



Faculty of Science and Technology
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Term Project – Feature Suite & ERD

Due Date:

Sunday, November 10, 2024

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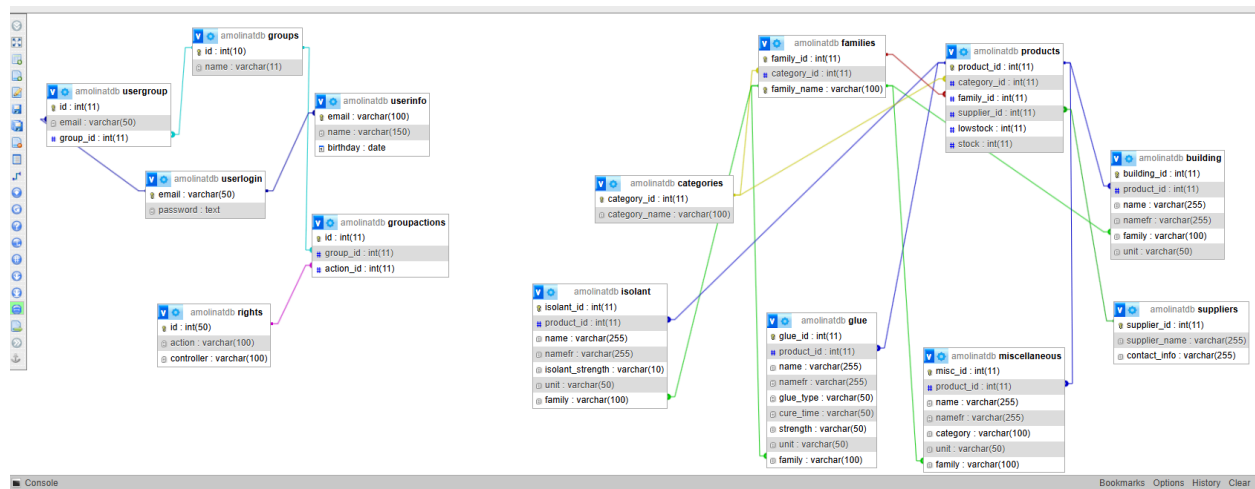
Assignment

In a WORD document, provide the ERD and Feature suite for your term project. Include any and all diagrams, as well as the explanations for these diagrams.

Also, add a list of all features that will be included in the project, as well as the description and rights for each feature.

ERD

Here is the ERD for our project:



Our database has 14 tables. The tables on the left exist to define users and their rights, while the tables on the right are for products.

USER RIGHTS TABLES

User information (i.e., email, name, birthday) is defined in the **userinfo** table whose primary key is **email**.

The **userlogin** table references the **userinfo** table using the foreign key **email**. This table also has a password field. The **userlogin** table contains all users' login information. Their personal information is stored elsewhere, in the **userinfo** table.

This is so if the application is ever compromised, the user's information will not immediately be taken.

The **groups** table defines all groups a user can belong to (Admin, Super Admin).

The **usergroup** table references the **userlogin** table and **groups** table using the foreign keys *email*, and *group_id* respectively. This table defines which group a user belongs to, either the Super Admin group or Admin group.

The **rights** table contains all actions as well as the controller (inventory, employee, calculator) that action belongs to. For example, the 'calculate' action can only be done in the 'Calculator' page.

The **groupactions** table contains which actions members of either group can execute. For example, both Admins and Super Admins can calculate using the Calculator, but only Super Admins can delete a product from the Inventory. This table references the **rights** table and **groups** table using the foreign key *action_id*, and *group_id* respectively.

PRODUCT TABLES

Products are separated into tables depending on their category: **building**, **glue**, **isolant** (insulation), and **miscellaneous**.

All categories are defined in the **categories** table.

Each item in every product category table (**building**, **glue**, **isolant**, and **miscellaneous**) also has a *family*. The family refers to the form the product comes in (i.e., plank, lumber, liquid, tape, spray, and physical). Each product category table references the field *family_name* from the families table. This is so each item in the table may have a defined family.

All families are defined in the **families** table. The **families** table references the foreign key *category_id* from the **categories** table. This is because certain categories already have specific families, or forms they can come in. For example, an adhesive cannot come in the form of a plank.

The **suppliers** table defines all suppliers of products (i.e., Home Depot, Rona, etc.)

Products from different categories are assembled into the **products** table using the foreign key *product_id* in their respective tables. The **products** table also references the **categories** table, **families** table, and **suppliers** table using the foreign keys *category_id*, *family_id*, and *supplier_id* respectively.

Feature Suite

Our project has four (4) feature suites: the Inventory Management Suite, the Employee Management Suite, the Calculator Suite, as well as the Access Suite. Below you will find a description of all of the feature suites in our project:

(**NOTE:** The application has two types of users: Super Admins (SA) and Admins (A). Certain features are only available to Super Admins.)

The **Inventory Management Suite** includes features for cataloging products, filtering the products catalog, searching for specific products, viewing products that are low in stock, updating stock, updating existing product information, adding new products and removing products.

- **View all products** [SA - A]

Users can view all products in the inventory. Products are displayed in a table with their name, category, family, unit of measurement (i.e., tubes, boxes, bags), supplier, low stock alert amount and current stock.

- **Filter products** [SA - A]

Users can filter through all products by family type (i.e., glue, insulation, building, miscellaneous). The table will display additional information based on which family type is selected. The glues will display two (2) additional columns for cure time and strength. Insulation will have an additional column to display the insulation's strength value.

- ***Search for a product*** [SA - A]

Users can search for a specific product by name.

- ***View products that are low in stock*** [SA - A]

Products that are low in stock will be displayed in a separate table for low stock items, in addition to being shown in the main product catalog.

- ***Update stock*** [SA]

Users can update the stock amount of products in the inventory. Multiple products' stock may be updated at a time.

- ***Modify existing product information*** [SA]

Users can modify the existing information of products in the inventory (i.e., name in English, name in French, category, family, unit of measurement, supplier, low stock alert amount, and current stock). Only one product's information may be modified at a time.

- ***Add a new product*** [SA]

Users can add new products to the inventory. The user must provide a name for the product in French, as well as the initial product stock, a low stock value, the unit of measurement, a product category and family, and the supplier which stocks the product when adding a product or modifying a product's information. An English name for the product can also be provided, however this is optional.

Glues must also have a cure time and strength provided.

Insulation must also have an insulation strength value provided. Only one product may be added at a time.

- ***Remove products*** [SA]

Users can remove products from the inventory. Multiple products can be removed at a time.

Admins may only view the product catalog, search for specific products, view products that are low in stock, and filter through the product catalog, whereas Super Admins have access to all features in this suite.

The **Employee Management Suite** includes features for cataloging employees, searching for specific employees, updating existing employees' information, adding new employees and removing employees.

- ***View all employees*** [SA]

Users can view all registered employees. Employees are displayed in a table with their name, e-mail, birthdate, and admin type.

- ***Search for an employee*** [SA]

Users can search for a specific employee by name.

- ***Modify existing employee information*** [SA]

Users can modify the existing information of employees (i.e., name, e-mail, birthdate, and admin type (i.e., Admin or Super Admin)). Only one employee's information may be modified at a time.

- ***Add a new employee*** [SA]

Users can register new employees, so that they may have access to the application. The user must provide the name, e-mail, birthdate and specify an admin type for the

employee in question (i.e., Admin or Super Admin). Additionally, a default password will be randomly generated, so that the newly-added employee may access the application. The user can change their default password using the “Forgot my Password” feature in the Access Suite. Only one employee may be added at a time.

- ***Remove employees***

[SA]

Users can remove employees in case of termination. Multiple employees can be removed at a time.

Super Admins have access to all features in this suite. Admins do not have access to this suite.

The **Calculator Suite** includes a feature for calculating both the amount of a specific type of lumber and the amount of insulation that the user will need to construct a wall. Additionally, the user will be able to view which lumber and insulation products are currently in their inventory.

- ***Calculate the amount of lumber and insulation needed to construct a wall***

[SA - A]

Users can calculate the amount of lumber and insulation needed to construct a wall. The length, height and thickness of the wall as well as the spacing between the lumbers have to be provided for the calculation.

- ***View lumber and insulation products in inventory***

[SA - A]

Lumber and insulation products currently in the inventory will be displayed in order for the user to see if the required lumber or insulation is present in the inventory.

Both Super Admins and Admins have access to this suite and its calculation feature.

The **Access Suite** includes features for logging into the application as either a Super Admin or Admin, 2-factor authentication, resetting your password and logging out of the application.

- ***Log in*** [SA - A]

To log in, the user must enter their email and password on the login screen.

- ***2-Factor Authentication*** [SA - A]

The 2-factor authentication will send a code to the user's email which they must enter into the application to gain access to it.

- ***Forgot my Password*** [SA - A]

When resetting their password, the user must select "Forgot my Password" and enter their email. A code will be sent to their email which they can click to reset their account's password. After resetting their password, the user must log in using their new password.

Both Super Admins and Admins have access to this suite and its features.

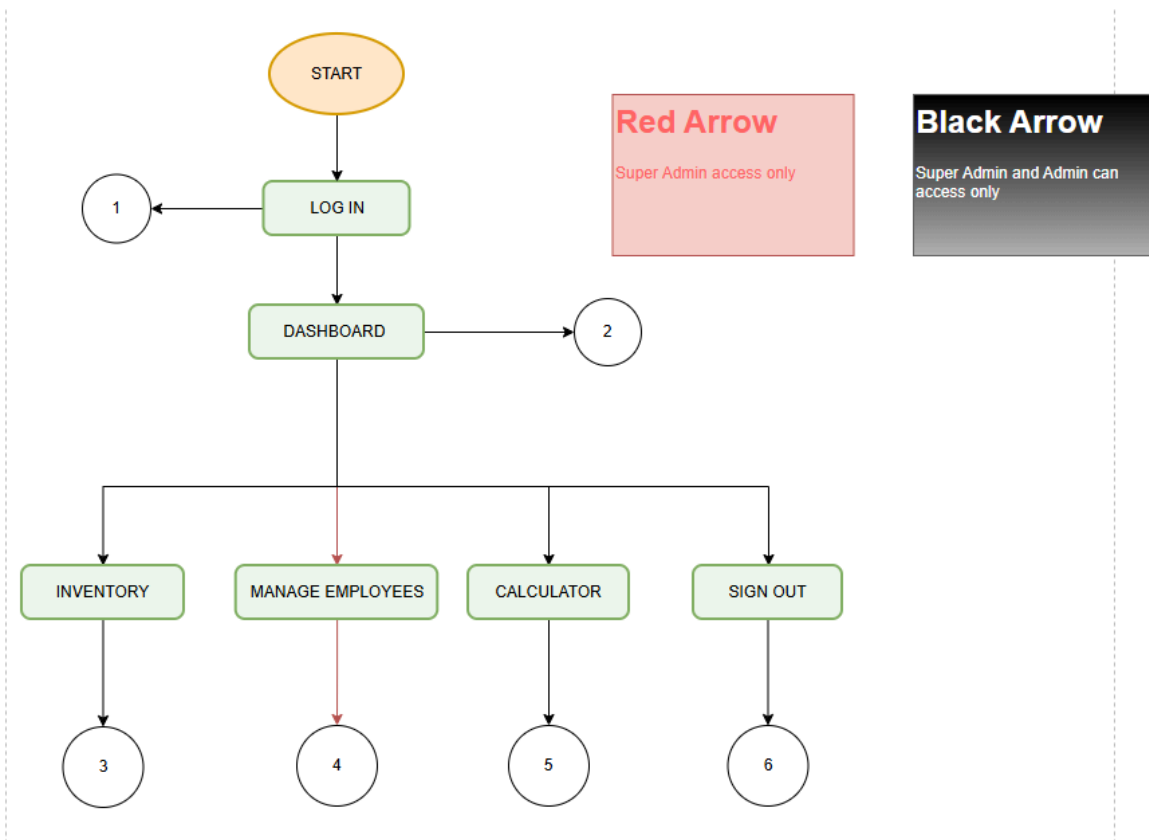
Other Diagrams

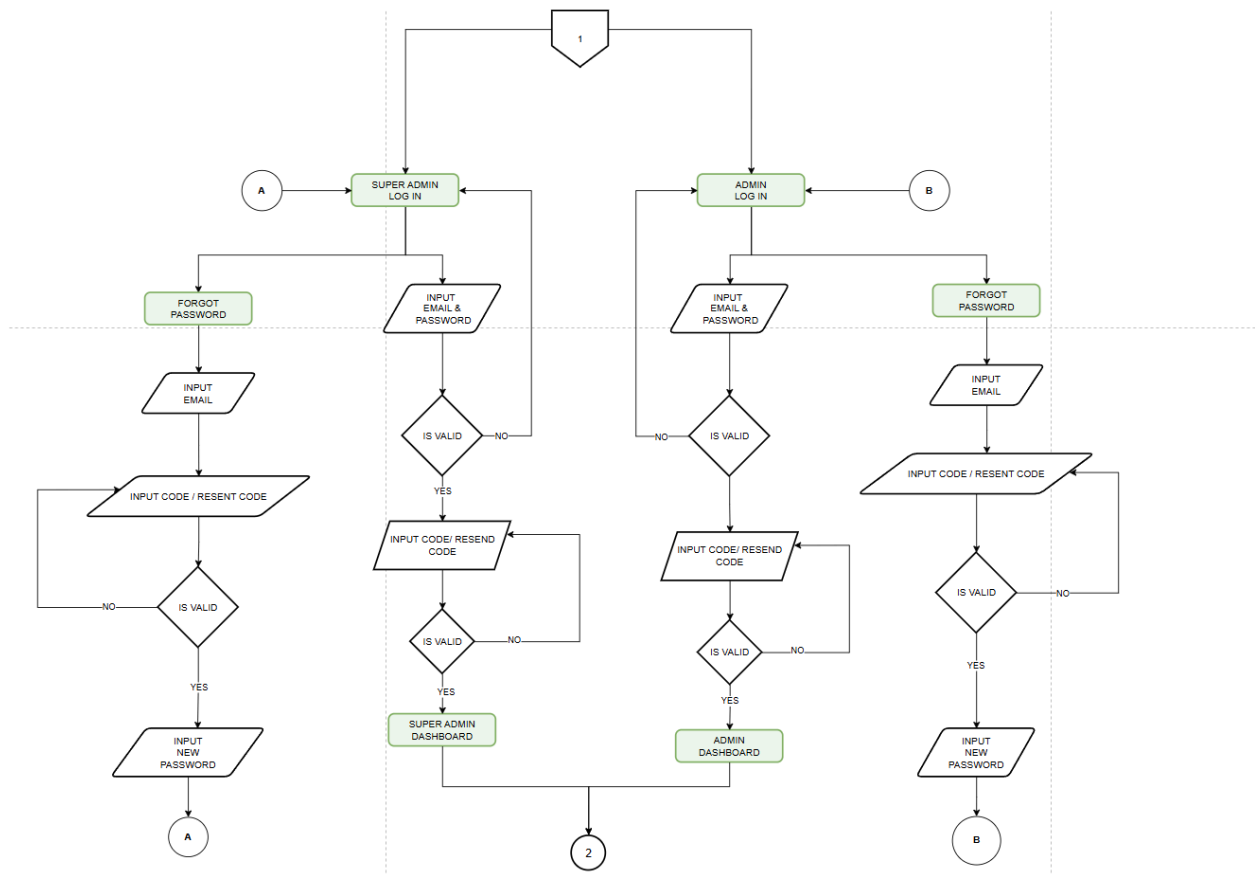
–FLOWCHART

The first flowchart shows the overall general view of how our website would work.

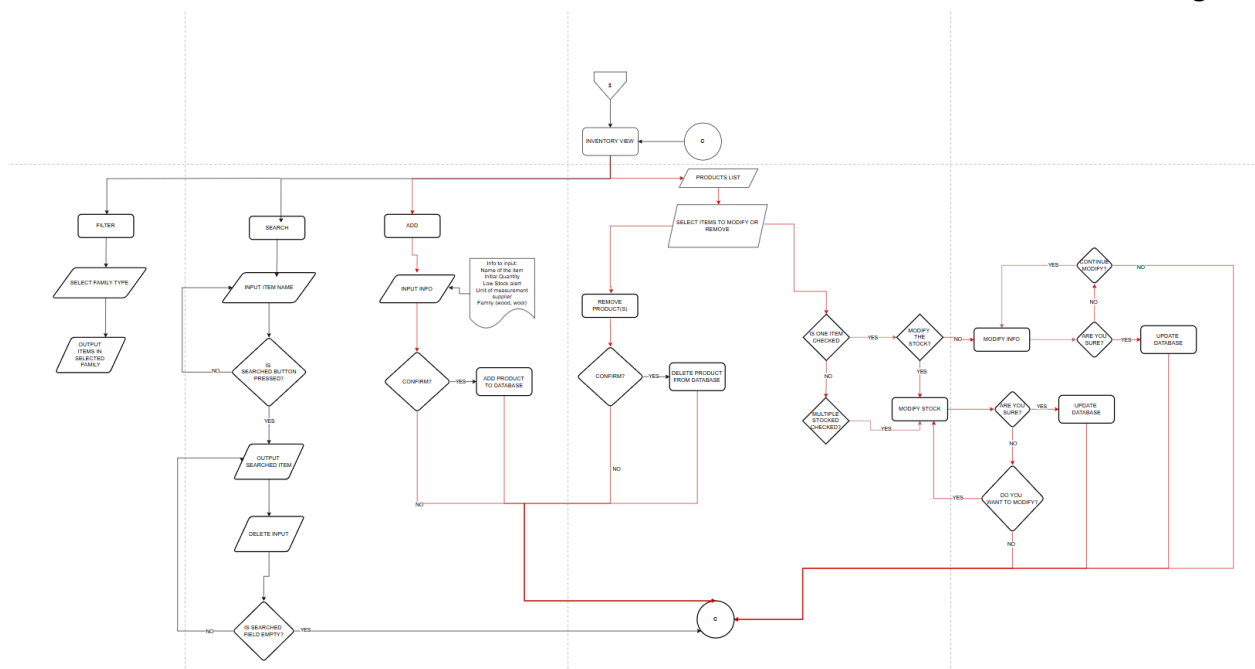
The second flowchart illustrates how the user goes through the login and its process. When the login is successful, the user can access the application. They will be met with multiple tabs, one of which (Manage Employees) can only be accessed by Super Admins. Super Admins and Admins can choose whether to sign out, manage the inventory and use the calculator. Only Super Admins can choose to manage employees.

Each of the aforementioned processes is illustrated by the Inventory, Employee, and Calculator/Sign Out flowcharts.

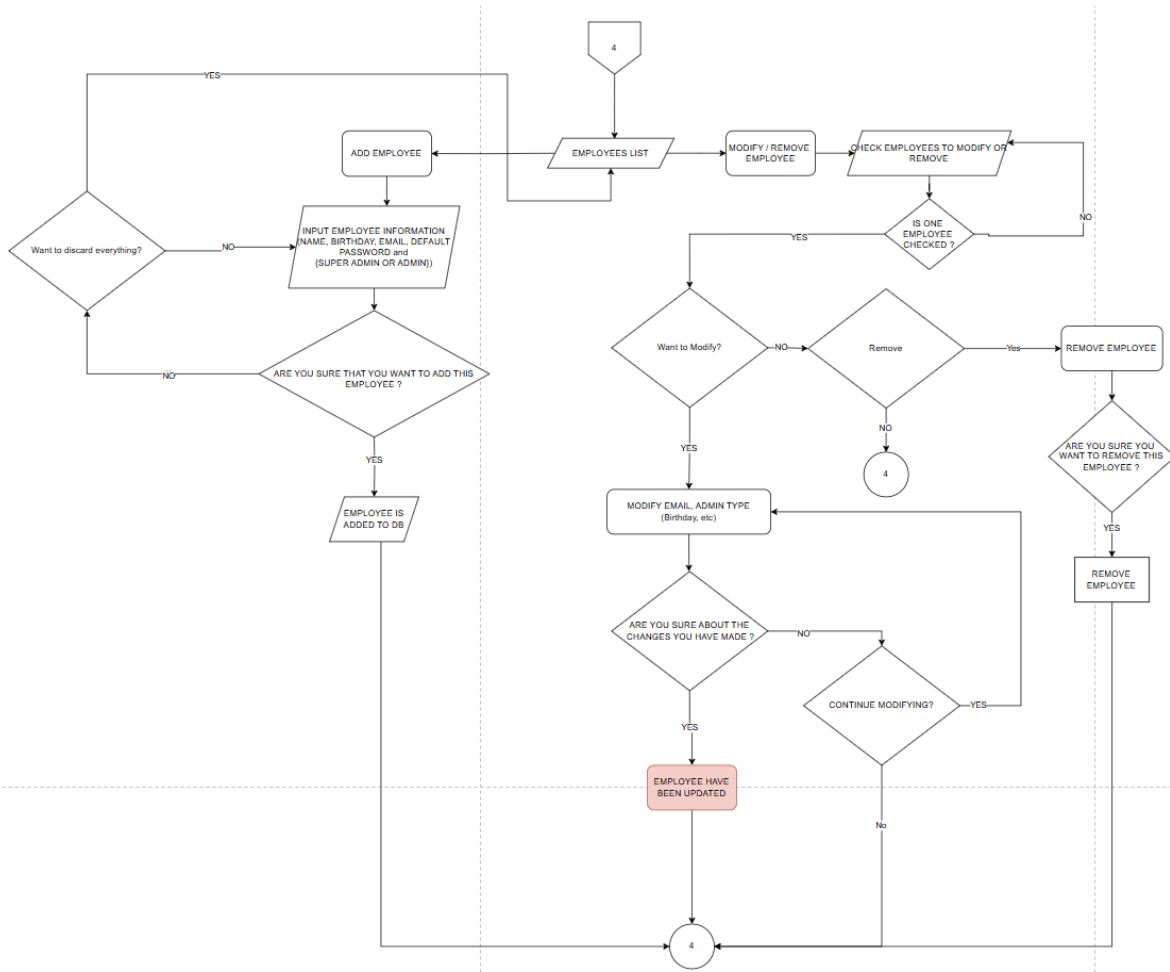




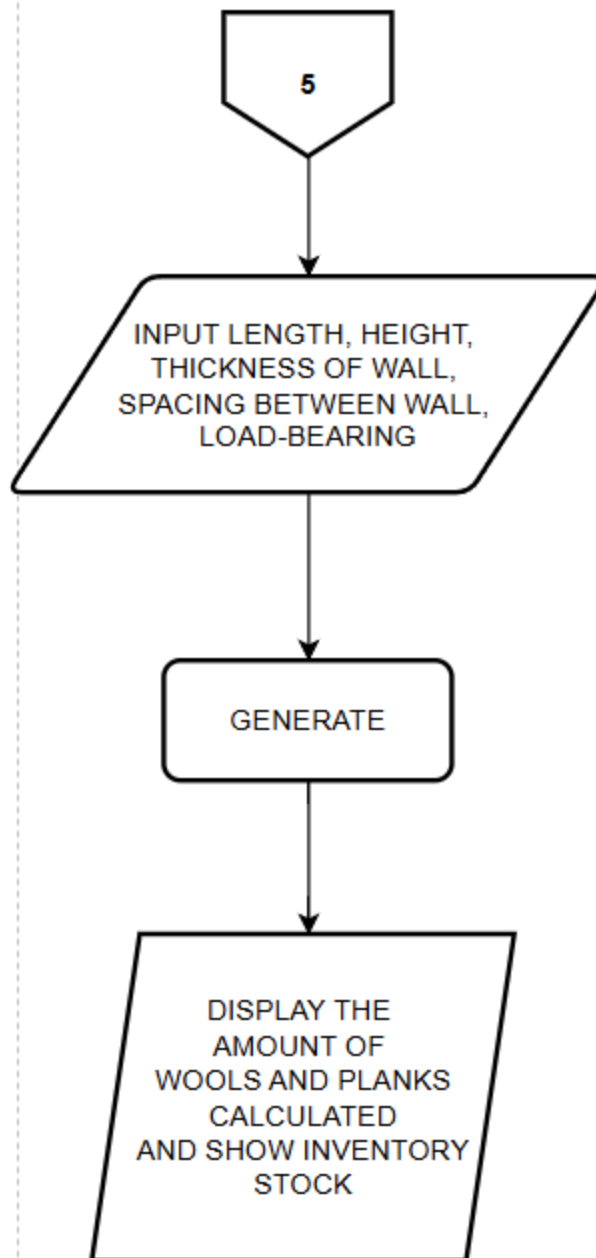
Login



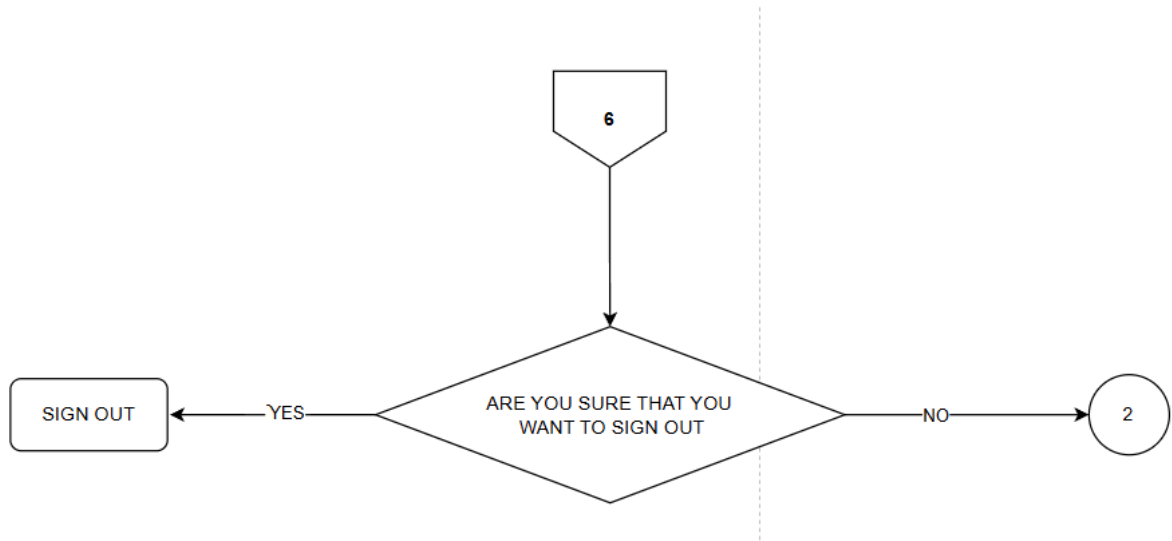
Inventory



Manage Employees



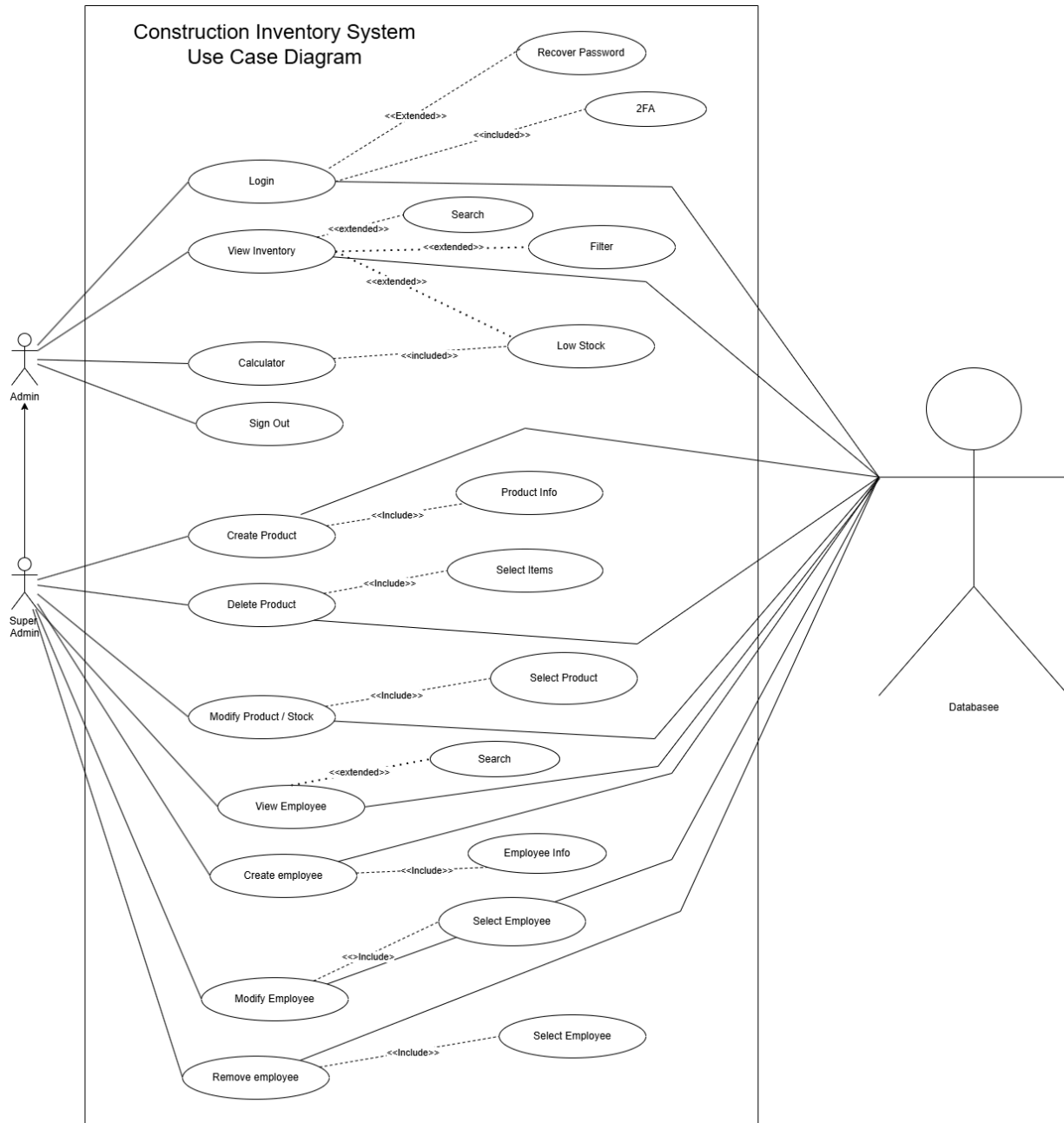
Calculator



***Sign
Out***

–USE CASE

The use case diagram depicts the possible interactions between the admin or super admin and the system. In simpler terms, it shows what the user can do with the system.



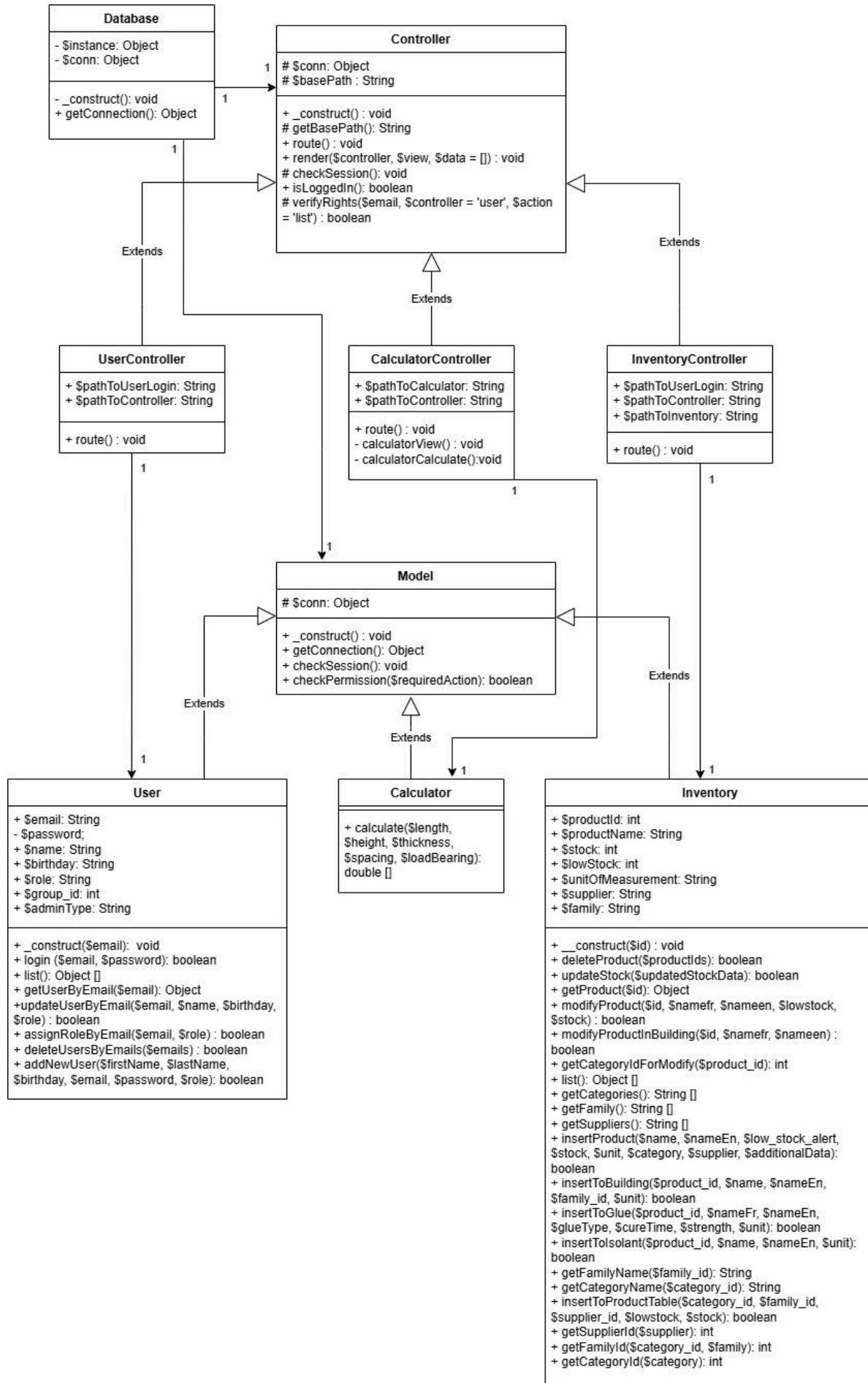
–UML CLASS DIAGRAM

The UML class diagram shows the classes that will make up our system as well as the relationships between them. We structured our application using the MVC structure.

Thus, we have three (3) Controller classes which extend the parent Controller class: UserController, CalculatorController, and InventoryController.

Additionally, there are three (3) Model controller classes which extend the parent Model class: User, Calculator and Inventory.

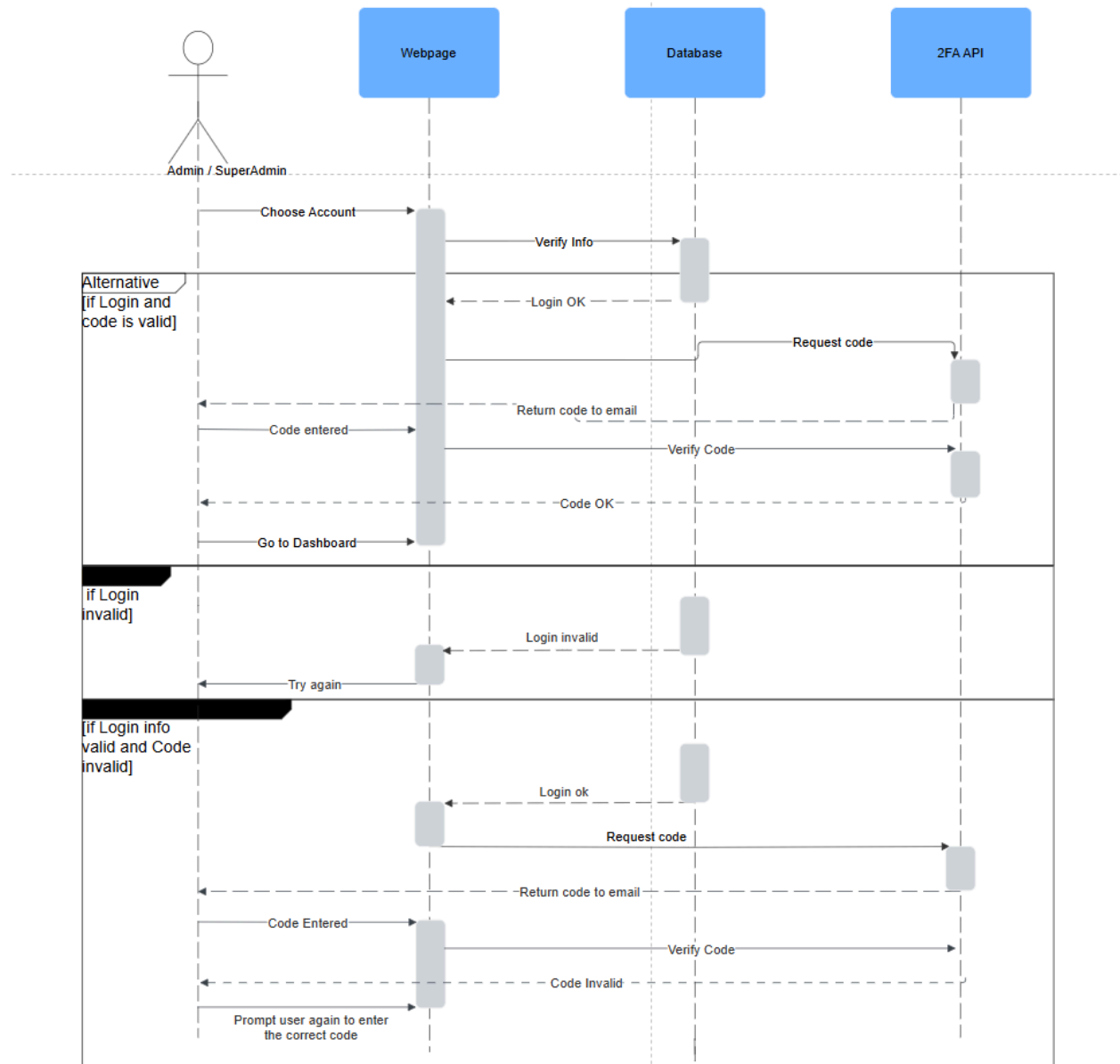
Lastly, the Database class creates a connection to the database, and is referenced by the parent Controller and parent Model classes.



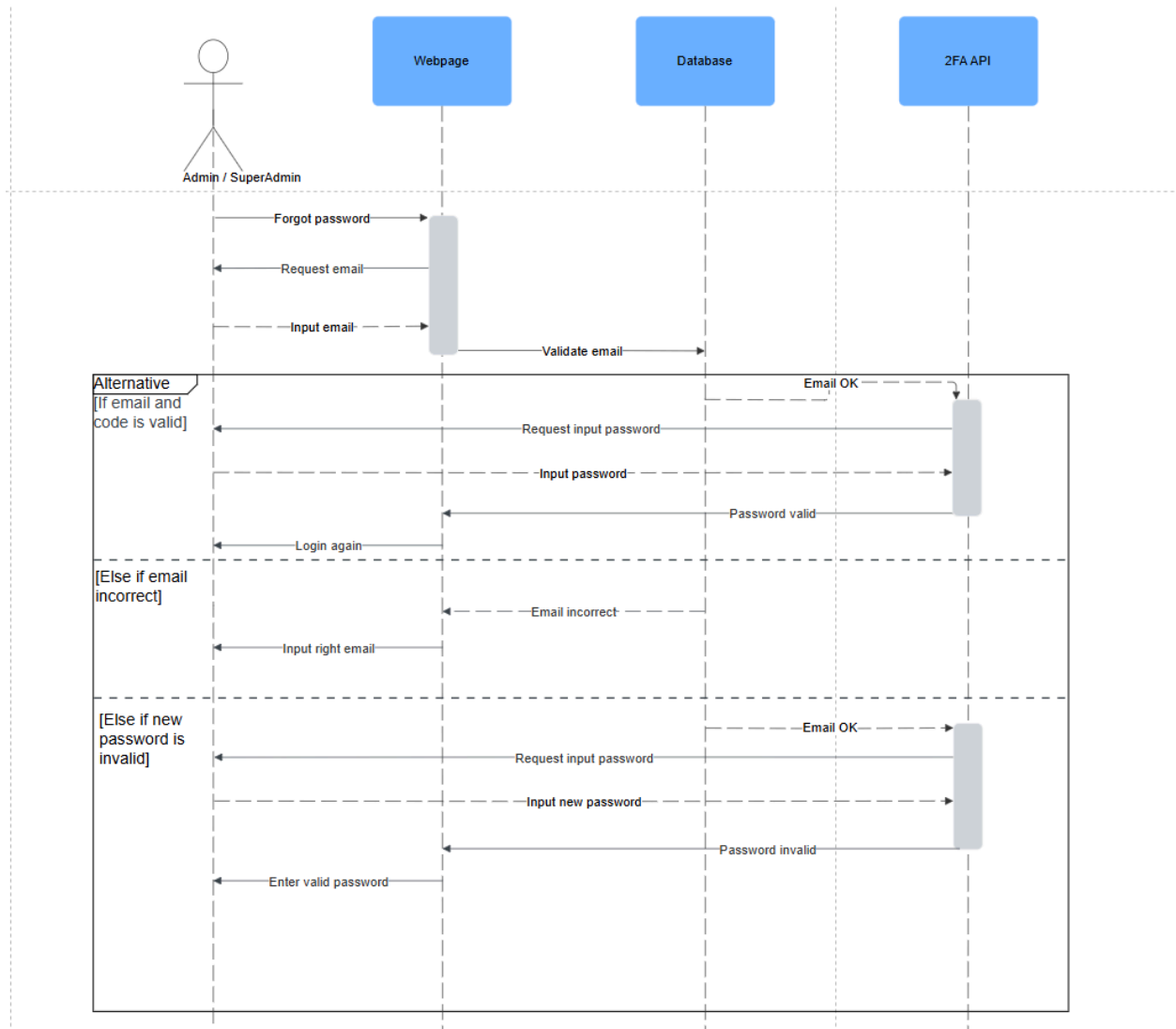
—SEQUENCE DIAGRAMS

The sequence diagrams depict the sequence in which objects in our system will interact and how messages will be sent between them.

—1. LOGIN



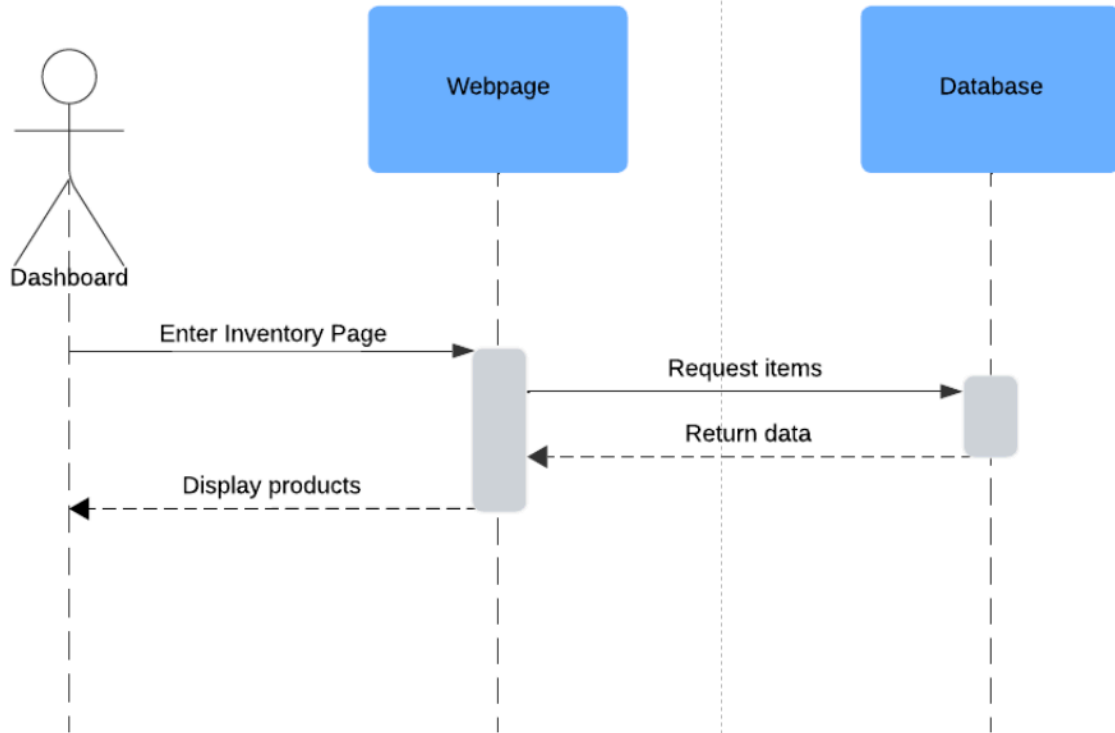
Login



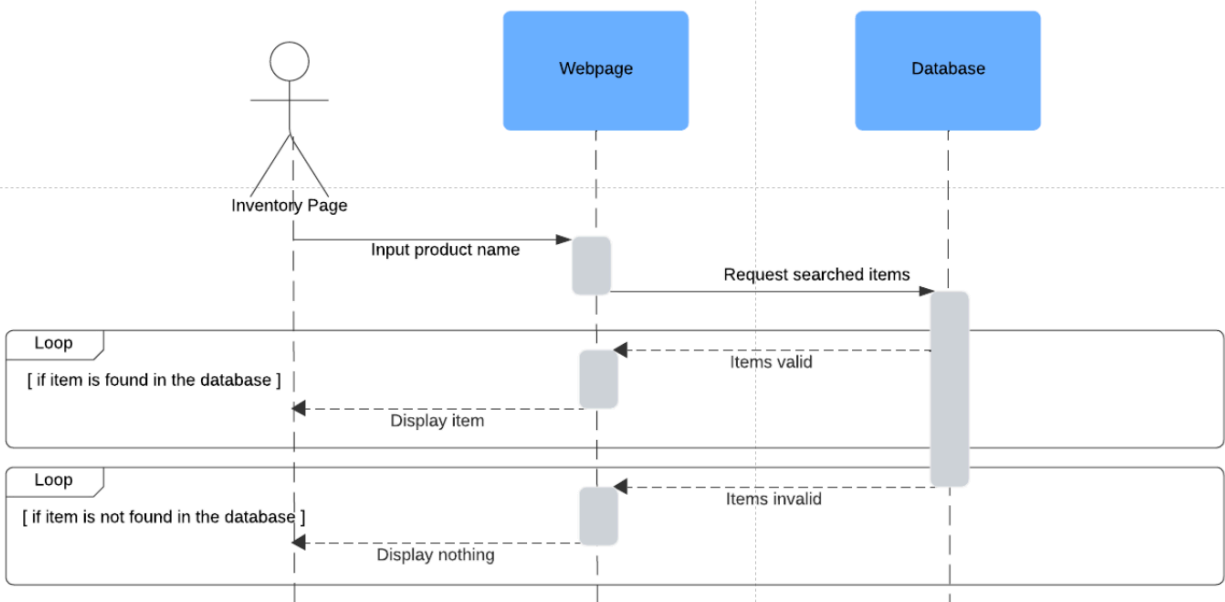
***Forgot my
Password***

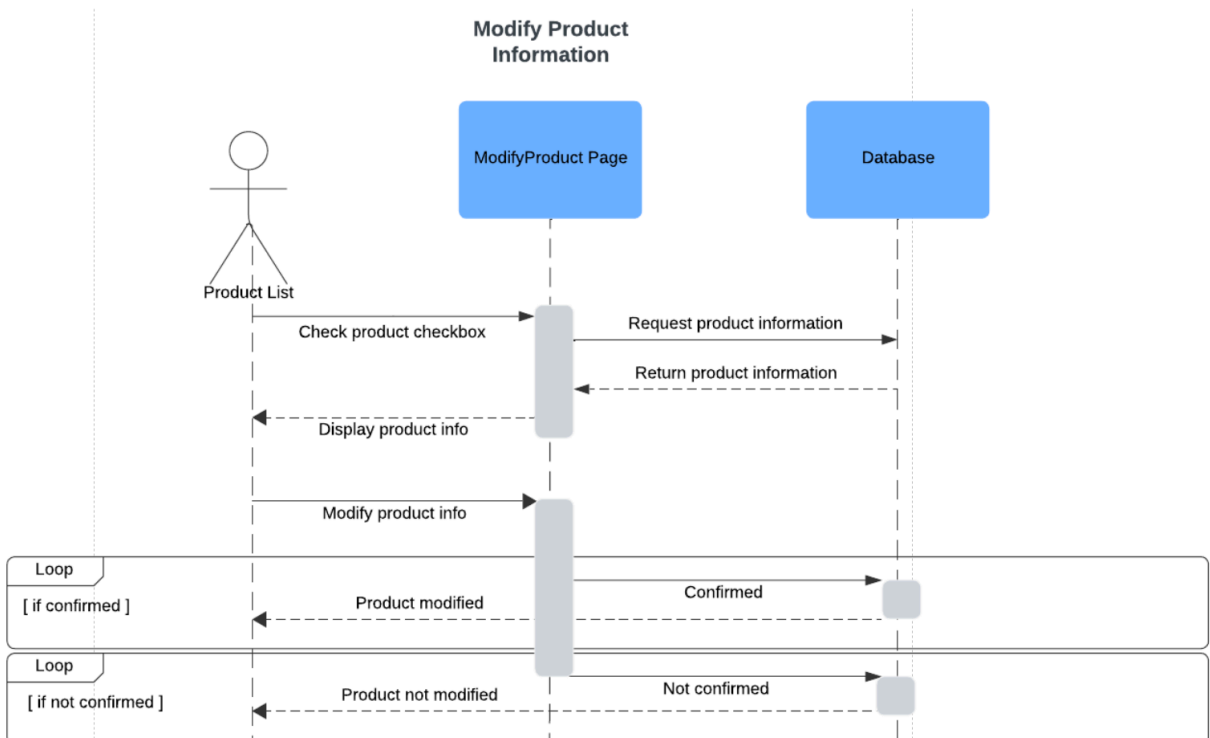
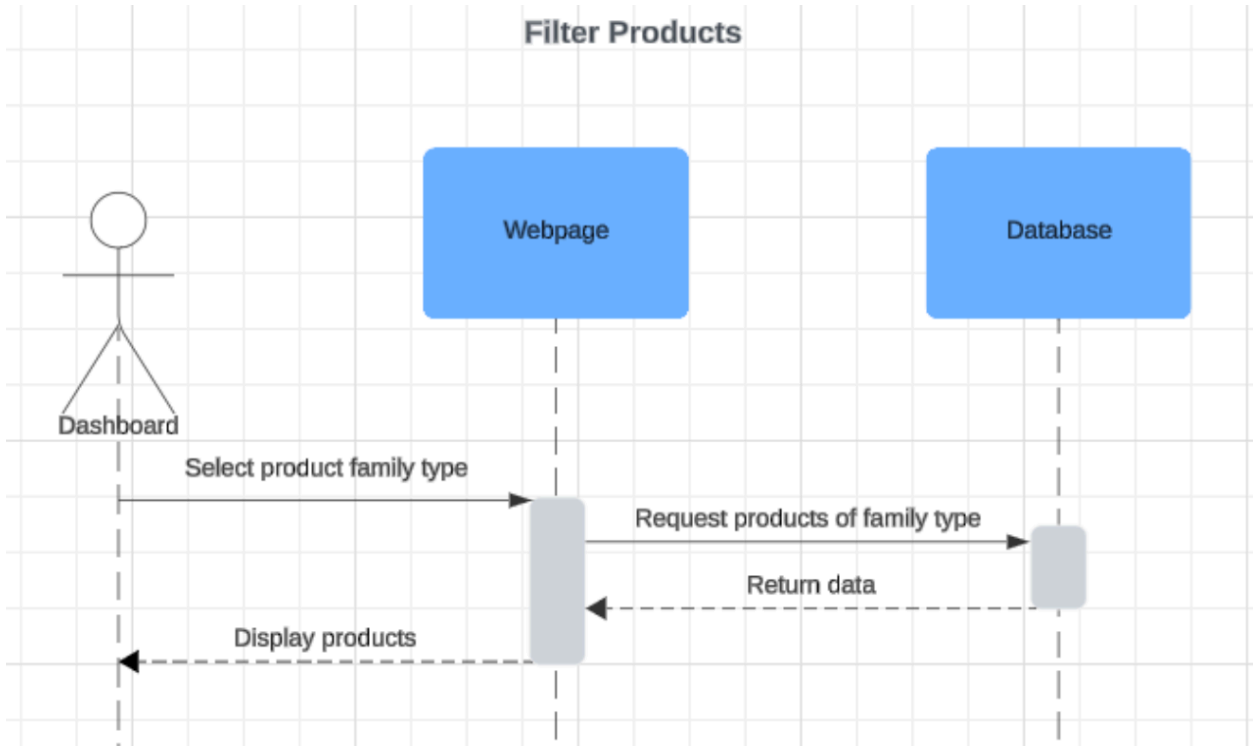
—3. INVENTORY

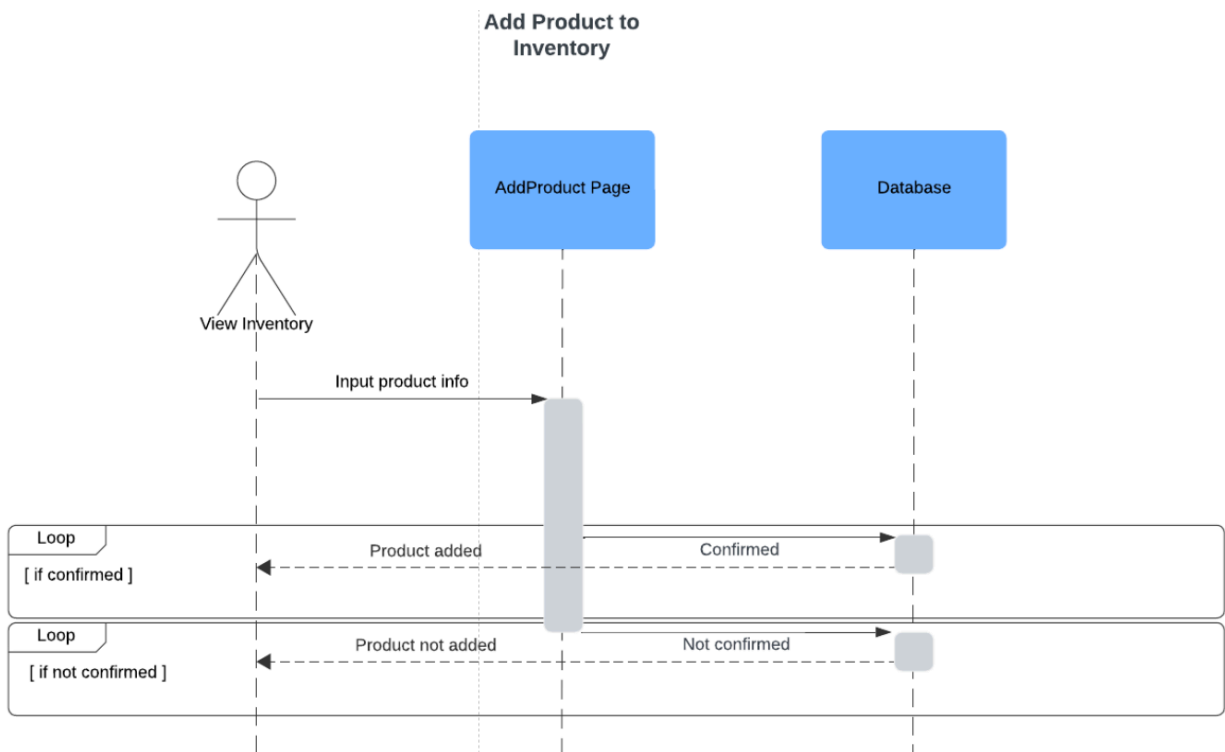
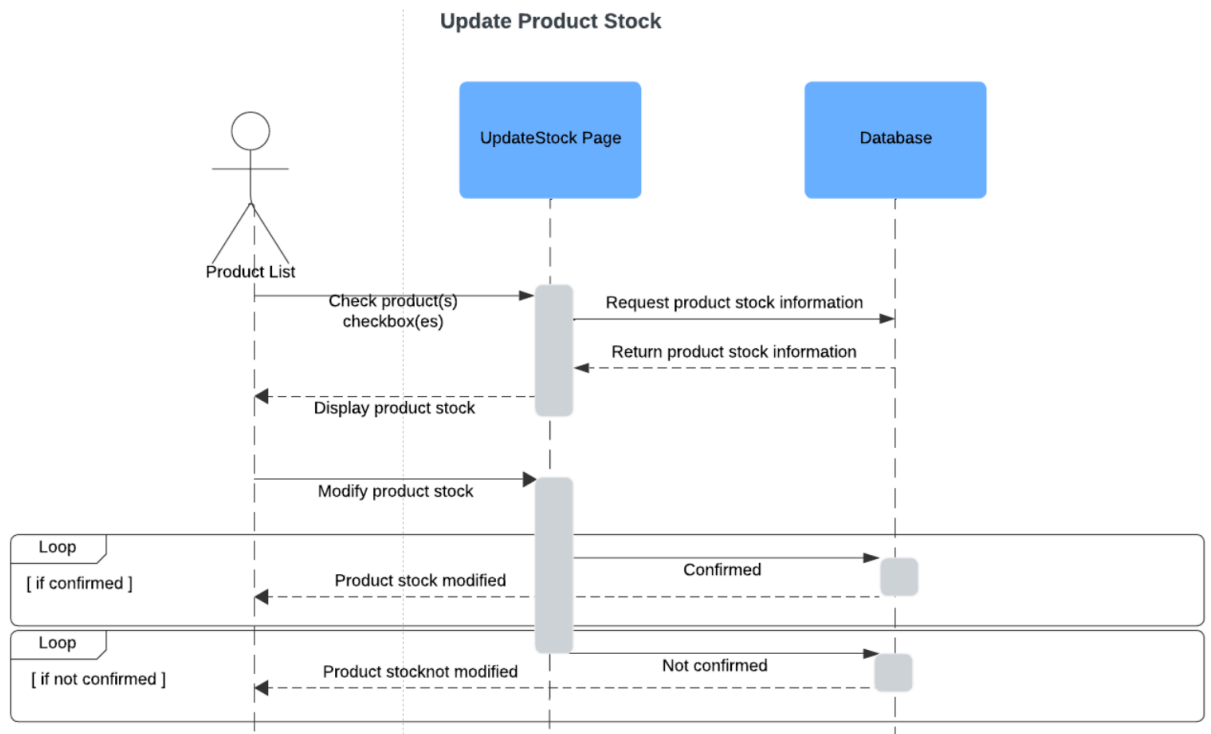
View Products



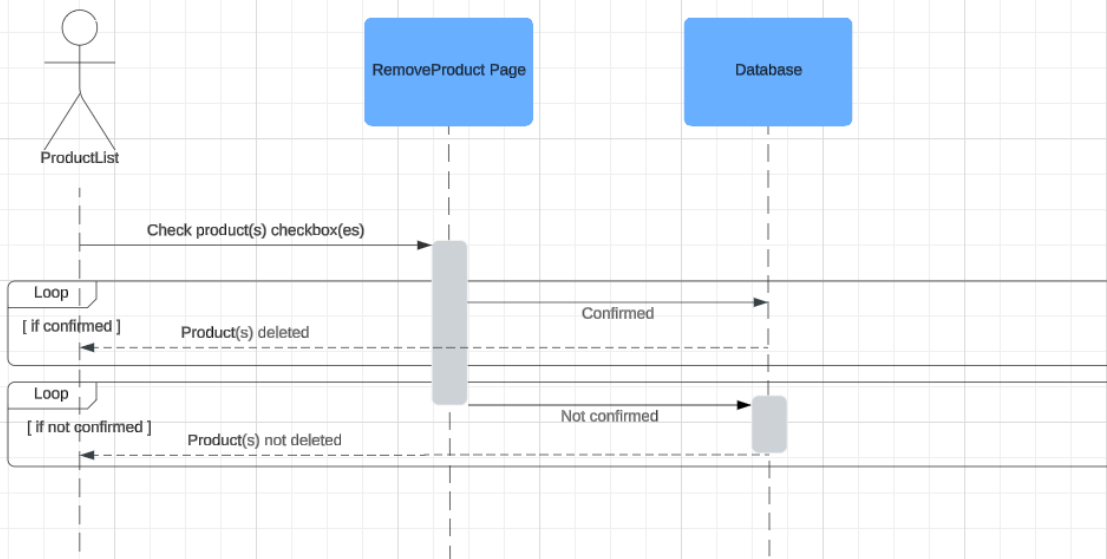
Search for Products





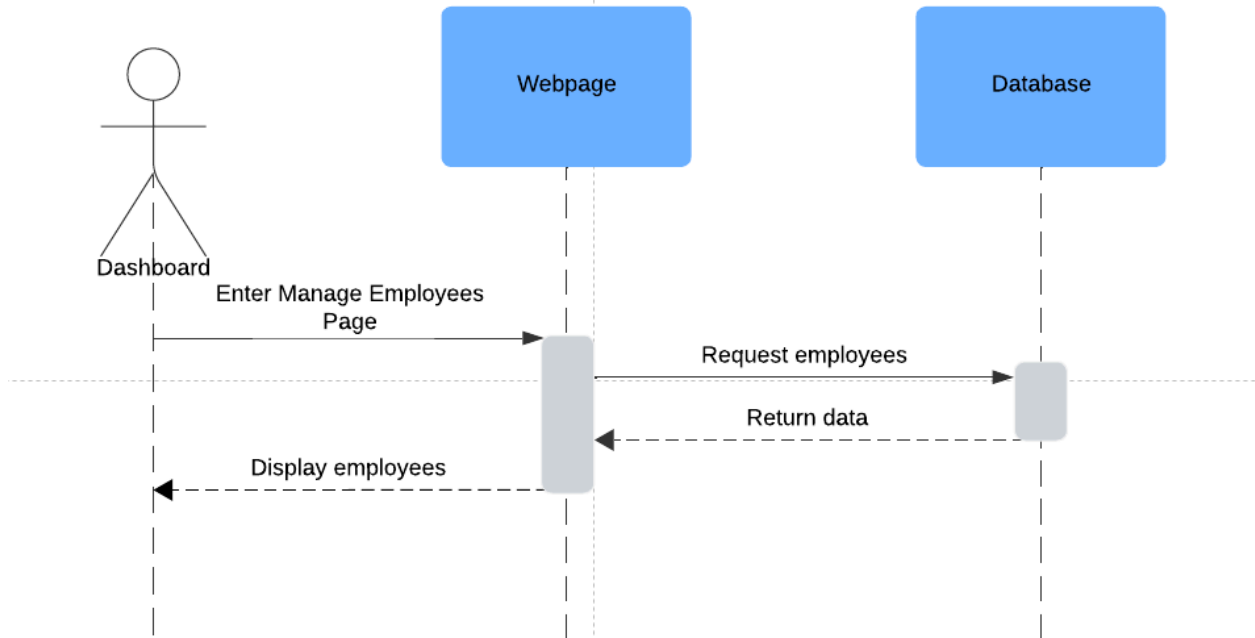


Remove Product(s)

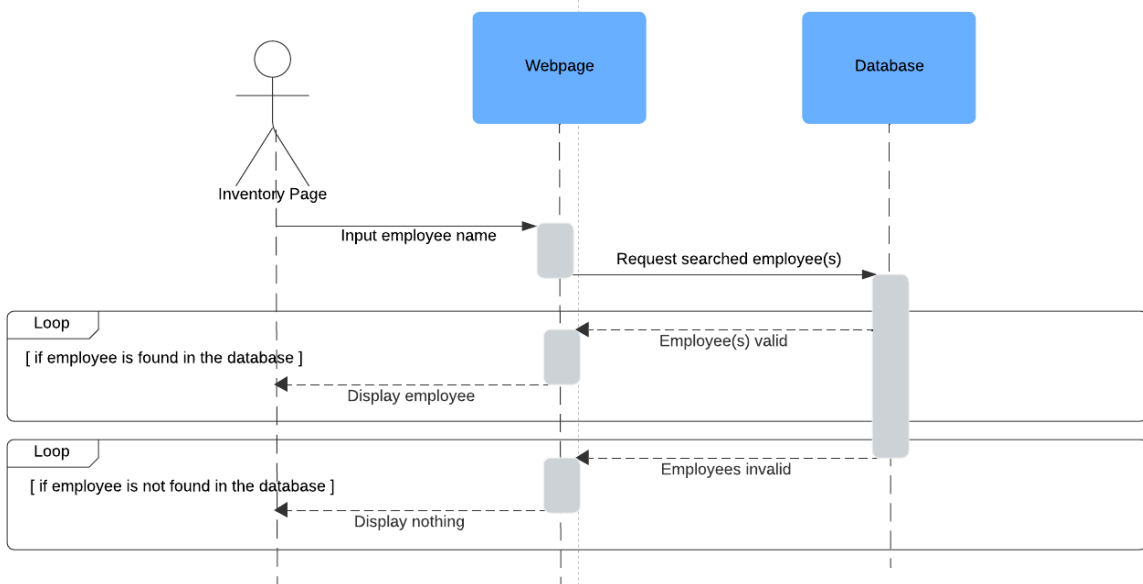


—4. MANAGE EMPLOYEES

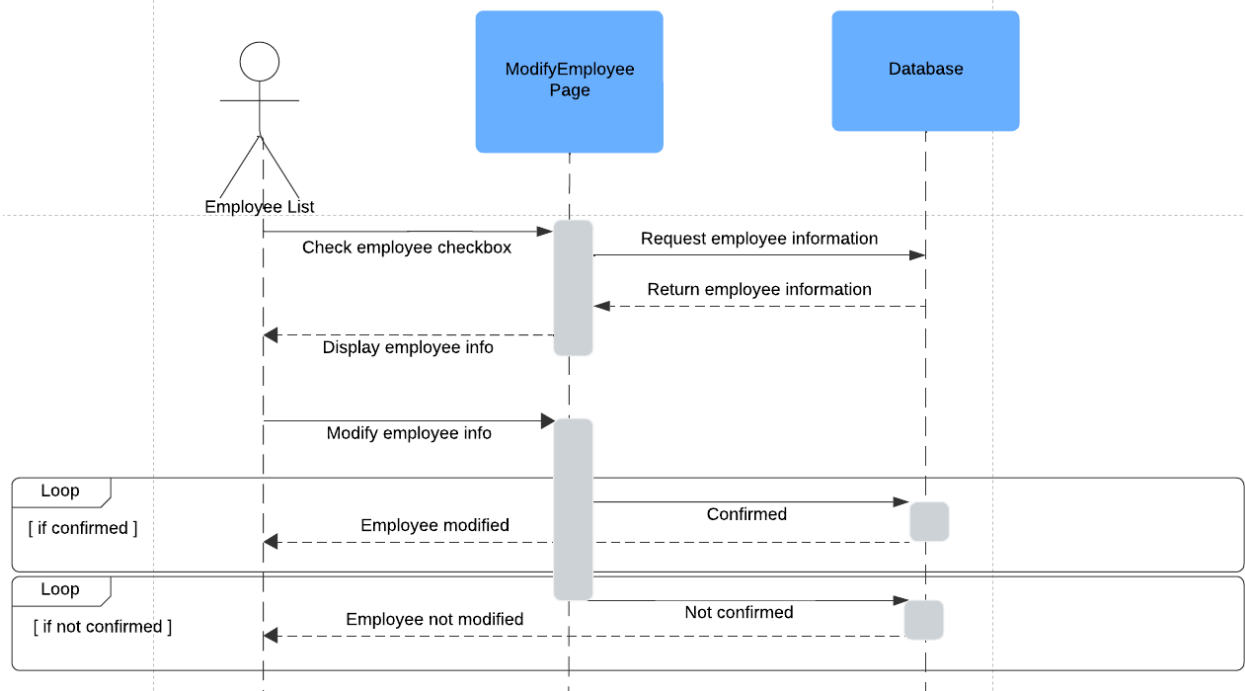
View Employees



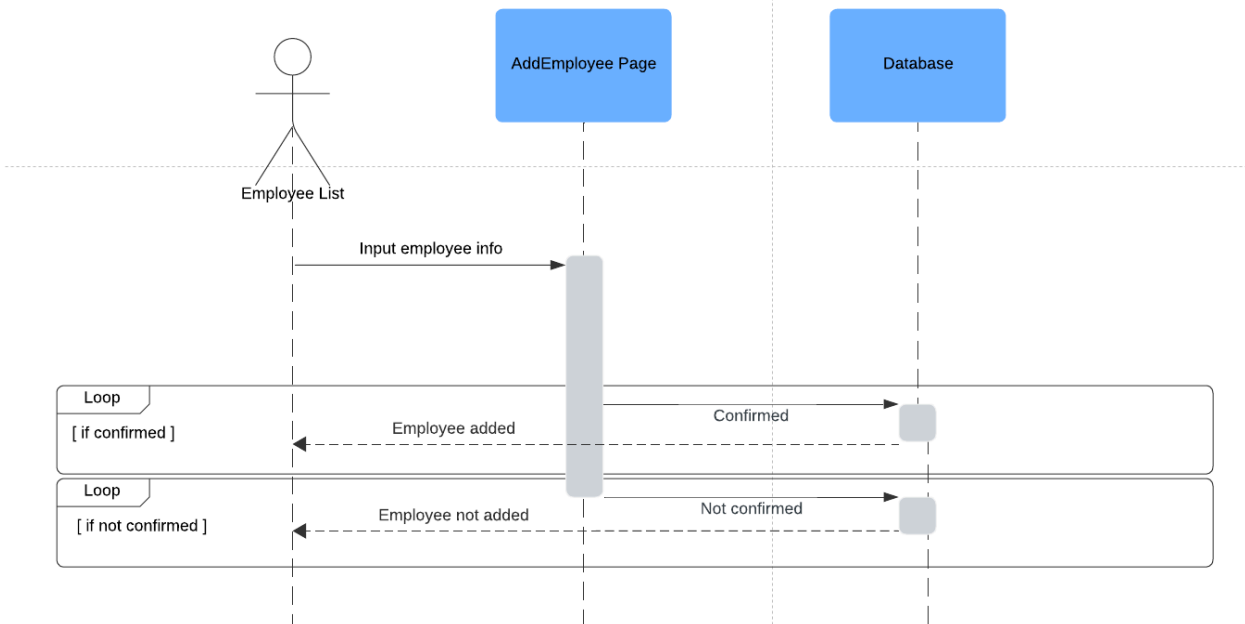
Search for Employees



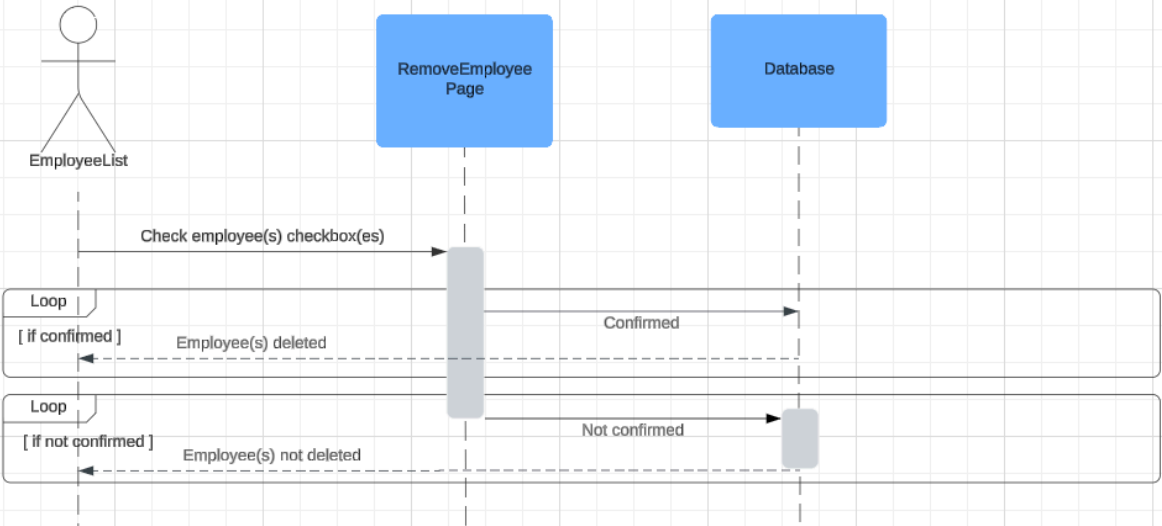
Modify Employee Information



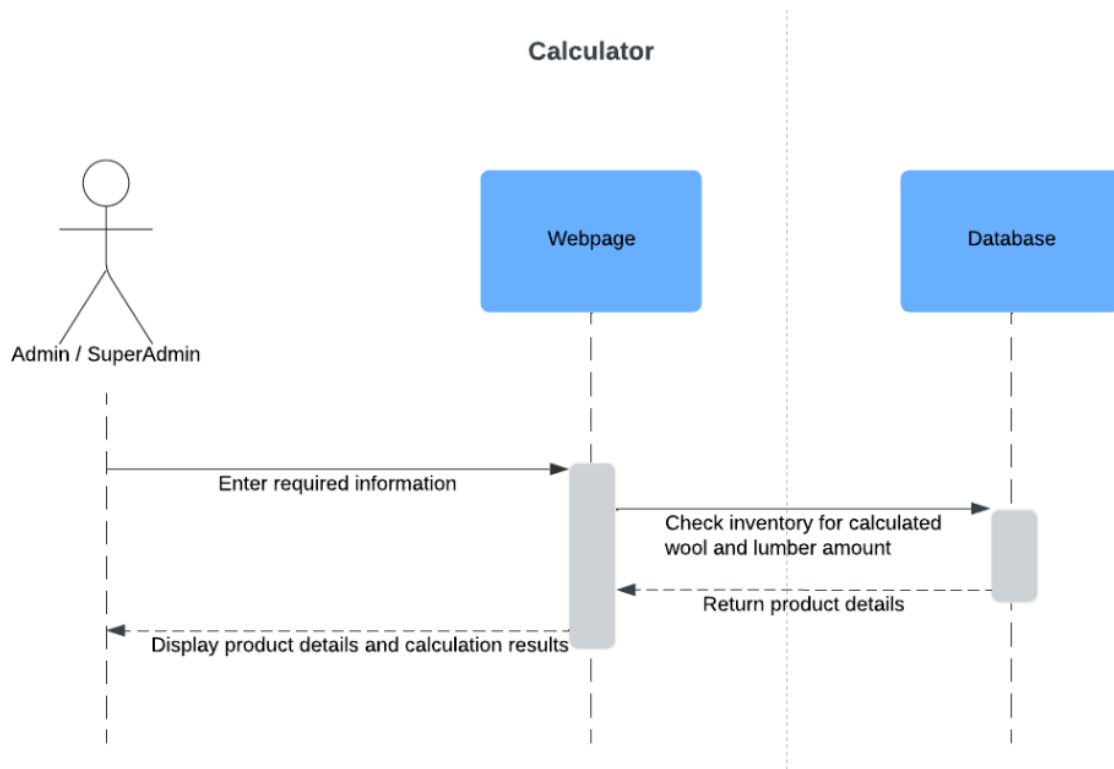
Add Employee



Remove Employee(s)



—5. CALCULATOR



—6.SIGN OUT

