**Acknowledgement**

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**Abstract**

The product available in the stock is difficult task to manage for the business activities. As the stock management plays the vital role to run the business activities effectively and smoothly. The digital world has influence the most of the area. Likewise, with the help of technology it makes easier to manage the stock in the blink of eye.

To manage the stock, there people can visit the website and can insert, edit and delete the stock that are available in their warehouse. It helps to save the time as well as the cost. It makes easier to manage the stock.

This project helps to keep the record of stocks as it is the web based application. Not only for the business activities but also for the shops people can manage their stocks. This project includes all the requirements like use cases and its description, system architecture, model use, design, implementation as well as the testing. To do the web based application I use the to design the software.

Chapter 1

Introduction

**Background of the system**

The stock management plays the vital role to run the business activities and helps to meet the goal of the business. It provides the better platform to make the business success. So, the stock management is one of the most required software for the business as well for the shops. This software helps to exchange the product and keep the record safe. It helps to manage the stock within the small period of time.

Basically, stock management helps to improve the quality of the product as well as save the time and cost. This software helps to edit the stocks and create the bill of the product as well. It manages the product in the easiest way and helps to understand how it works as well as run in the smooth way.

**Aims**

The main aim of this project is to develop the stock management system which helps to keep the record of the stocks safe and manage the stocks properly as well as to run it smoothly. It keeps the details of the product and manages it within the short period of time.

So, it provides safety of stock keeps record and manage it properly as well as saves the time and cost which going to help to maintain the better quality of the product.

**Objectives**

To meet the desired aims, following are the objectives of the project

* First objective is to collect the requirement of the project.
* To perform the installation that is required during designing the software.
* To design the database that makes it easier to build the software.
* To perform the planning so that project complete in the correct time period.
* To perform the testing so that the confirmation of the software.
* To perform the release that gives the feedback and demand of the project.

Chapter 2

Analysis

Requirement

Function and nonfunctional

|  |  |  |
| --- | --- | --- |
| F/NF | Requirement | MoSCoW |
| NF(R1) | Login | M |
| NF(R2) | Registration | M |
| F(R3) | Add product | M |
| NF(R4) | List of product | M |
| F(R5) | Add stock | M |
| NF(R6) | List of stock | M |
| F(R7) | Add user | M |
| F(R8) | List of user | M |
| F(R9) | Add supplier | M |
| F(R10) | List of supplier | S |
| F(R11) | Update the customer | S |
| F(R12) | Update the product | S |
| F(R13) | Delete the supplier | C |
| F(R14) | Delete the users | C |
| F(R15) | Delete the product | C |

Fig4: function and nonfunctional (MoSCoW)

Use case diagram

It is the simple diagram which includes system, actor, use case and relationships. It represents the interaction of the user with the system and shows the relationships between the actor and the use cases. It helps to decrease the confusion as it gives clear information about the actor and their relationships with the use cases of the system.

Justification

Use case diagram is very helpful to develop and design the system as it provides the clarity. Following are the reasons to choose the use case diagram for the system:

* Mainly it provides way to communicate complex ideas in a fairly basic way.
* It helps to easily understand the system as have proven an excellent bridge between software developers and end users.
* It helps to provide the function requirement of the system.
* It provides the easiness to understand the how system works and who are involve in the system
* It helps to decrease the problems that can occur in the future.

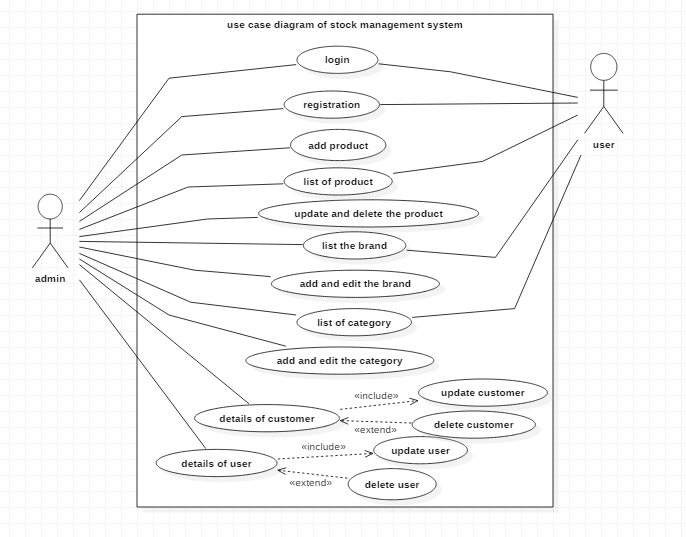


Fig1: use case diagram of stock management system

Here, in this use case diagram there are three actor admin, supplier and staff. Firstly the all three actors can login and register in the system. The inside works is handle by the admin like insert, update and delete of product, stock, staff and supplier. The staff can manage the product and stock available in the system. In this system the update should be done which is compulsory and the delete is in the hand of admin. If admin wants to delete then they can but don’t want to delete then also it is fine. The supplier does the work of supply of the product.

Initial class diagram

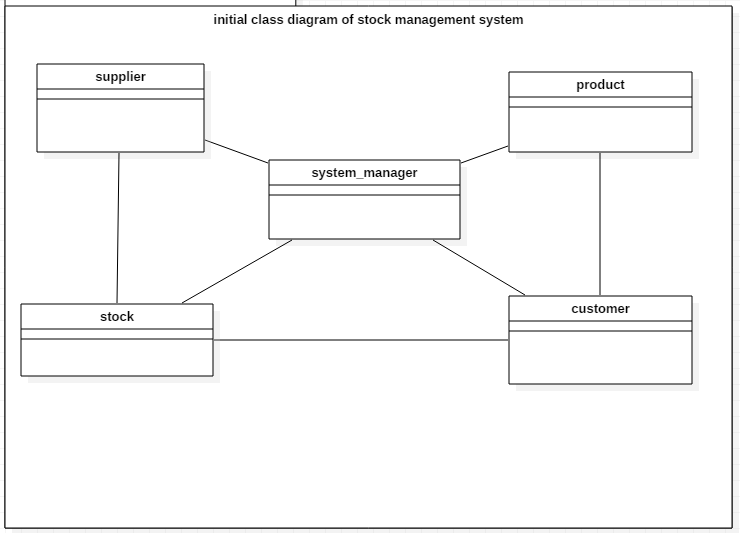


Fig2: initial class diagram

Er-diagram

It is the visual representation of the design which shows the relationships between the entities which is stored in the database. It provides simple way to understand the system and its work as it provides the details of the relationship of entity.

Justification

Following are the reasons to select the er-diagram for the system:

* Firstly it is highly flexible as it easily delivers the other relationships from the already existing ones.
* It is easy to understand as it acts as the blueprint for the database.
* It decreases the complication which can arise during the development.
* It provides the effective communication between the entities.
* It is very simple to understand.

Er-diagram of stock management system

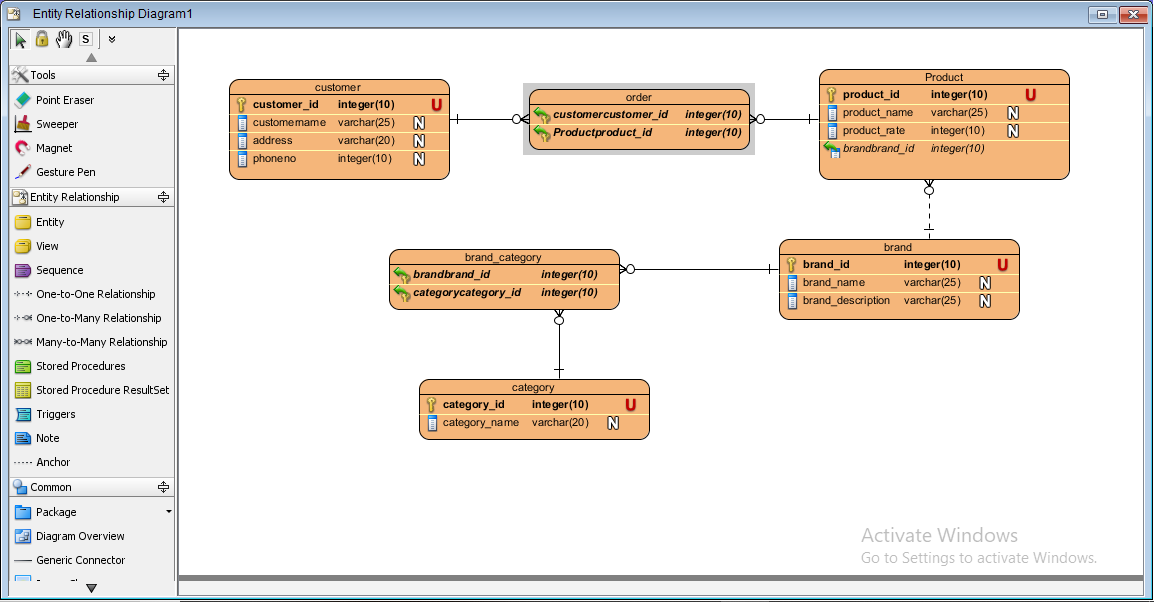


Fig: Er diagram of the stock management system

Architecture

For the development of the project I used the 3-tier system architecture. It is divided into the three layers which are given down below:

1. Presentation layer

It is the first layer of the 3-tier architecture.

It is handles by the client system that transfer the data to the application layer.

1. Application layer

It is the second layer and also the middle layer of the 3-tier architecture that is handle by the application server.

It helps to move and process the data between the presentation and database layer.

1. Database layer

It is the third layer of the 3-tier architecture which is handling by the server system.

In this layer the data is stored and retrieved from a database or file system.

For example if the client wants to login the email then the client request to server and server request to the database. Likewise the database request from the server would send the data to server and server would forward it to the client. After this the email of the client would open. The 3-tier system architecture is given down below:

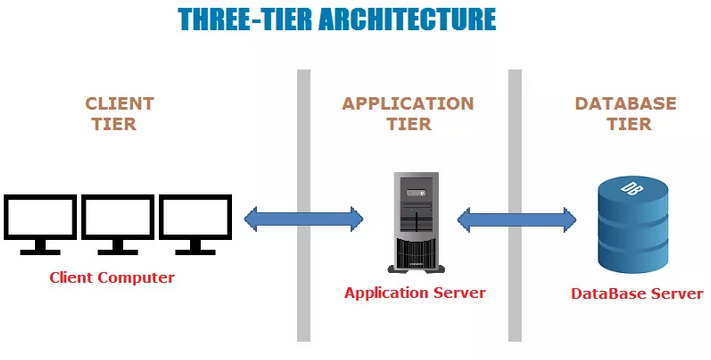


Fig: three tier architecture

Chapter 3

Design

Class diagram

It is the graphical representation which is made up of different classes and relationship between them in the object oriented system. In the class diagram, the attributes and operation forms the complete class. It is use while systems design and development.

Justification

Class diagram provides the simple and effective way to design the system. So, I have also chosen the class diagram to design the system. Following are the reason to choose the class diagram.

* It provides the information about how the system is structured or design.
* It contains the relevant structural relations and data type.
* It provides the overall sketch of the system.
* It is flexible as it gives the clear structure of system.
* It is also mostly used diagram to design the system.

The class diagram of stock management system is given down below:

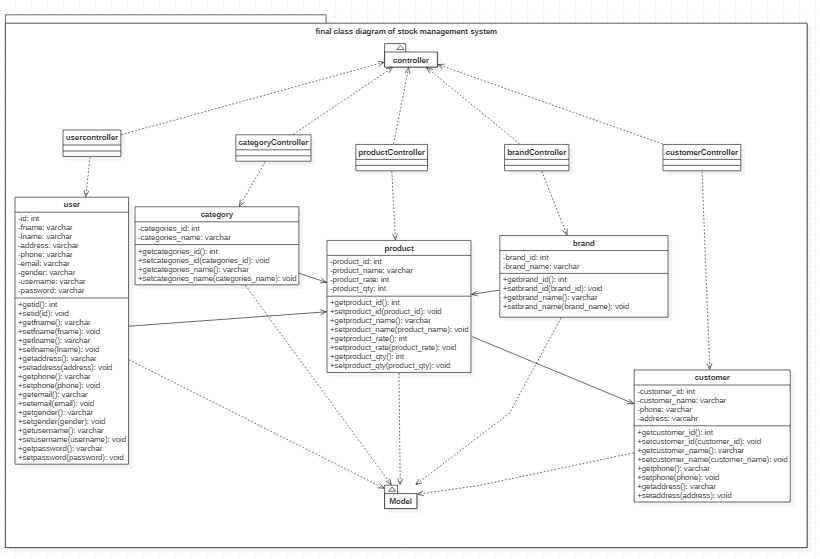


Fig1: class diagram of stock management system

Here, the classes that are involved in the class diagram are user, product, category, brand, buyer and supplier. Here the admin login inside the system and manage the product. It manages the category and brand of the product. The buyer can buy the product and the supplier supply the product to the buyer. The class diagram is made in the MVC pattern as shown in the figure above. In this class diagram, there is the attributes of classes and its operation are also given as well as the connection of classes.

Activity diagram

It is one of the important diagrams in UML that describe the dynamic aspect of the system. It is the diagram which is similar to flow chart that represents the flow from one activity to another activity. It is the behavioral UML diagram.

Justification

Activity diagrams are the user friendly diagrams which help to the flow of activity of the system. It shows the how the system behaves. So, following are the reasons to select the activity diagram:

* It provides the actual work flow behavior of the system.
* It describes the actual state of activities of a system by showing all the sequence of activities performed.
* It is use for analyzing a use case by describing what actions need to take place and when they should occur.
* It provides the easiness to understand the work flow of the system.
* It is mostly use diagram as it is user friendly.

The activity diagram of stock management system is given down below:

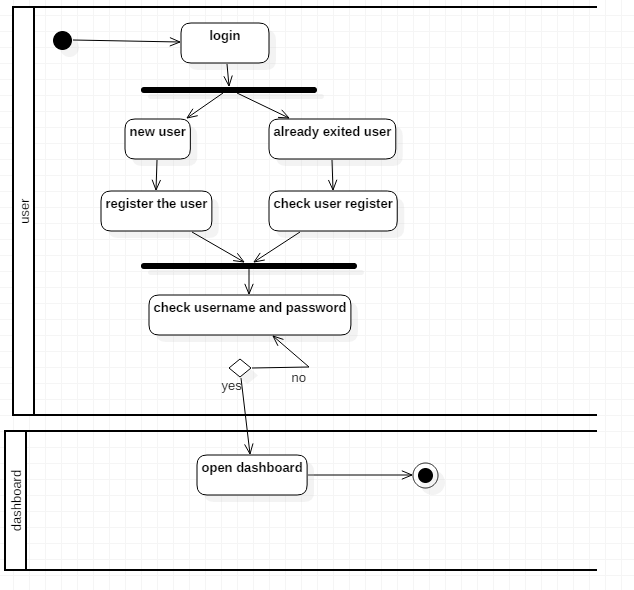


Fig1: activity diagram of login

The given activity diagram is of login system where the user can login. If it’s new user, then can register and login. If already exited then enter the email and password. In case of entering the right email and password, open the dashboard not then check the email and password.

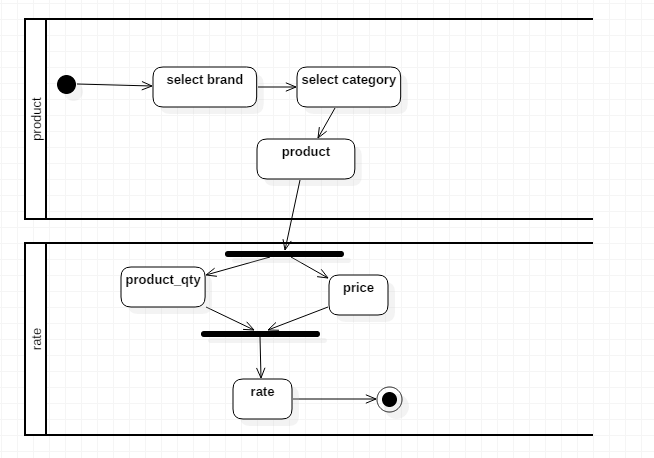


Fig2: activity diagram of stock

Here, the admin can select the category, brand and product. They can calculate the amount of the product. Also they can generate the payment bill of that product and print it out.

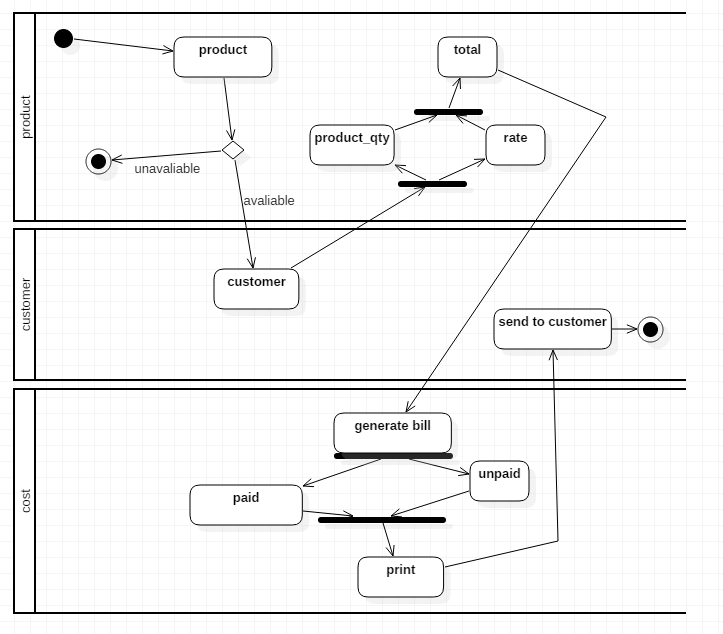


Fig3: activity diagram of selling the product

To provide the product to the buyer, select the category and brand of product. Check whether the product is available or not. If it’s available, then calculate the amount of the product. After calculation generate the bill for that product.

Sequence diagram

Sequence diagram is the diagram which shows behave of the system. It has different components like actor, lifeline, objects, focus of control, message, etc. with the help of these components the sequence diagram is made which helps to interact with the objects with the aim of exchanging the message at the time.

Justification

Sequence diagram is one the most required diagram for the project as it helps to shows behaves of the system. So here are the reasons for selection of the sequence diagram:

* It shows the actual behavior of the system.
* It shows the message pass between the objects at a time.
* It shows the actual flow of the system.
* It provides the easier platform to understand the system.
* It is user friendly and easy to use as well.

The sequence diagrams for the stock management are given down below:

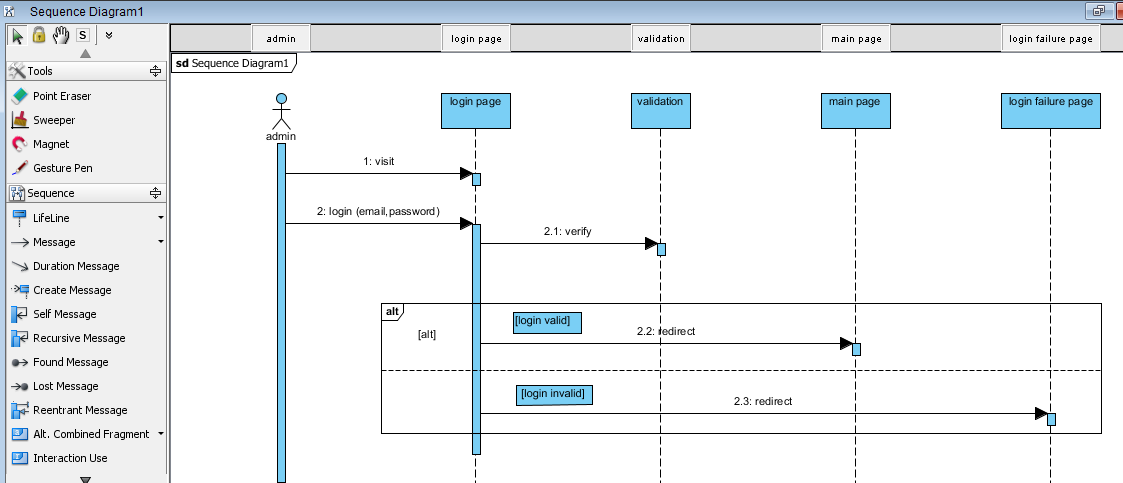


Fig1: sequence diagram of login system of stock management system

Here in this diagram the admin is the actor. Login page, validation, main page and login failure page are the objects.in this sequence diagram I have used actor, object, lifeline, message, focus of control, text and the frame.

* Firstly the admin go to the login page.
* After visiting the login page, the admin login the system by entering the email and password.
* To check the correct email and password it will verify in the validation page.
* If it’s correct then the main page will open not then the login failure page will open.

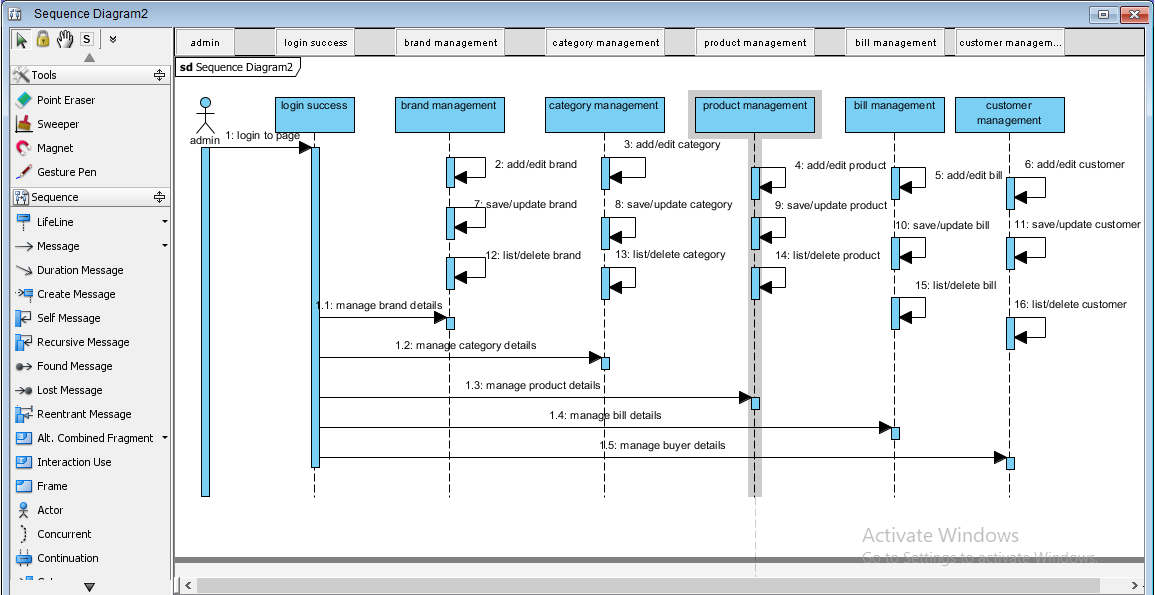


Fig2: sequence diagram after entering the main page of the system

Here in this diagram also the admin is the actor. The login success, stock management, product management, supplier management, bill management, buyer management are the objects of this sequence diagram.

* After entering the page the admin can manage all the details of the stock, product, supplier, bill and buyer.
* While in the stock management object, the admin can add, edit and list the stock.
* As well in the product management object, the admin can add, edit and list the product.
* Likewise in the supplier management, bill management and buyer management, the admin can add, edit and list the supplier, bill and buyer.

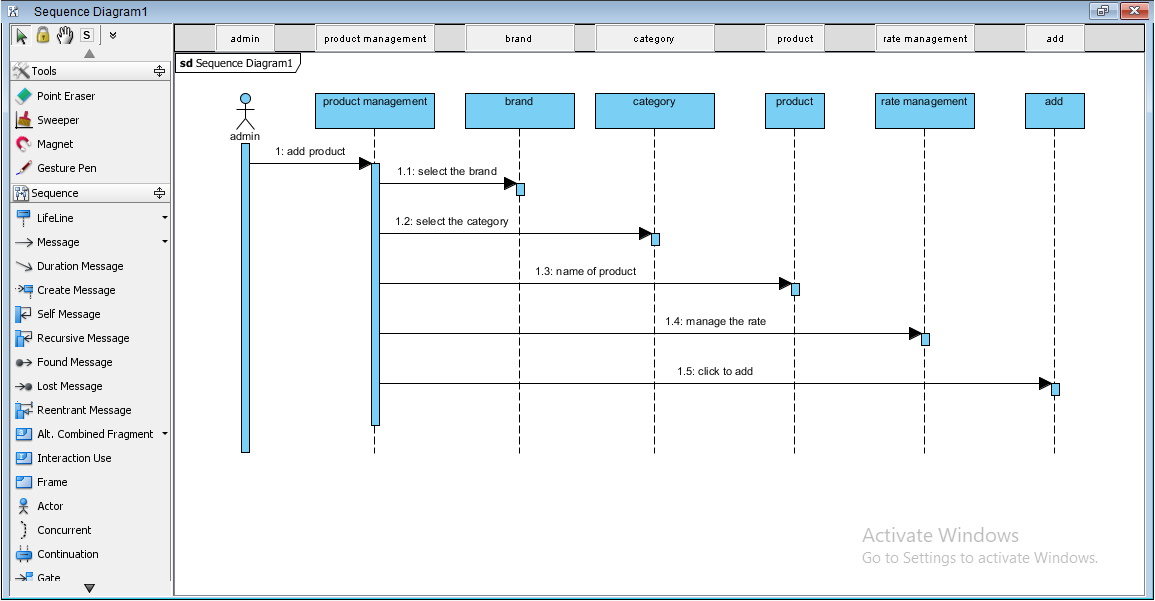


Fig3: sequence diagram of adding the stock

Here in this diagram the admin is the actor as well. The stock management, category management, brand management, product management, supplier management, bill management and add stock are the objects of this sequence diagram.

* To add the stocks firstly visit in the stock management object and select category.
* Likewise select brand, select product and select supplier of that stock.
* After selection do calculate the amount of the stock.
* Now add the stock by clicking the add button.

Chapter 4

Implementation

Programming language used

Chapter 5

Testing

Chapter 6

Other project issues

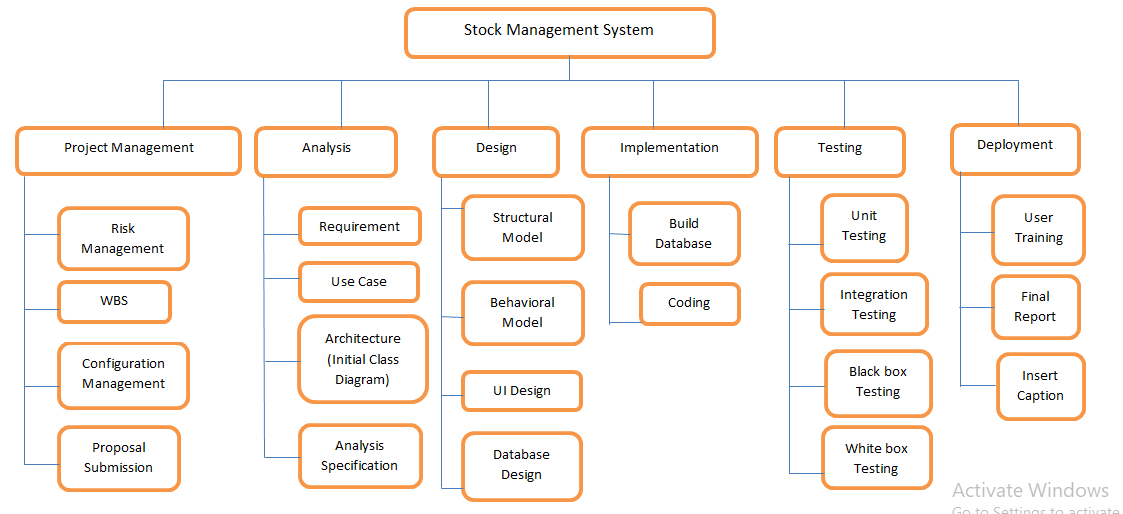


Fig: work breakdown structure

The work breakdown structure is used to manage the actual work which is breakdown into different pieces. Its main goal is to make the work easy and understandable so that it will help to complete the work effectively and smoothly. It makes the tune with the planning of the project and helps to make project complete in the time.

Milestones

|  |  |
| --- | --- |
| **Milestones** | **Date** |
| **Project Management**  Risk Management  WBS  Configuration Management  Proposal Submission | 21-de-2018 to 3-jan-2019  21-de-2018 to 25-de-2018  26-de-2018 to 27-de-2018  28-de-2018 to 1-jan-2019  2-jan-2019 to 3-jan-2019 |
| **Analysis**  Feasibility Study  Requirement analysis  Planning  Use Case  Architecture ( Initial Class Diagram) | 4-jan-2019 to 28-jan-2019  4-jan-2019 to 5-jan-2019  6-jan-2019 to 11-jan-2019  12-jan-2019 to 16-jan-2019  17-jan-2019 to 21-jan-2019  22-jan-2019 to 28-jan-2019 |
| **Design**  Structural Diagram  Behavioral Diagram  UI Design  Database Design (ER , Data Dictionary) | 29-jan-2019 to 27-feb-2019  29-jan-2019 to 5-feb-2019  6-feb-2019 to 13-jfeb-2019  14-feb-2019 to 19-feb-2019  20-feb-2019 to 27-feb-2019 |
| **Implementation**  Building Database  Coding | 28-feb-2019 to 31-march-2019  28-feb-2019 to 11-march-2019  12-march-2019 to 31-march-2019 |
| **Testing**  Unit Testing  Integration Testing  Blackbox Testing  Whitebox Testing | 1-april-2019 to 10-april-2019  1-april-2019 to 2-april-2019  3-april-2019 to 4-april-2019  5-april-2019 to 7-april-2019  8-april-2019 to 10-april-2019 |
| **Deployment**  User Training  Final Report  Insert Caption | 11-april-2019 to 20-april-2019  11-april-2019 to 14-april-2019  15-april-2019 to 17-april-2019  18-april-2019 to 20-april-2019 |

Fig: milestone located for the project

For this project I have located the six main milestones which are project management, analysis, design, implementation, testing and deployment. The detail descriptions of these milestones are given down below:

* **Project Management (14 days)**
  + For the project management I have allocated the 14 days.
  + For the risk management I have separated the 5 days.
  + For the WBS I have separated the 2 days.
  + For the Configuration Management I have separated the 5 days.
  + For the Proposal Submission I have separated the 2 days.
* **Analysis ( 25 days / month)**
  + For the analysis I have allocated the 25 days.
  + For the requirement I have separated the 7 days.
  + For the Use Case I have separated the 6 days.
  + For the Architecture I have separated the 5 days.
  + For the Analysis Specification I have separated the 7 days.
* **Design( 30 days / month)**
  + For the design part I have allocated the 30 days
  + For the Structural Model I have separated the 8 days.
  + For the Behavioral Model I have separated the 8days.
  + For the UI Design I have separated the 6 days.
  + For the Database Design I have separated the 8 days.
* **Implementation ( 32 days / month)**
  + For the implementation of the project I have allocated the 32 days.
  + For the Build Database I have separated the 12 days.
  + For the Coding I have separated the 20 days.
* **Testing (10 days / month)**
  + For the testing of the project I have allocated the 10 days.
  + For the Unit Testing I have separated the 2 days.
  + For the Integration Testing I have separated the 2 days.
  + For the Blackbox Testing I have separated the 3 days.
  + For the Whitebox Testing I have separated the 3 days.
* **Deployment ( 10 days / month)**
  + For the deployment of the project I have allocated the 10 days.
  + For the User Training I have separated the 4 days.
  + For the Final Report I have separated the 3 days.
  + For the Insert Caption I have separated the 3 days.

Scheduling/Gantt chart

The scheduling helps to set the start date and the end date of the project. It helps to complete the project on time and helps to manage the project smoothly. The schedule of this project is show down below:

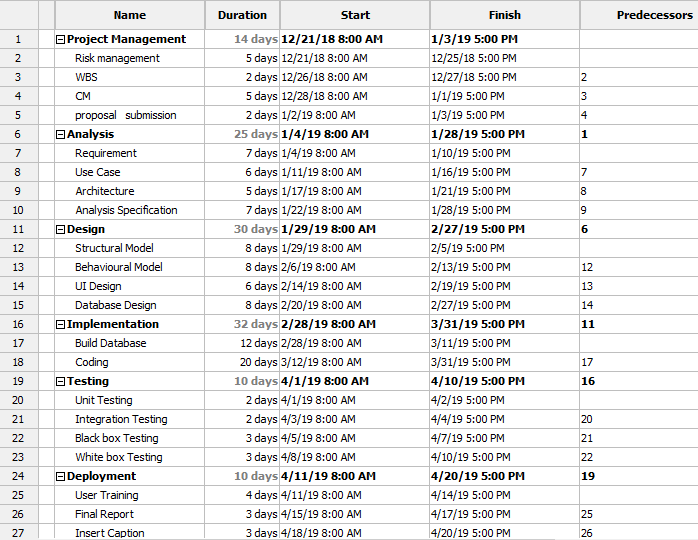


Fig: schedule of the project

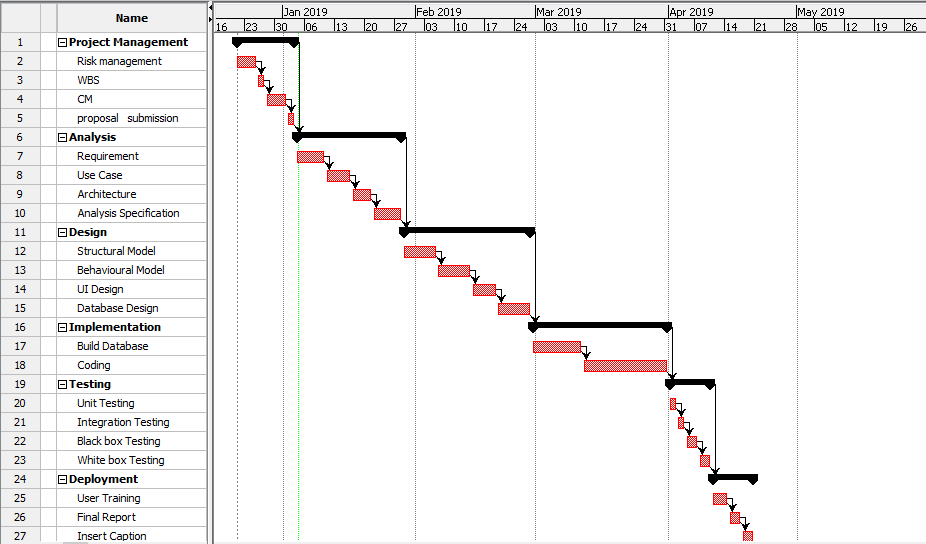
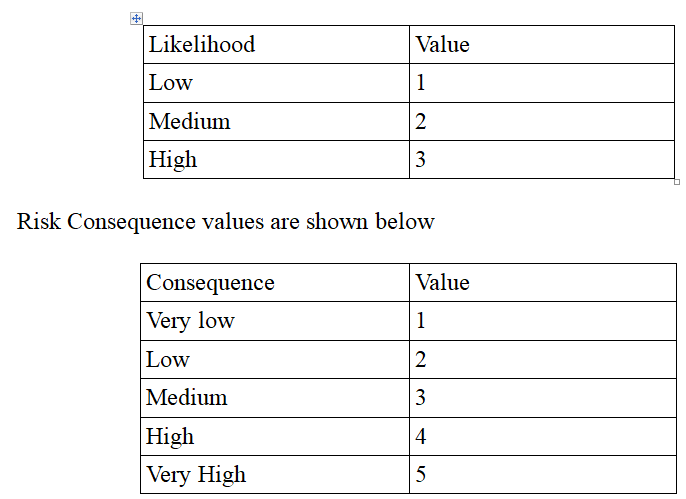
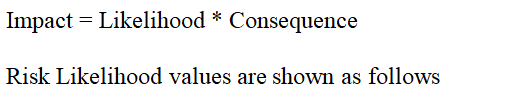


Fig: Gantt chart of the project

Future work

* If the admin wants to keep the staff and manage the stock then they can allow and also can select the feature that they want to allow to the staff in the future.
* This project is not only implemented in the business but also for the small shops as it manage the stock.
* The admin can absolutely manage the details of the stock as they can delete it or edit it.
* If the admin has the knowledge about the coding of the project then they can modify it as it is not the online website.

Risk management



Risk management is the process of managing the risk or the problems that arise in the present and in the future. It helps to manage the risk that appears in the system and also helps to reduce it. It helps to find out the risk in the system and helps to give the solutions that can arise in the present as well as in the near future. The risk and its solution for this project is given down below in the table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S. No | Risk type | Risks | Likelihood | Consequences | Impact | Solution |
| 1 | Technical | Loss of data | 2 | 2 | 4 | To avoid the data loss, it should be kept in the drive like for the backup. |
| 2 |  | Server failure | 1 | 2 | 2 | Sometime the server can fail while doing the project. For prevention the security and backup should be maintained. |
| 3 |  | Data theft | 2 | 3 | 6 | To avoid from data theft, should maintain the  tide security to data with different methods  like data encryption, etc. |
| 4 |  | Threat on the system | 2 | 2 | 4 | Updating or scanning the system should be done time to time so that it will work smoothly. |
| 5 | Non-technical | Lack of planning | 2 | 4 | 8 | The proper planning should be done to avoid the problems that may arise in the future. |
| 6 |  | Insufficient resources | 2 | 4 | 8 | Collect the required resources for the project. |
| 7 |  | Lack of budget | 2 | 3 | 6 | Do the proper use of budget and separate the little more budget for project. |

Fig: risks management

Configuration management

Configuration management is the management which helps to keep the record safe and helps to get the correct and relevant document for everyone. If any problem occur and any changes need to done then with the help of configuration management we can add, edit and modify the files. It also helps to know that which items need to be configured. The diagram of configuration management of this project is given down below:

Fig: configuration management

Chapter 7

Conclusion

Finally the project is completed for the stock management system. The project includes the introduction, analysis, design, implementation, testing and other project issues. In the introduction, there is the background of the system, aims and objectives of the project. It is describe in the details in the chapter-1.

As well in the analysis, there is the requirement of the project is defined. In this phase there is also the requirement prioritization with is made with the help of MoSoCoW prioritization. There are also the function and non-function requirements. Use case diagram, er-diagram and initial class diagram are also in it which is in the chapter-2.

In the design also there are the diagrams which are the sequence diagram, activity diagram and class diagram of this project. There is the clear description of these diagrams with justification for choosing it which is in the chapter-3.

In this way in the implementation, there is the implementation of project in the programming language. So, I used the php programming language with the laravel framework. It is clearly described in the chapter-4.

Likewise in the testing, there is the test of the project by using the different type of the testing. I used the blackbox and the whitebox testing to test the system. The tests are in the chapter-5.

Lastly in the other project issues, there is given the work breakdown structure which help to divide the work. Milestones are also there which helps to set the work at the time. There is also the schedule/Gantt chart of this project. Future work, risk management and configuration management are also included which is in the chapter-6.The references and appendix containing all the test results, code and user manual are in the chapter-8 and 9.

Chapter 8

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Chapter 9

Appendix