 2, City (Kampar), State (Perak), Postcode, Country, Contact No., and E-mail. There is a checked 'Active' checkbox and a 'Save' button at the bottom right. The 'Last Update' timestamp is 2011/04/06 12:31:33 AM.

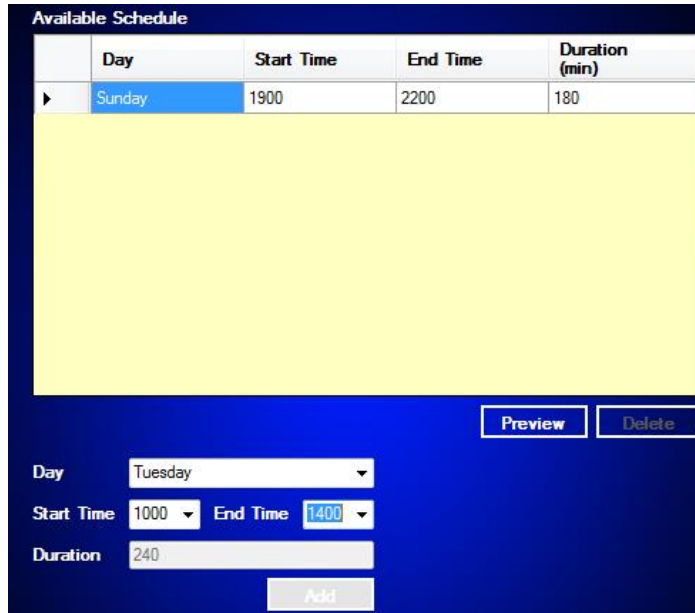
Step 2: Click on *Save* button to save the new staff detail.

## 8.2. Update Existing Staff

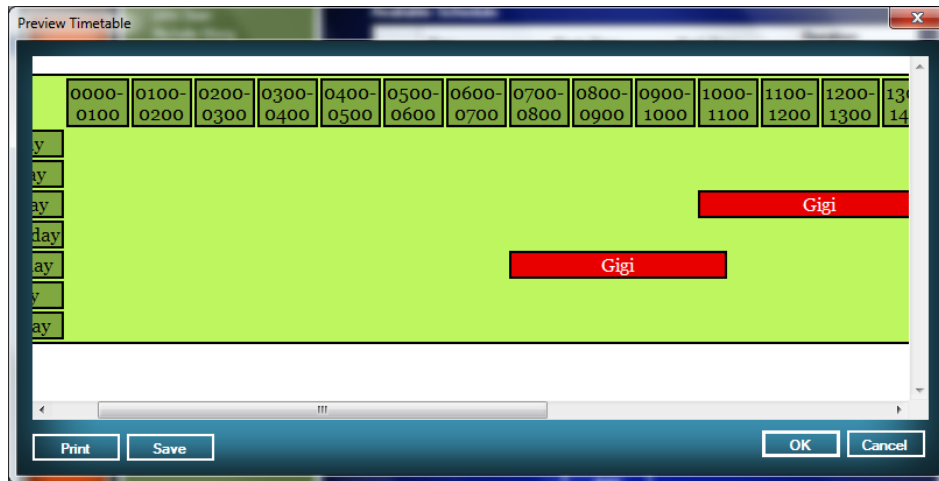
User can click on the staff name in the tree view to update the information of the staff. After that, click on save button to save the changes.

## 8.3. Available Schedule

User can *Add* the available schedule for the staff by going to available schedule. After that, select the day, start time and end time to add the available time.

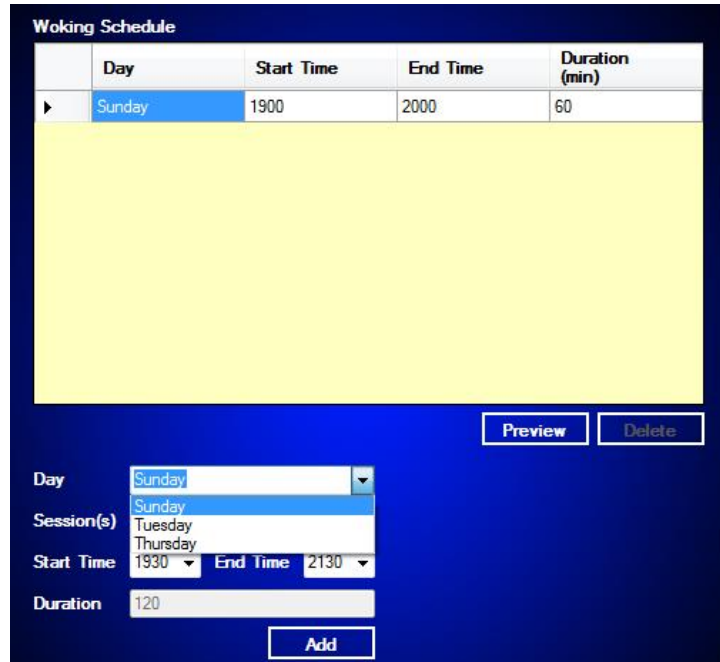


User also can preview the timetable by clicking on the *Preview* button. A windows dialog will pop up and display the timetable. User can print and save the timetable by clicking on the *Print* button and *Save* button.

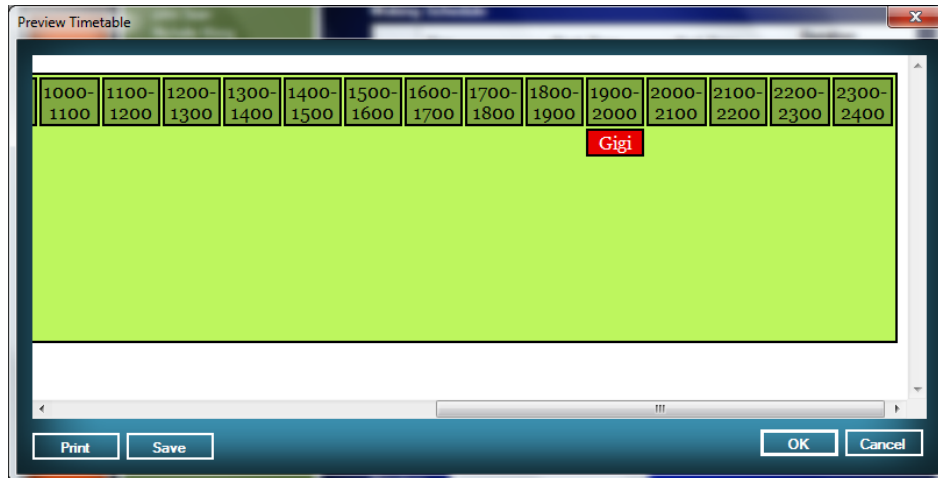


#### 8.4. Working Schedule

After adding the available time, user can add the working time in the working schedule module by choosing the session create in available schedule.



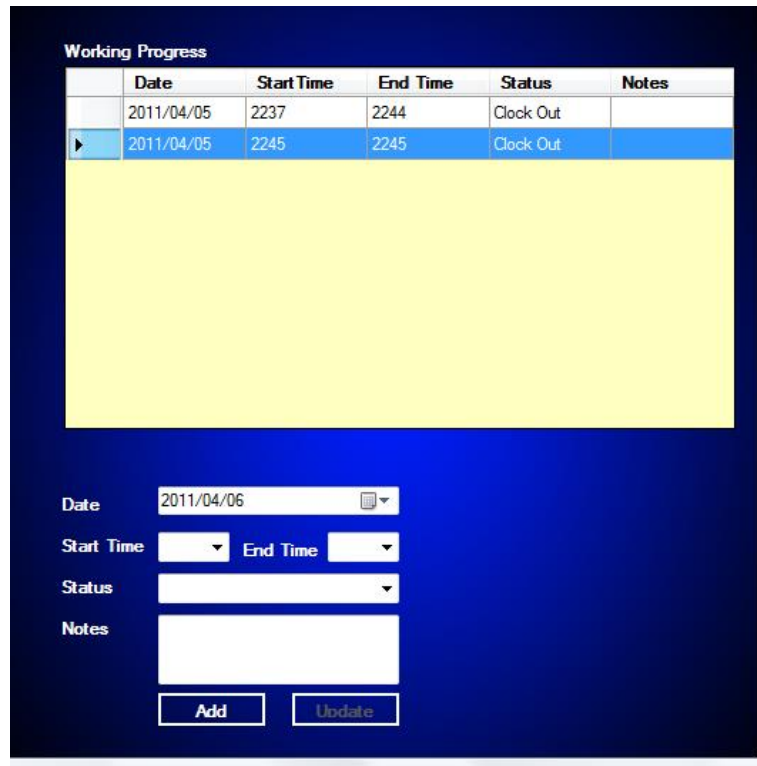
User also can preview the timetable by clicking on the *Preview* button. User can print and save the timetable by clicking on the *Print* button and *Save* button.



### 8.5. Working Progress

In this module, user can maintain the working progress of staff on every day. User can update the status of the working progress status which is used update the working progress status of a staff if the particular staff forget clock in or clock out in the front end system.

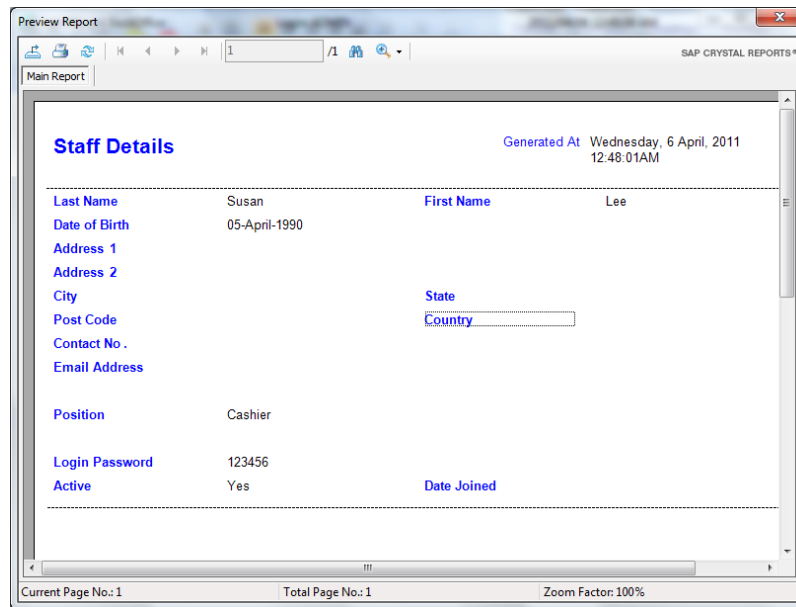




### 8.6. View Report

This staff module contains two kinds of reports which are staff details report and working progress report.

#### Staff Details Report



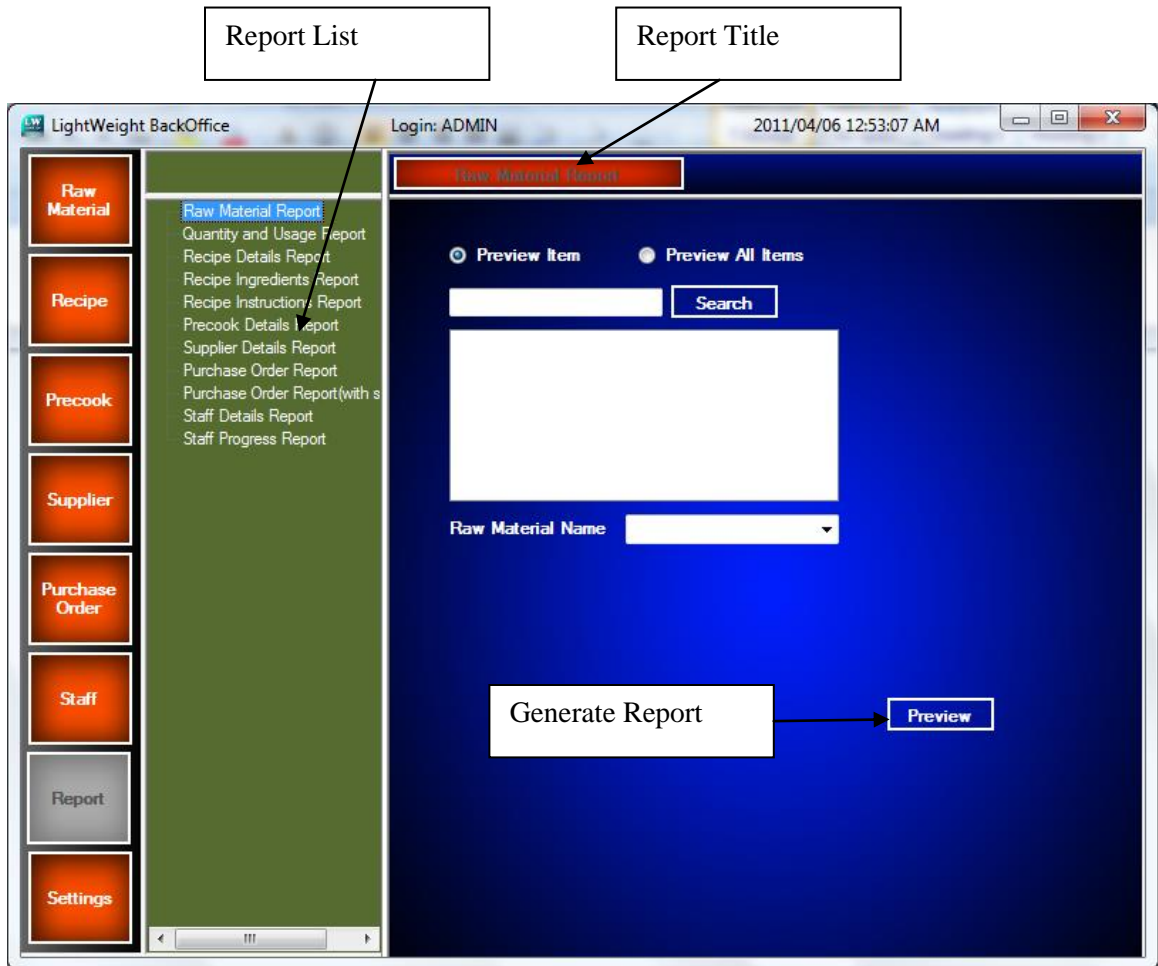
## Working Progress Report

The screenshot displays a 'Preview Report' window for 'SAP CRYSTAL REPORTS'. The report title is 'Staff Progress', generated on Wednesday, 6 April, 2011 at 12:52:24AM. The report details for employee Susan Lee, a Cashier, showing two clock-in events on 05-April-2011.

Last Name	Lee	First Name	Susan	
Position	Cashier			
Worked Date	Time Clock In	Time Clock Out	Notes	Status
05-April-2011	2237	2244		Clock Out
05-April-2011	2245	2245		Clock Out

Current Page No.: 1      Total Page No.: 1      Zoom Factor: 100%

## 9. Report



## 9.1. Raw Material Report

User can generate one or all raw material report in this report.

The screenshot shows a 'Preview Report' window for 'Raw Material Details'. The report is generated on Wednesday, 6 April, 2011 at 12:54:58AM. The details for 'Bacon Ham' are as follows:

Inventory Name	Bacon Ham	
Category	Meat	
Description		
Quantity In Pack	10.00	
Unit	KG	
Reorder Point	5	
Active	True	
Supplier Name	Supplier Cost Price	Available
ABC Company	\$ 21.00	No

At the bottom of the report, the 'Inventory Name' is listed as 'Chicken Chop'. The status bar indicates 'Current Page No.: 1', 'Total Page No.: 1+', and 'Zoom Factor: 100%'.

## 9.2. Quantity and Usage Report

User can select to preview one or all quantity & usage report for raw material.

User also can select the range of the date to generate the report.

The screenshot shows a 'Preview Report' window for 'Quantity and Usage'. The report is generated on Wednesday, April 06, 2011 at 12:59:07AM. The details for 'Apple' are as follows:

inv_name	Apple
inv_desc	
rawcategory_name	Fruit
inv_quantitypack	10.00
unit_type	Single

Date	Total Quantity	Quantity Used	Monthly Check	Quantity Left	Last Update	Comment
January 2011	100.00	98.00	2.00	0.00	01/26/2011	0-<2011/01/26> spoil-<2011/01/26>(-2) return-<2011/01/26>(2)spoil
<b>Total</b>	<b>100.00</b>	<b>98.00</b>	<b>2.00</b>	<b>0.00</b>		

The status bar indicates 'Current Page No.: 1', 'Total Page No.: 1', and 'Zoom Factor: 100%'.

### 9.3. Recipe Details Report

User can preview one or all recipe details in this report.

The screenshot shows a 'Preview Report' window for 'SAP CRYSTAL REPORTS'. The report title is 'Recipe Details', generated on Wednesday, 6 April, 2011 at 1:05:00AM. It displays two recipes: Apple Juice and Orange Juice. Each recipe entry includes fields for Recipe Name, Description, Category, Sub-Category, Preparation Time (min), Cooking Time (min), Cost Price, Selling Price, Gross Profit, and Serving(s). The Apple Juice recipe has a cost price of \$10.50 and a selling price of \$17.50. The Orange Juice recipe has a cost price of \$1.00. The report footer indicates 'Current Page No.: 1', 'Total Page No.: 1+', and 'Zoom Factor: 100%'.

Recipe Name	Description	Category	Sub-Category	Preparation Time (min)	Cooking Time (min)	Cost Price	Selling Price	Gross Profit	Serving(s)	Cost Per Serving
Apple Juice		Beverages	Cold Drink			\$ 10.50	\$ 17.50	40	1	\$ 17.50
Orange Juice		Beverages	Cold Drink			\$ 1.00				

### 9.4. Recipe Ingredients Report

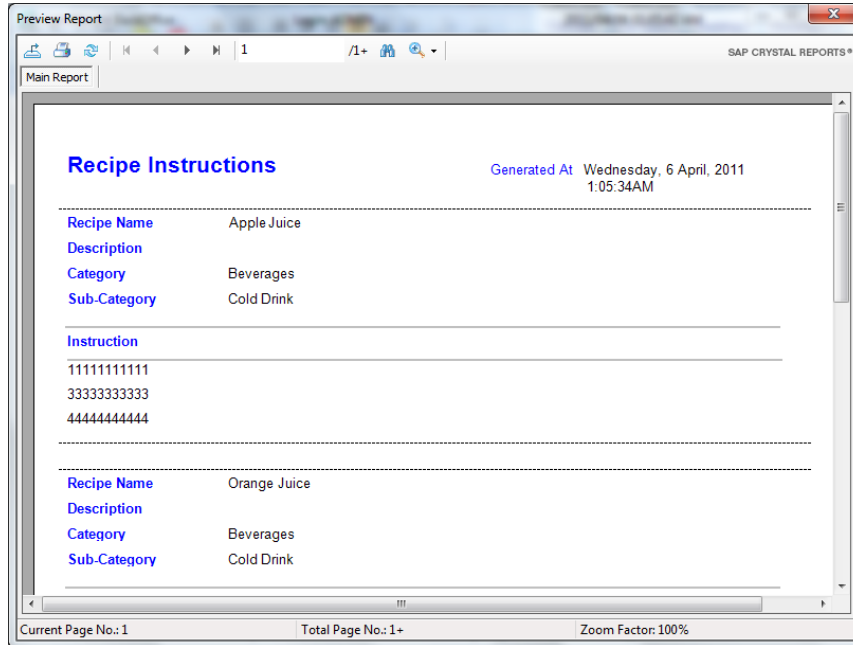
User can preview one or all recipe ingredient in this report.

The screenshot shows a 'Preview Report' window for 'SAP CRYSTAL REPORTS'. The report title is 'Recipe Ingredients Details', generated on Wednesday, 6 April, 2011 at 1:05:13AM. It displays the ingredients for Apple Juice. The ingredients table lists Honey Dew, Apple, and Banana with their respective quantities, units, and cost prices. Summary statistics for the recipe are also provided, including Cost Price, Gross Profit %, Selling Price, Serving(s), and Cost Per Serving. The report footer indicates 'Current Page No.: 1', 'Total Page No.: 1+', and 'Zoom Factor: 100%'.

Recipe Name	Description	Category	Sub-Category	Preparation Time	Cooking Time
Apple Juice		Beverages	Cold Drink		
Ingredients	Quantity	Unit	Cost Price		
Honey Dew	1	KG	\$ 4.50		
Apple	2	Single	\$ 2.40		
Banana	1.5	Single	\$ 3.60		
			Cost Price	\$ 10.50	
			Gross Profit %	40	
			Selling Price	\$ 17.50	
			Serving(s)	1	
			Cost Per Serving	\$ 17.50	

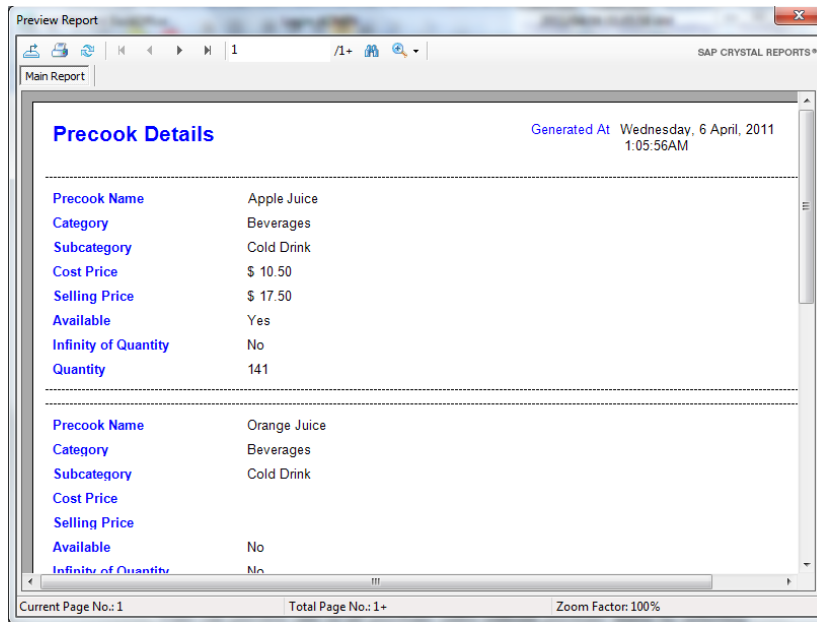
## 9.5. Recipe Instructions Report

User can preview one or all recipe instructions in this report.



## 9.6. Precook Details Report

User can preview one or all precook details in this report.



## 9.7. Supplier Details Report

User can preview one or all supplier details in this report.

Preview Report

SAP CRYSTAL REPORTS®

Main Report

Address 1 No 324 Foster  
 Address 2 Henry Street  
 City State NY  
 Post Code 00100 Country US  
 Contact 1 01234124124 Contact 2  
 Email Address Fax No.  
 Active No

Supplied Item(s)	Category	Cost Price	Available
Bacon Ham	Meat	\$ 21.00	No
Chicken Chop	Meat	\$ 0.00	No
Spinach	Vegetable	\$ 0.00	No
Banana	Fruit	\$ 12.00	No
Apple	Fruit	\$ 11.00	No
Watermelon	Fruit	\$ 0.00	No
Meehon	Dry Goods	\$ 12.00	No
Orange	Fruit	\$ 0.00	No
Chili	Vegetable	\$ 0.00	No
Tomato	Vegetable	\$ 0.00	No
Cabbage	Vegetable	\$ 0.00	No
Lamp Chop	Meat	\$ 0.00	No

Current Page No.: 1 Total Page No.: 1+ Zoom Factor: 100%

## 9.8. Purchase Order Report

User can preview one or all purchase order without purchase status by selecting the supplier or purchase date.

Preview Report

SAP CRYSTAL REPORTS®

Main Report

**Purchase Order Details** Generated At Wednesday, 6 April, 2011 1:06:36AM

Purchase Date Wednesday, 6 April, 2011

Supplier Name Hyper Vege

Item(s) Name	Order Quantity	Unit	Cost Price
Cabbage	4	KG	\$ 2.00

Supplier Name Healthy Fruits

Item(s) Name	Order Quantity	Unit	Cost Price
Honey Dew	10	KG	\$ 5.00
Watermelon	10	Single	\$ 15.00

Current Page No.: 1 Total Page No.: 1+ Zoom Factor: 100%

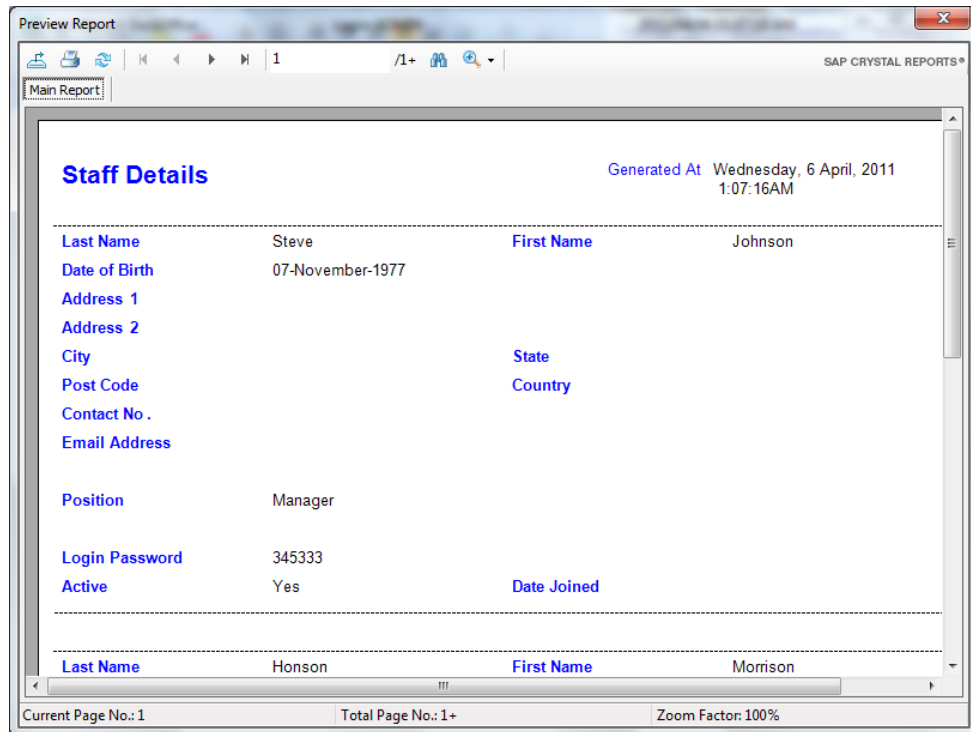
### 9.9. Purchase Order Report (with status)

User can preview one or all purchase order with purchase status by selecting the supplier or purchase date.



### 9.10. Staff Details Report

User can preview one or all staff details in this report.





### 9.11. Staff Progress Report

User can preview one or all the staff progress by selecting the staff and date range in this report.

