1. **System Design (Functional Design)**

**3.1 Introduction**

* System design is the process of defining the architecture, module interfaces and data for a system to satisfy specified requirements.
* The purpose of the design phase is to plan the solution of the problem specified by the requirement documents.
* This is the first step that moving from problem domain to the solution domain.
* The design of the system is essentially a blueprint or a plan for a solution for the system.

**3.2 Assumption and constraints**

* For windows 11 1 gigahertz (GHz) or faster with 2 or more cores on a compatible 64-bit processor or System on a Chip (SoC). 4 gigabytes (GB). 64 GB or larger storage device.
* The system is dependent on the availability of an Apache Tomcat Server to run.
* 3 months of time for completion.

**3.3 Functional Decomposition**

Functional decomposition is the process of taking a complex process and breaking it down into its smaller, simpler parts. Using functional decomposition large or complex functionalities are more easily understood. It is mainly used during project analysis phase, so each phase can be viewed as software. So, this has modular with some sub modules.

* + 1. **System Software Architecture**

Sell Gros

Admin

Login

View Products

Product management

Dealer Allotment

Region management

Add

Update

Delete

Dealer authorization

Add

Remove

Update

Add

Dealer

Status view

View order

Generate bill

Feedback and report

Customer

Registration

Order placement

Feedback

Bill view

Remove

Registration

**3.3.2 System technical architecture**

Internet

Chrome client

Xampp server

MySQL Database server

Mozilla client

Presentation Tier

Application Tier

Data Management Tier

**3.3.3 System hardware architecture**

Printer

Computer

Hard disk or storage device

Keyboard and mouse

**3.3.4 External Interface**

**Not applicable**

* 1. **Description of programs**
     1. **Context Flow Diagram**

In CFD entire system is considered as a single process. Context flow diagram shows input and outputs of the system. It shows all the external entities that interact with the system and how the data flows between these external entities and system.

View status

Regions

Customer

Registration

Feedback and report

Order placement

Bill view

Products

Admin

Dealers

Registration

Bill generates

Dealer

View order

* + 1. **Data Flow Diagram**

Data flow diagram shows the flow of data through system. Data flow diagrams also called the data flow graphs. It views a system as a function that transforms the inputs into desired outputs. It aims to capture the transformation that taken place within a system to the input data so that eventually the output data is produced.

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Name** | **Description** |
|  | Process | It performs transformation of data from one state to another. |
|  | Sink/Source | It represents the external entity that may be either source or sink. |
|  | Flow of data | It represents the flow of data from source to destination. |
|  | Data Source/Data storage | It is the place where data is stored. |

**Top level DFD**

Sell gross software

* 1. **Description of the components**
     1. **Login module**
        1. **Input**

User name and password

* + - 1. **Process**

Read details and validation

* + - 1. **Output**

Logged in and next page

* + - 1. **Interface with another functional components**

Independent

* + - 1. **Resource allocation**

Admin/Dealer/Customer table

* + - 1. **User interface**

Textboxes are provided to enter the username and password. If any new dealer/customer wants to register hyperlink is provided for registration in login page. Login button is provided to move to next page.

Admin/Dealer/Customer

User name

Read details

Password

Admin/Dealer/Customer

* + 1. **Admin module**

Admin

* + - 1. **Product Management**

Product Management

* + - * 1. **Add**

**Input**

Product Details

**Process**

Read details and basic Validation

**Output**

Store to database and show success message

**Interface with another component**

Independent

**Resource allocation**

Product table

**User Interface**

Textboxes are provided for entering product details. Add button is provided to add product. After add button he will see back/return button to back to administrative page.

Invalid

Admin

Read details

Valid

Products

* + - * 1. **Update**

**Input**

Product details- price, quantity

**Process**

Validate input

**Output**

Update database and show success message

**Interface with another components**

Independent

**Resource allocation**

Product table

**User interface**

Update button will be provided for update details. Textboxes are provided for updating price and quantity. Save button will helps to save details to database.

Message

Updated data

Admin

Product

Product selected

Display

Modified

Display

Load

* + - * 1. **Delete**

**Input**

Product Selection and click delete button

**Process**

Delete operation

**Output**

Selected product deleted and database will be updated

**Interface with another functional components**

Independent

**Resource allocation**

Product table

**User Interface**

Item list will be displayed in the form of list. To delete the product, delete button will be provided.

Admin

Product

Load

Delete Product

Display

Product selected

Generate message

Display

Deletion

* + - 1. **Region Management**

Region management

* + - * 1. **Add**

**Input**

Region details

**Process**

Validation

**Output**

Region will be added to database and success message

**Interface with another functional components**

Independent

**Resource allocation**

Region table

**User interface**

Textboxes are provided for adding region details. By clicking add button region will be added to table.

Admin

Invalid

Product

Details

Valid data

Region

* + - * 1. **Update**

**Input**

Read region details

**Process**

Update operation

**Output**

Updated to database

**Interface with another functional components**Independent

**Resource allocation**

Region table

**User interface**

Update button is used for update page. Textboxes are provided for entering details. Save button will be provided to update database.

Updated

Database

Admin

Region table

Load regions

Modified

Show message

Region selected

* + - * 1. **Delete**

**Input**

Region details

**Process**

Delete operation

**Output**

Region deleted and database updated

**Interface with another functional components**

Independent

**Resource allocation**

Region table

**User interface**

Region details will be displayed on the screen. Admin has to select the region and delete button will be provided for delete operation.

Database

Display

Delete

Operation

Details

Load

Admin

Region table

Updated

Success message

* + - 1. **Dealer Authorization**
         1. **Input**

Dealer details

* + - * 1. **Process**

Selection process

* + - * 1. **Output**

Update to dealer table

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Dealer table

* + - * 1. **User interface**

Radio buttons are provided for authorizing the dealers. Save button is used to save details.

Dealer details

Admin

Dealer details

* + - 1. **Dealer Allotment**
         1. **Input**

Dealer details and item order details

* + - * 1. **Process**

Allot dealer to customer

* + - * 1. **Output**

Dealer assigned to item orders

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Dealer table and item order table

* + - * 1. **User interface**

Allot button to allot dealer. Save button to save to data base

Admin

Item order

Dealer

Dealer id

Item order details

Item order details

Dealer id

Message

* + 1. **Dealer**

Dealer

* + - 1. **Registration**
         1. **Input**

Dealer details

* + - * 1. **Process**

Read and validate

* + - * 1. **Output**

Store to database

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Dealer table

* + - * 1. **User interface**

Registration link will be seen in login page. Textboxes are provided to enter details. Save button to save details. Back button to return home.

Valid data

Dealer

Dealer

Invalid

Customer details

Show message

* + - 1. **View orders**
         1. **Input**

Click on view order button

* + - * 1. **Process**

Retrieving order details

* + - * 1. **Output**

Orders will be displayed

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Item order table

* + - * 1. **User interface**

View order link will be provided. After clicking the link, it will show the item order details.

Item Oder

Dealer

Orders displayed

* + - 1. **View status**
         1. **Input**

Click on view status

* + - * 1. **Process**

Retrieving details

* + - * 1. **Output**

Status will be displayed

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Dealer details table

* + - * 1. **User interface**

View status link will be provided on the dealer page. After clicking the link, he can view his status.

Dealer

Dealer details

Load details

Display

* + - 1. **Bill generation**
         1. **Input**

Order details

* + - * 1. **Process**

Bill generation

* + - * 1. **Output**

Bill will be displayed

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Cart table, Item order table, Bill table.

* + - * 1. **User interface**

After clicking on generate bill button the bill will be generated and displayed on the screen.

Display

Generated bill

Dealer

Item order

Bill

Cart

* + 1. **Customer**

Customer

* + - 1. **Registration**
         1. **Input**

Customer details

* + - * 1. **Process**

Read and validate

* + - * 1. **Output**

Store to database

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Customer table

* + - * 1. **User interface**

Registration link will be seen in login page. Textboxes are provided to enter details. Save button to save details. Back button to return home

Valid data

Customer

Customer

Invalid

Customer details

Show message

* + - 1. **Order placement**
         1. **Input**

Click on add to cart.

* + - * 1. **Process**

Process the input

* + - * 1. **Output**

Order will be placed

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Item order table

* + - * 1. **User interface**

Item details will be displayed on the screen. For selecting quantity plus/minus button will be provided. Add to cart button will be provided to place order.

Place order

Cart

Customer

Retrieving all products.

Generating Order ID and order approval

Inserting order Details

Order

* + - 1. **Feedback and report**
         1. **Input**

Entered feedback and report, click on submit button.

* + - * 1. **Process**

Process the feedback

* + - * 1. **Output**

Feedback/report will be saved

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Feedback and report table

* + - * 1. **User interface**

Textbox will be provided for entering feedback/report. Dealer details will be displayed in the dropdown list. Submit button will helps to store the details.

Load

Dealer selection

Dealer

Customer

Message

Feedback and report

* + - 1. **View bill**
         1. **Input**

Click on view bill

* + - * 1. **Process**

Bill generation

* + - * 1. **Output**

Display bill

* + - * 1. **Interface with another functional components**

Independent

* + - * 1. **Resource allocation**

Bill table.

* + - * 1. **User interface**

View bill button will be provided for bill view. Bill will be displayed on the screen.

Bill

Customer

View Bill

Bill Display