



FACTORY MANAGEMENT SYSTEM

Muhammad Samama Khan
Muhammad Yusha
Syed Baqir Ali Shah



SEPTEMBER 1, 2020
AL-KHALEEJ PLASTIC
3-B, Industrial Estate, Hayatabad, Peshawar

Factory Management System

AIM: To bring ease and automation in managing business

REQUIREMENTS:

Hardware Interfaces

- Mobile
- PC's

Software Interfaces

- Any operating system

THEORY:

The purpose of this project is to help the administrating personal and other personal that are working in the factory by providing them a software, a digital way of doing their task and replace the currently used paper-based system with this digital system.

Conclusion: The problem statement was written successfully by following the steps described above.

SOFTWARE REQUIREMENTS SPECIFICATION

FMS

Version 1.0

March 1, 2020

A FACTORY MANAGEMENT SYSTEM

Table of Contents

1. Introduction

- 1.1 Purpose*
- 1.2 Scope*
- 1.3 References*
- 1.4 Overview*

2. The Overall Description

- 2.1 Product Perspective*
- 2.2 Product Functions*
- 2.3 User Characteristics*

3. External interface Requirements

- 3.1 User Interfaces*
- 3.2 Hardware Interfaces*
- 3.3 Software Interfaces*
- 3.4 Communications Interfaces*

4. System Features

5. Other Non-Functional Requirements

- 5.1 Performance Requirements*
 - 5.1.1 Capacity*
 - 5.1.2 Dynamic Requirements*
 - 5.1.3 Quality*
- 5.2 Software System Attributes*
 - 5.2.1 Reliability*
 - 5.2.2 Availability*
 - 5.2.3 Security*
 - 5.2.4 Maintainability*

1. Introduction

The software **THE MANAGER™** version 1.0 is to be developed for a Factory. The Factory is a small Industry where specific products are made and then sold to whole sale dealers. **THE MANAGER™** would provide the whole sale dealers an automated ordering environment, while to the factory administrator's it would provide ease in managing and overlooking the production of the product, and to the staff it would provide an overview of the services they have provided. Through **THE MANAGER™** factory administrators, staff and whole sale dealers interact with a user-friendly interface that enables them to overlook their part in the production and selling of the product.

1.1 Purpose

This SRS defines External Interface, Performance and Software System Attributes requirements of **THE MANAGER™**. This document is intended for the following group of people: -

- ✓ Developers for the purpose of maintenance and new releases of the software.
- ✓ Management of the bank.
- ✓ Documentation writers.
- ✓ Testers.

1.2 Scope

This document applies to Factory software **THE MANAGER™**. This software facilitates the whole sale dealer to order the product through an interface, without calling out. For the Factory administrators this software offers the benefits such as inquiries related to the production, stocking and selling of the product and inquiries related to staff availability, working shifts etc.

The software takes as input the login Id and the bank account number of the user for login purposes. The outputs then comprise an interactive display that lets the user select the desirable function that he wants to perform.

The software is expected to complete in a duration of six months and the estimated cost is Rs18 lakhs.

1.3 References

The references for the above software are as follows: -

- i. www.google.com

1.4 Overview

Section 1.0 discusses the purpose and scope of the software.
Section 2.0 describes the overall functionalities and constraints of the software and user characteristics.
Section 3.0 details all the requirements needed to design the software.

2. The Overall Description

2.1 Product Perspective

- ❑ **THE MANAGER™** has two main components.
- ❑ One component which will consist of a live website.
- ❑ The other major component will consist of a unit which would have sub-components.
- ❑ The one task performed by the first main component would be that customers can give order of product, and check the progress of their product through it.
- ❑ The next task performed by the first main component would be helping the marketing department to market the product through the factory's own website.
- ❑ Some of the tasks performed by the other major component is to help the HR department in managing employees, the Finance department in managing finances, the employees in knowing about their work times etc.
- ❑ Some components of the system would be a setup of a local network in the site and a web-application deployed in the same premises.
- ❑ The local network shall have the capacity to have at least 50 connections at a time and still give smooth performance.

2.2 Product Functions

The major functions that **THE MANAGER™** performs are described as follows: -

- ❑ **Dashboard:** - After the user has logged in, the display provides him with a screen from which he can perform functions on the software which are in his domain.

2.3 User Characteristics

There are different kinds of users that will be interacting with the system. The intended user of the software are as follows: -

- ❑ **Customer A:** A new customer, who after seeing our ads or knowing about us through some other source reaches us out through our website to get our product. This user would be using our system for the first time and would not have any past experience about interacting with the system. Customer A will easily get used to the system and during the first use of the software,

he/she would be okay with the use of the software.

- ❑ **Customer B:** An already registered customer. This customer would have already used the software and would know the steps for ordering the product from before.
- ❑ **HR Department Personal:** An employee of the factory working in the HR Department. This user is in charge of keeping the profiles of all the employees of the factory. The personnel of this department would have a separate UI than others, which would be a sub-component of the main software. They would have user credentials for using the software. They would be able to add new, remove existing or modify the current profile of employee(s).
- ❑ **Finance Department Personal:** An employee of the factory working in the Finance Department. This user is in charge of bookkeeping. The personnel of this department would have a separate UI than others, which would be a sub-component of the main software. They would also have user credentials for using the software. They would be able to add new, remove existing or modify in any record of their department.
- ❑ **Administration Department Personal:** An employee of the factory working in the administration department. This user is in charge of keeping check on all other departments. The personnel of this department would have a separate UI than others, which would be a sub-component of the main software. They would also have user credentials for using the software. They would be able to view the records of any individual of the factory.
- ❑ **Employees:** They can be working in any department of the factory. This user would have a separate UI than others, which would be a sub-component of the main software. They would also have user credentials for using the software. They would be able to see their own profile.

3. External Interface Requirements

3.1.1 User Interface Requirements

The interface provided to the user should be a very user-friendly one and it should provide an optional interactive help for each of the service listed. The interface provided is a menu driven one and the following screens will be provided: -

1. A login screen is provided in the beginning for entering the required user credentials.
2. In case of administrator, a screen will be shown having options to view any employees profile, check any record.
3. After the login, a screen with a number of options is then shown to the user. It contains all the options along with their brief description to enable the user to understand their functioning and select the proper option.

4. If the user is from the Finance Department, the user would be provided with a screen to either add, remove or modify finance record(s).
5. If the user is from the HR Department, the user would be provided with a screen to either add, remove or modify employee(s) profile.

The following reports will be stored in the logs records present in the factory's database after each day use of the software: -

1. The login time and logout time of each employee has interacted with the software.
2. The changes that the employee has made during the session.

3.1.2 Hardware Interface Requirements

There are various hardware components with which the machine is required to interact. Various hardware interface requirements that need to be fulfilled for successful functioning of the software are as follows: -

- An internal network set up in the premises of the factory.
- A 24/7 broadband internet connection.

3.1.3 Software Interface Requirements

In order to perform various different functions, this software needs to interact with various other software's. So there are certain software interface requirements that need to be fulfilled which are listed as follows: -

- The Browser of the departmental users shall be latest.
- The database used to keep records of user accounts shall be MySQL.

3.1.4 Communication Interface Requirements

The software needs to communicate with the customers for various functions such as login verification, order dashboard etc. so the following are the various communication interface requirements that are needed to be fulfilled in order to run the software successfully: -

- The software will employ broadband internet connection.
- The communication protocol used shall be TCP/IP.

4. Function Requirements

1. Making Order

Description

The customer will be provided with a screen to make order of the product.

2. *Tracking Order*

Description

The Administrator, Customer and Finance personal can check on the percentage of the production of the product that is completed for order.

3. *Canceling Order*

Description

The Customer can request for the canceling of an order. The administrator can cancel the order.

4. *Checking Books*

Description

The Administrator and Finance personal can check all the books.

5. *Updating Books*

Description

The Finance personal can update the books.

6. *Making New Employments*

Description

The HR personnel can make new employment on behalf of the administrator.

7. *Checking Profile*

Description

The employees can check the different details of their work in their profile and can request for changes.

5. Other Nonfunctional Requirements

5.1 *Performance Requirements*

The following list provides a brief summary of the performance requirements for the software:

5.1.1 Capacity

- **THE MANAGER™** shall provide customers a 24-hour service.

5.1.2 Dynamic requirements

- The system at least should respond in 1 sec under normal network load or 5 sec under peak network load.

5.1.3 Quality – The primary objective is to produce quality software. As the quality of a piece of software is difficult to measure quantitatively, the following guidelines will be used when judging the quality of the software:

1. Consistency – All code will be consistent with respect to the style. (This is implied when adhering to the standard).
2. Test cases – All functionality will be thoroughly tested

5.2 Software System Attributes

5.2.1 Reliability

- The local network shall be such that it ensures reliability and quality of service provided in a heavy traffic environment.
- The memory system shall be of non-volatile type.

5.2.2 Availability

- The product will have a backup power supply in case of power failures.
- Any abnormal operations shall result in the shutting down of the system.
- After abnormal shutdown of **THE MANAGER™**, the system shall have to be manually restarted by a maintenance personnel.
- There should be no inconsistency introduced in the database during whose traversal or updating the system has abnormally shut down.

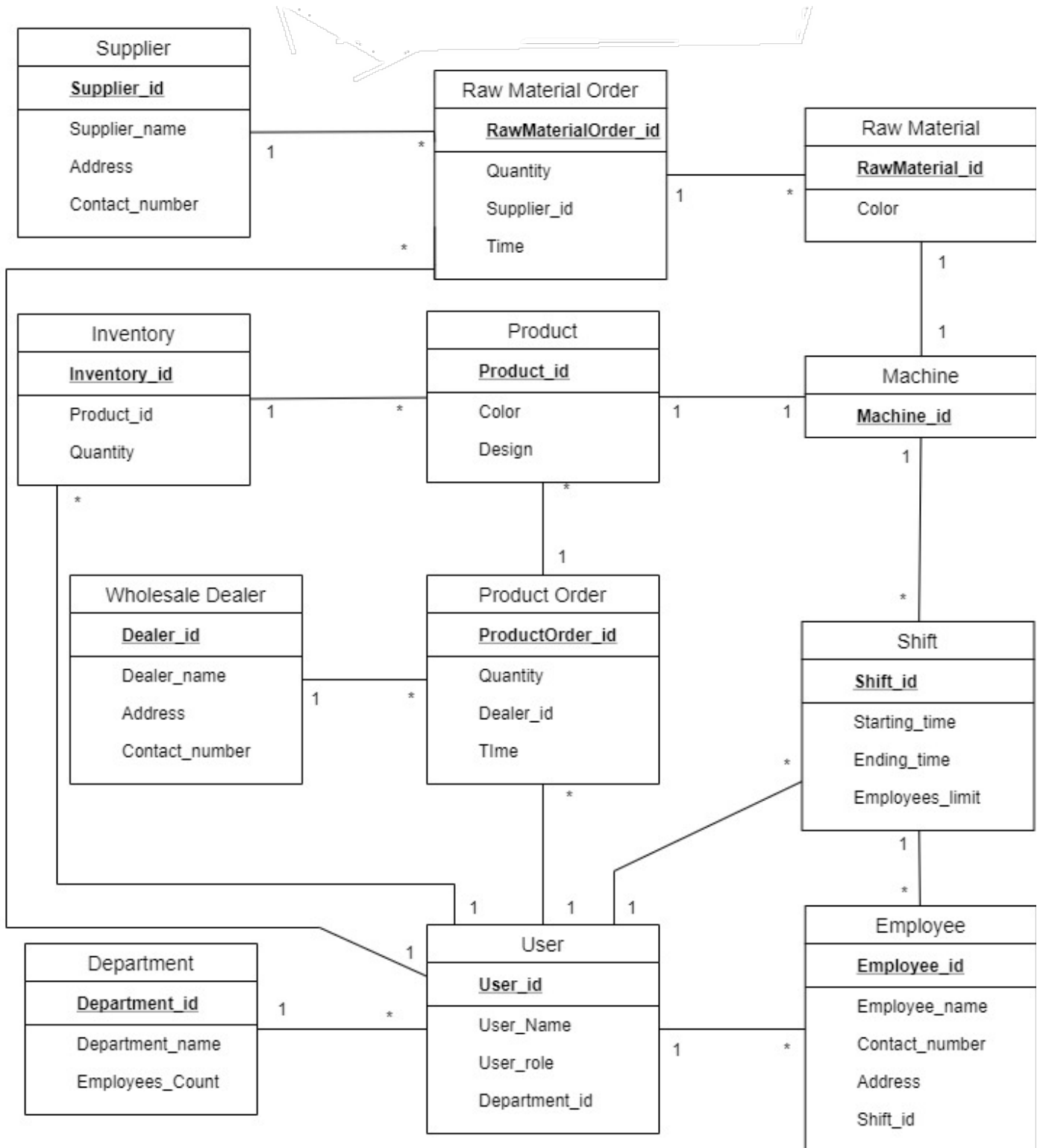
5.2.3 Security

- The system shall be compatible with AIMS security standards.
- The system shall have one level of security i.e. user credentials.
- The Encryption standard used during user credentials transmission shall be SHA1.
- The password shall be minimum 8 characters long.
- Passwords shall not contain the names of customers as they are easy to be hacked.

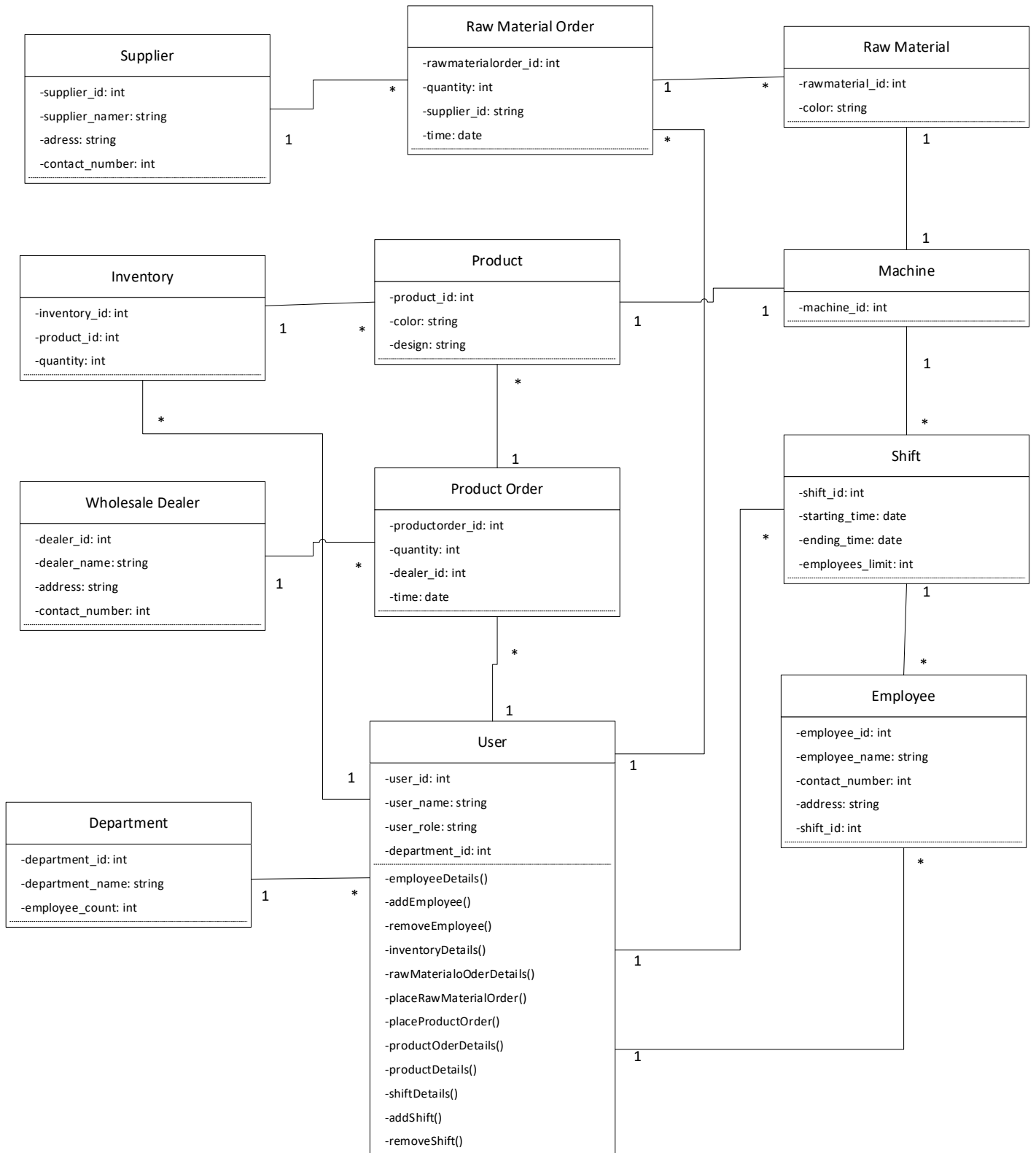
5.2.4 Maintainability

- The system components i.e., modem, memory, disk, drives shall be easily serviceable without requiring access to the vault.
- The system should have the mechanism of self-monitoring periodically in order to detect any fault.

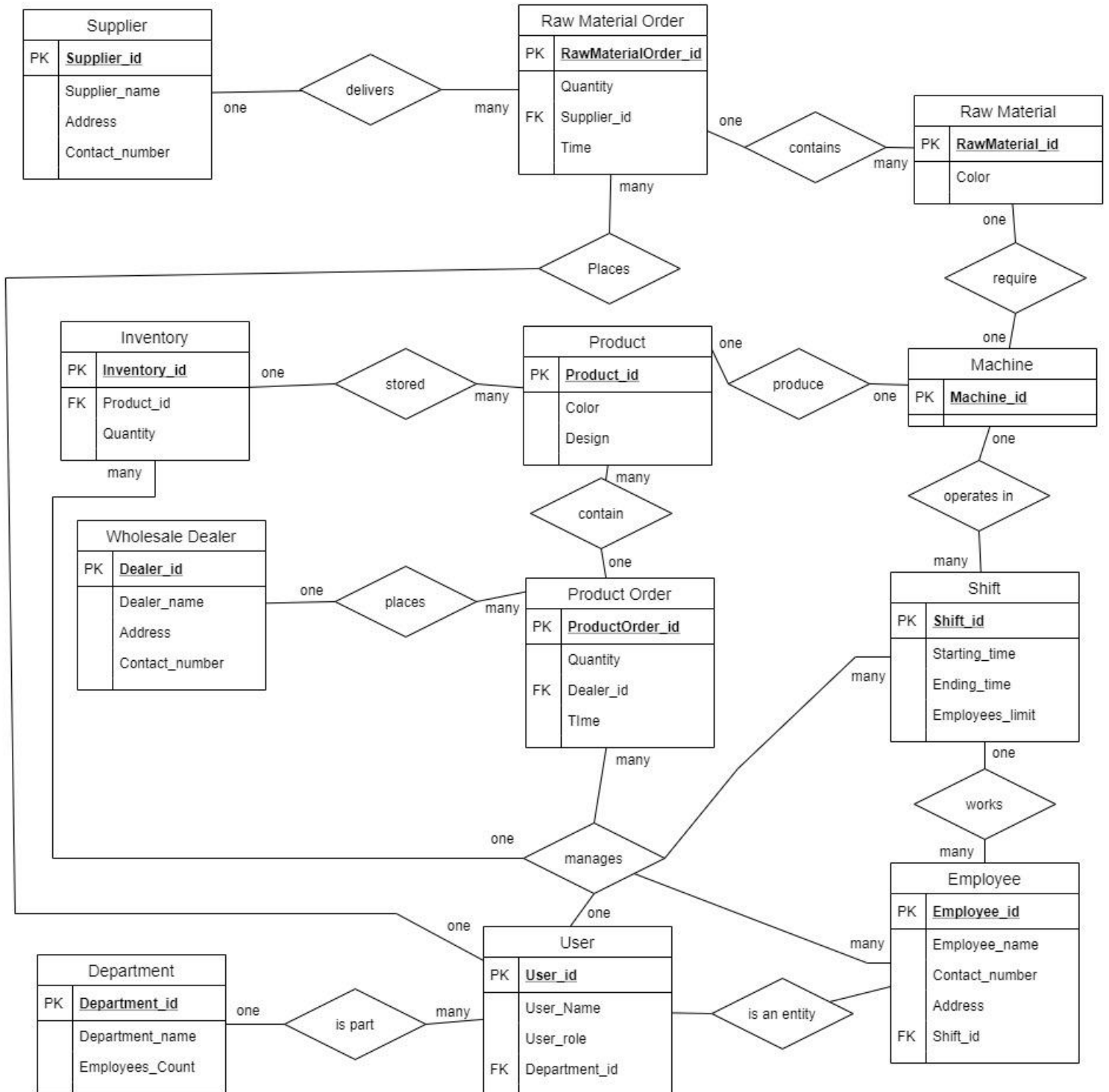
Domain Model



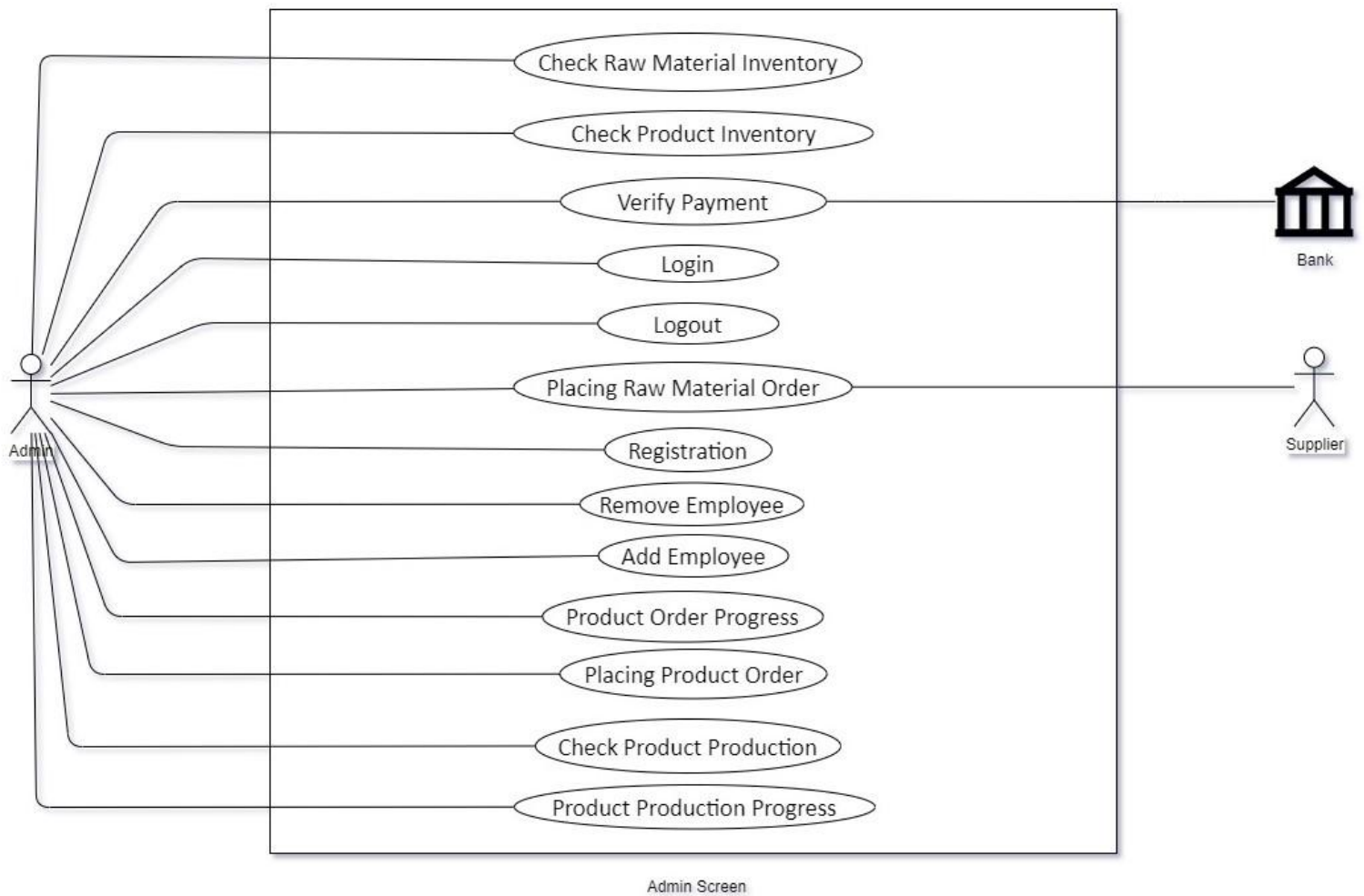
Class Model

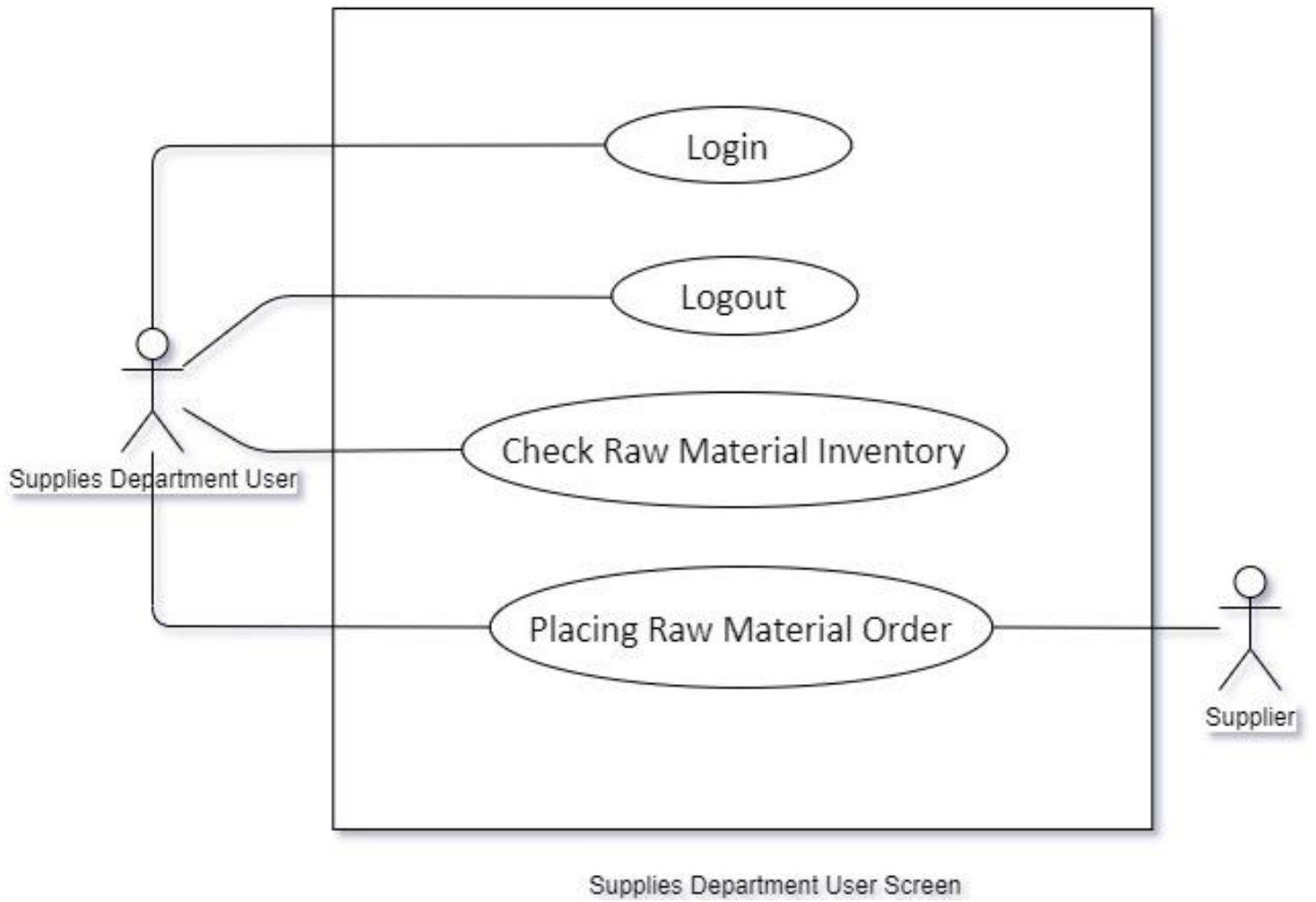


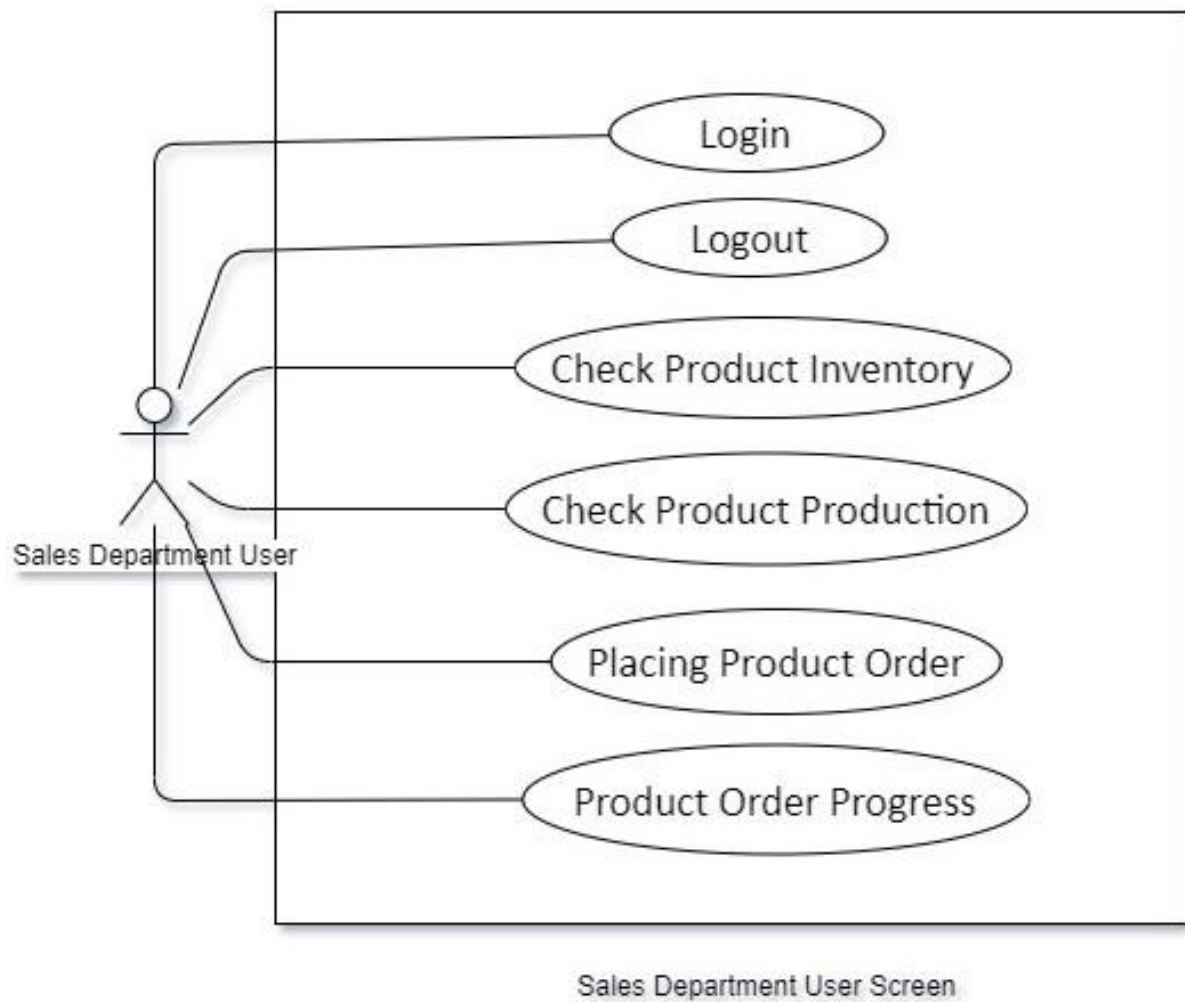
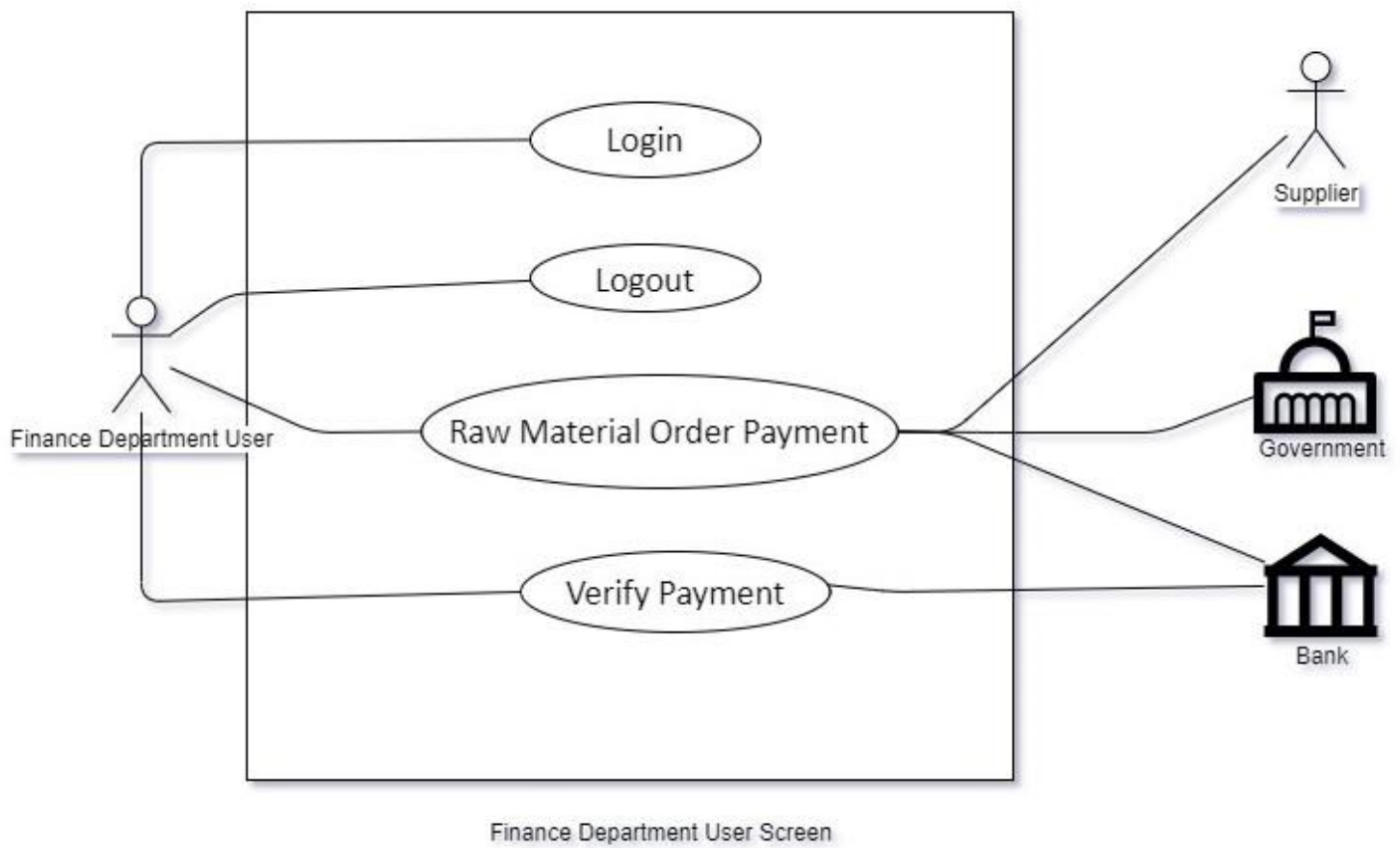
Entity Relationship Diagram (ERD)

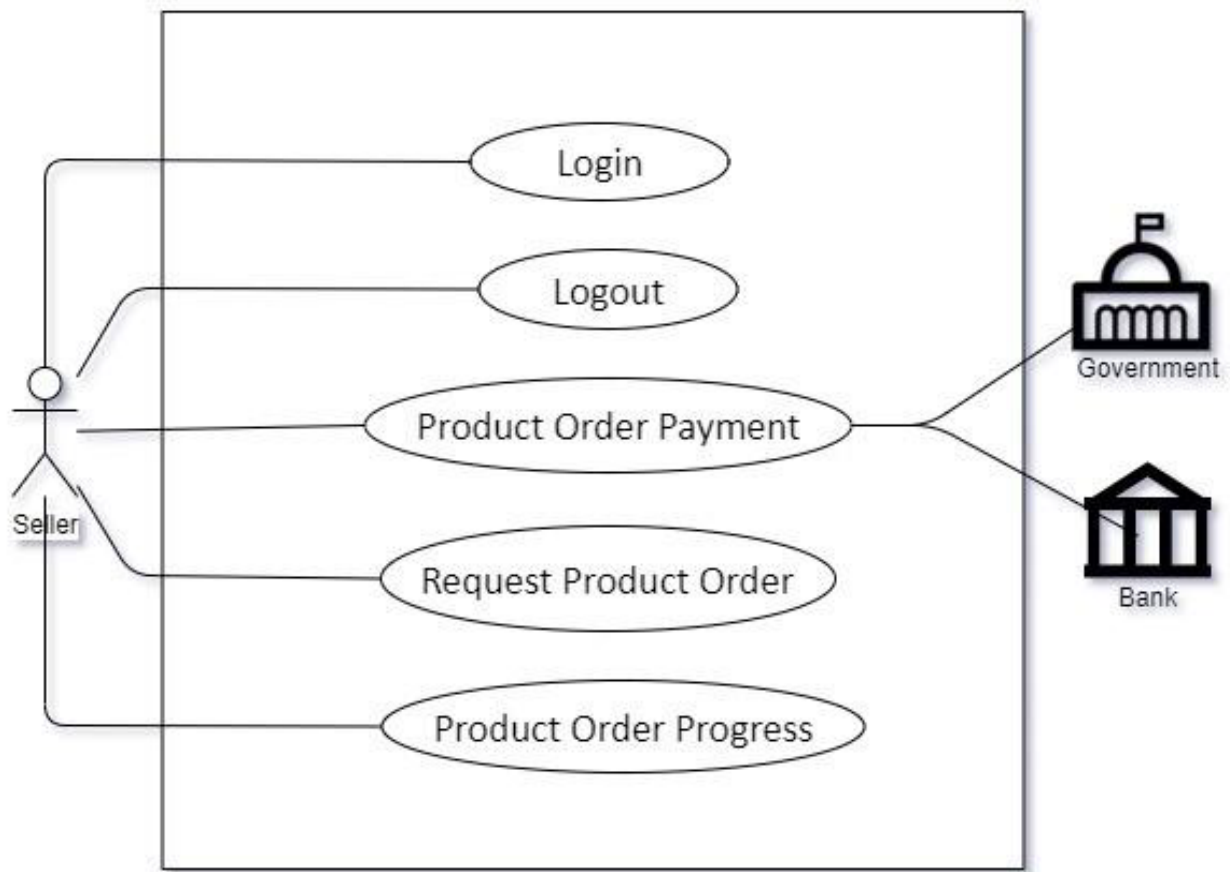


Use Case Diagram

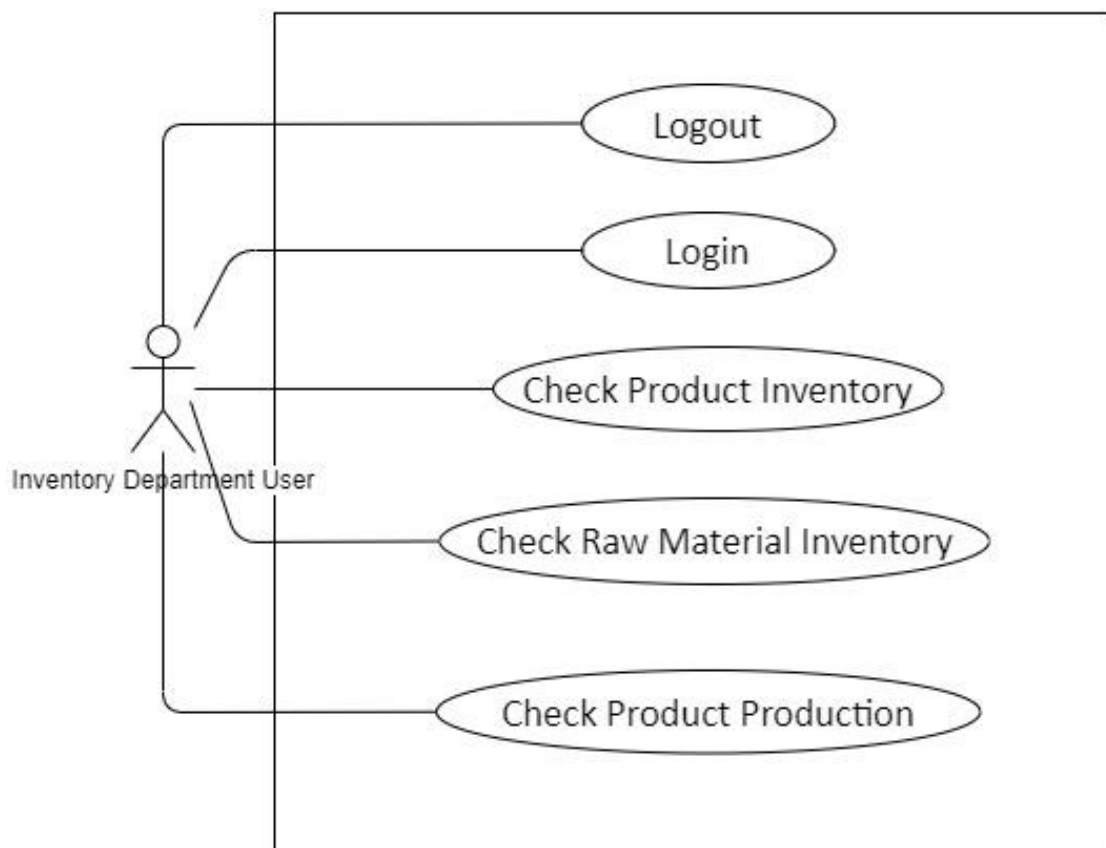




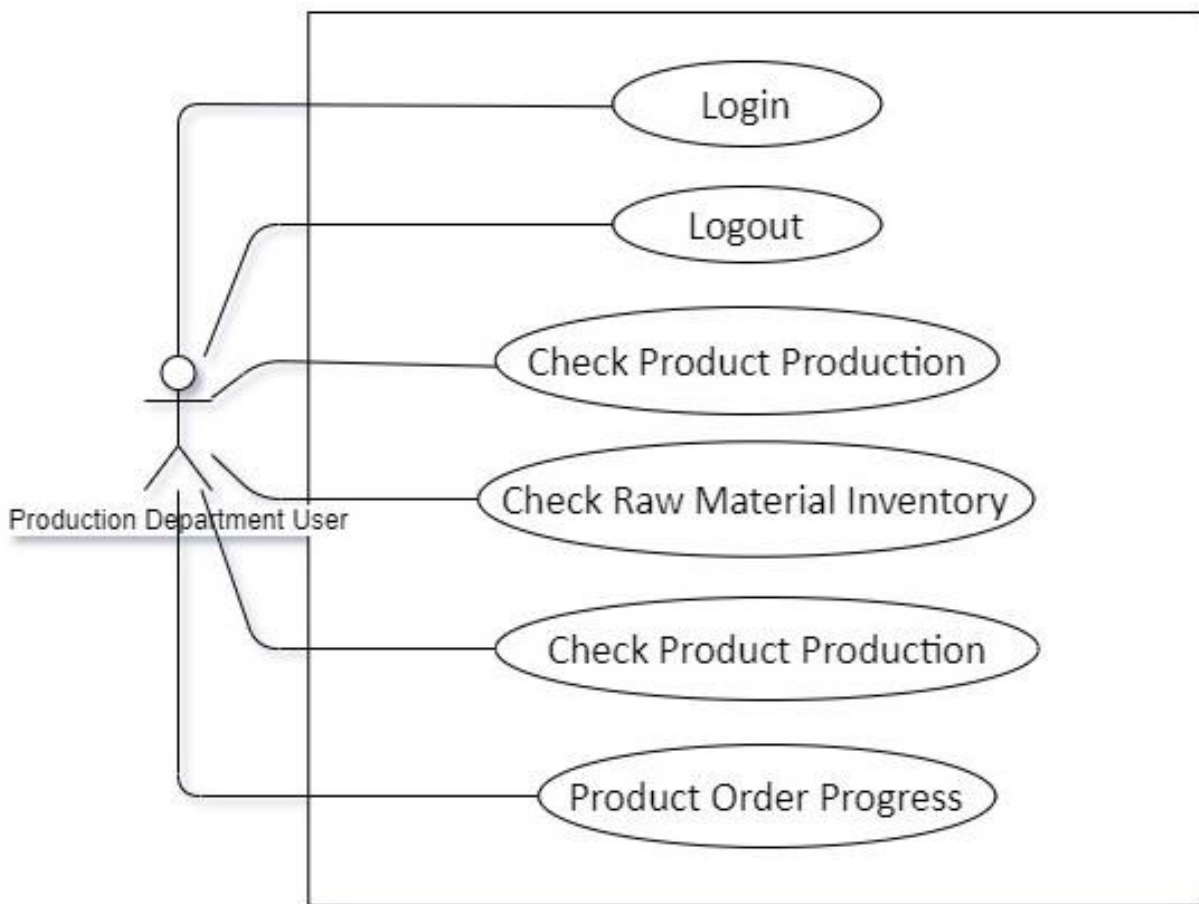




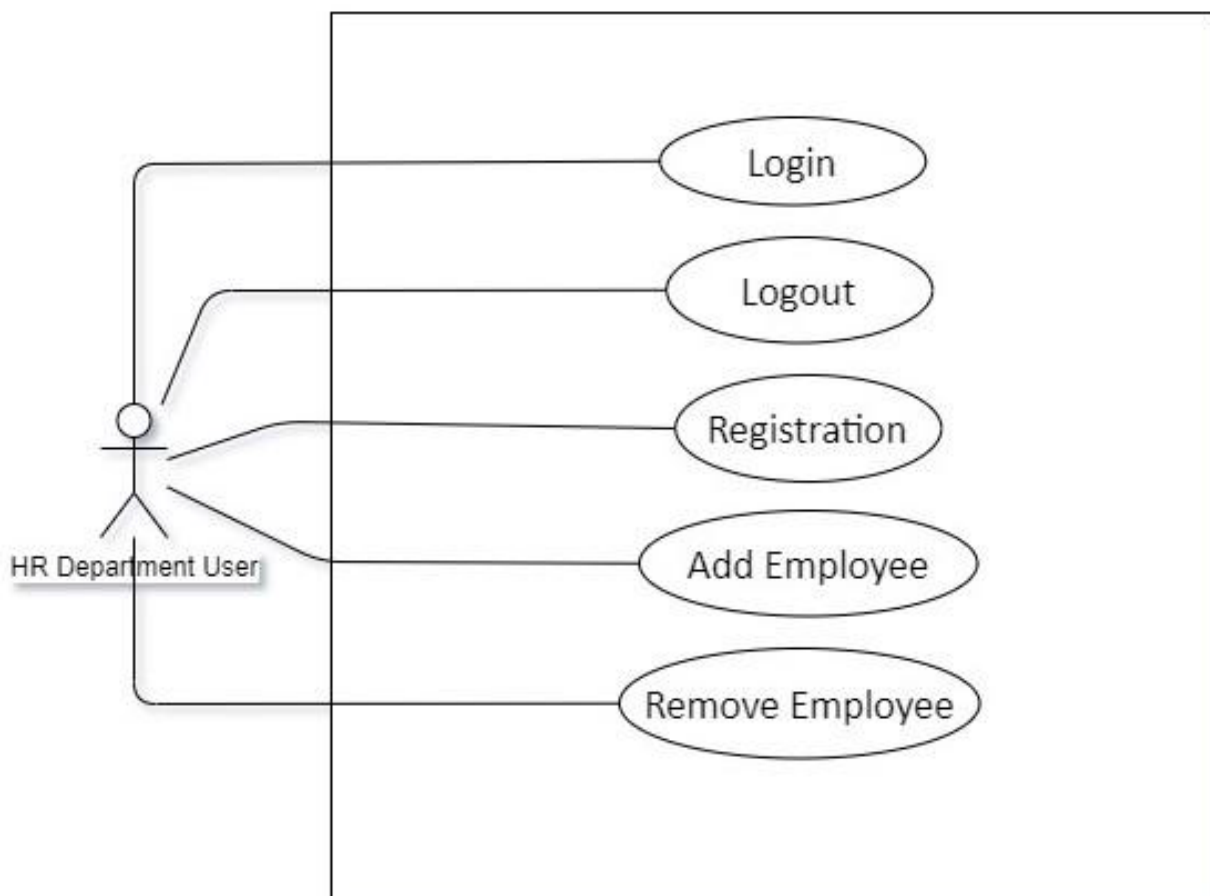
Seller Screen



Inventory Department User Screen



Production Department User Screen



HR Department User Screen

Use Case Diagram

UC1: Registration

UC1	
Name	Registration
Actors	Admin, HR Department User
Purpose	Register user.
Description	On Launching the application, user is shown the login screen along with Sign up Screen, User have to sign up in order to login to the application
Cross Reference	None
Pre-Conditions	None
Successful Post Conditions	User account is successfully created

Typical Course of Events			
Actor Action		System Response	
1	User clicks on Sign Up Button		
		2	Sign Up form is loaded into the screen and step 1 is shown to the user, waiting for the user to enter data.
3	User inputs Username, Email, Password and then clicks Next Button		
		4	Step 2 is loaded and shown to user, waiting for user input
5	User inputs First Name, Last Name, Gender and Phone Number and press Next Button		
		6	Step 3 is Loaded and shown to the user
7	User enters Date Of Birth and Press Next Button		
		8	Step 4 is loaded and shown to the user
9	User can choose a profile photo to upload or they can skip this step by pressing the Finish Button		
		10	All the user information is processed and sent to system to be uploaded to MySQL server
		11	The User Registration is completed.

Alternate Scenarios
10* Cannot connect to the server, user is shown the login screen
3* Username does not exists, user must enter correct username that is not taken already

UC2: Login

UC2	
Name	Login
Actors	HR Department User , Admin, Inventory Department User, Production Department User, Finance Department User, Supplies Department User, Sales Department User, Seller
Purpose	Authenticate users
Description	System takes username and password as input from user, verify credentials and give access to the application
Cross Reference	None
Pre-Conditions	User must be already created (One time only)
Successful Post Conditions	User is shown Home Screen to use the application

Typical Course of Events			
Actor Action		System Response	
1	User inputs username, password and press Login In Button		
		2	Username and password are sent to system to verify authenticity from online database.
		3	User's specific Screen is displayed

Alternate Scenario			
Actor Action		System Response	
1*	User enters wrong username or password		
		2*	An error message is shown to the user requesting for correct username or password
		2*	Could not connect to the server, an error is shown to the user.

UC3: Logout

UC3	
Name	Logout
Actors	HR Department User , Admin, Inventory Department User, Production Department User, Finance Department User, Supplies Department User, Sales Department User, Seller
Purpose	User is signed off from the application
Description	User is logged out of the application
Cross Reference	None
Pre-Conditions	User must be registered User must be logged in
Successful Post Conditions	Login screen is displayed to the user
Failure Post Conditions	User is not logged out and Login Screen is not displayed to the user

Typical Course of Events			
Actor Action		System Response	
1	User swipes the user's specific screen on left side, user selects the Log Out		
		2	System logs out the user
		3	System displays the Log in Screen

Alternate Scenario			
Actor Action		System Response	
		1	System closes or the application crashes.

UC4: Add Employee

UC4	
Name	Add Employee
Actors	Admin, HR Department User
Purpose	Adding an employee to the records
Description	The new employee details are added into the companies database
Cross Reference	None
Pre-Conditions	None
Successful Post Conditions	Employee record is added
Failure Post Condition	Employee record is already added

Typical Course of Events			
Actor Action		System Response	
1	User click on Add Employee.		
		2	Add Employee forms is loaded up to the users screen
3	User fills up the form and clicks submit.		
		4	All the form information is processed and sent to system to be uploaded to MySQL server
		5	The Employee's addition is completed.

Alternate Scenarios
4* System finds out that the information entered is already present in database.

UC5: Remove Employee

UC5	
Name	Remove Employee
Actors	Admin, HR Department User
Purpose	Removing an employee from the records
Description	The already existing employee details are removed from the companies database
Cross Reference	None
Pre-Conditions	Employee's record should already exist
Successful Post Conditions	Employee record is removed
Failure Post Condition	Employee record is not present

Typical Course of Events			
Actor Action		System Response	
1	User click on Remove Employee.		
		2	Remove Employee forms is loaded up to the users screen
3	User fills up the form and clicks submit.		
		4	All the form information is processed and sent to system to be uploaded to database
		5	The Employee's removal is completed.

Alternate Scenarios	
4*	System cannot connect to the database.
4*	System finds out that the information entered is not present in database.

UC6: Check Product Inventory

UC6	
Name	Check Product Inventory
Actors	Admin, Inventory Department User, Production Department User, Sales Department User
Purpose	Loads up product inventory data from server into the screen
Description	This is to check the availability of product in inventory, and the quantity available.
Cross Reference	None
Pre-Conditions	The user must be logged into the system.
Successful Post Conditions	Available quantity of product in inventory is load upped on the screen
Failure Post Conditions	Available quantity of product in inventory is not load upped on the screen

Typical Course of Events			
Actor Action		System Response	
1	User click on view product inventory		
		2	System connects to server
		3	System loads up the product inventory details onto the system screen.

Alternate Scenarios
2* System cannot connect to server.

UC7: Check Raw Material Inventory

UC7 (Section Main)	
Name	Check Raw Material Inventory
Actors	Admin, Supplies Department User, Production Department, Inventory Department User
Purpose	Loads up raw material inventory data from server into the screen
Description	This is to check the availability of raw material in inventory, and the quantity available.
Cross Reference	None
Pre-Conditions	The user must be logged into the system.
Successful Post Conditions	Available quantity of raw material in inventory is load upped on the screen
Failure Post Conditions	Available quantity of product in raw material is not load upped on the screen

Typical Course of Events			
Actor Action		System Response	
1	User click on view raw material inventory		
		2	System connects to server
		3	System loads up the raw material inventory details onto the system screen.

Alternate Scenarios	
2*	System cannot connect to server.

UC8: Placing Product Order

UC8	
Name	Placing Product Order
Actors	Admin, Sales Department User
Purpose	A product order is placed, which need to be delivered to the seller
Description	The users places a product order which is accepted after the sellers request for it
Cross Reference	None
Pre-Conditions	Sellers product order request should be accepted
Successful Post Conditions	Product order is added to queue
Failure Post Conditions	Product order is not added to queue

Typical Course of Events			
Actor Action		System Response	
1	User click on Place Product Order.		
		2	Product order forms is loaded up to the users screen
3	User fills up the form and clicks submit.		
		4	All the form information is processed and sent to system to be uploaded to database
		5	The product order placement is completed.

Alternate Scenarios	
4*	System cannot connect to the database.

UC9: Product Order Payment

UC9	
Name	Product Order Payment
Actors	Seller
Purpose	Seller pays for product order
Description	Seller does payment for product order through bank
Cross Reference	None
Pre-Conditions	Sellers product order request should be accepted Seller should be logged in
Successful Post Conditions	Payment is successfully completed through bank
Failure Post Conditions	Payment process is not successful.

Typical Course of Events			
Actor Action		System Response	
1	User will open his transaction in our application		
2	User will fill in the transaction id provided to him by bank		
		3	The transaction id will be uploaded into the database and will be queued for verification.
		4	Verification is completed and product order is started.

Alternate Scenarios	
3*	System cannot connect to the database.
4*	System cannot verify transaction.

UC10: Raw Material Order Payment

UC10	
Name	Raw Material Order Payment
Actors	Finance Department User
Purpose	User pays for raw material order
Description	User does payment for raw material order through bank
Cross Reference	None
Pre-Conditions	User should be logged in
Successful Post Conditions	Payment is successfully completed through bank
Failure Post Conditions	Payment process is not successful.

Typical Course of Events			
Actor Action		System Response	
1	User clicks on update finances buttons		
		2	Update Finances page is displayed
3	User enters the required information and clicks on submit button.		
		4	All the information entered by user is uploaded to the database

Alternate Scenarios
4* System cannot connect to the database.

UC11: Verify Payment

UC11	
Name	Verify Payment
Actors	Admin, Finance Department User
Purpose	Display expense details of user
Description	User can view all the products bought from different categories, they can also view the prices of categories they have spent money on
Cross Reference	None
Pre-Conditions	List must be created Products should be added to the list
Successful Post Conditions	Expense details are displayed to the user
Failure Post Conditions	No Expense History is displayed to the user

Typical Course of Events			
Actor Action		System Response	
1	User clicks on payment		
		2	All the payments are shown to user
3	The User check-marks the payment that are verified and click on update button		
		4	The payment verification is updated in the database

Alternate Scenarios
4* System cannot connect to the database.

UC12: Request Product Order

UC12	
Name	Request Product Order
Actors	Seller
Purpose	Seller places a product order request
Description	Seller asks for a quantity of product to be delivered to him.
Cross Reference	None
Pre-Conditions	Seller must be registered Seller must be logged in
Successful Post Conditions	Seller successfully submit request
Failure Post Conditions	Sellers request is not submitted.

Typical Course of Events			
Actor Action		System Response	
1	User click on Request Product Order.		
		2	Request product order forms is loaded up to the users screen
3	User fills up the form and clicks submit.		
		4	All the form information is processed and sent to system to be uploaded to database
		5	The product order request's placement is completed.

Alternate Scenarios
4* System cannot connect to the database.

UC13: Placing Raw Material Order

UC13	
Name	Placing Raw Material Order
Actors	Admin, Supplies Department User
Purpose	A raw material order is placed with supplier
Description	The users places a raw material order with the supplier. The supplier supplies the raw material to the company
Cross Reference	None
Pre-Conditions	Space should be available in inventory
Successful Post Conditions	Raw material order is successfully placed
Failure Post Conditions	Raw material order placement is not successful

Typical Course of Events			
Actor Action		System Response	
1	User click on Place Raw Material Order.		
		2	Raw material order forms is loaded up to the users screen
3	User fills up the form and clicks submit.		
		4	All the form information is processed and sent to system to be uploaded to database
		5	The product order placement is completed.

Alternate Scenarios
4* System cannot connect to the database.

UC14: Check Product Production

UC13	
Name	Check Product Production
Actors	Admin, Inventory Department User, Production Department User, Sales Department User
Purpose	Check if product production is on going
Description	The current status of product production is checked
Cross Reference	None
Pre-Conditions	A registered user must be logged in
Successful Post Conditions	Status of product production is checked
Failure Post Conditions	Status of product production cannot be checked

Typical Course of Events			
Actor Action		System Response	
1	User click on check product production		
		2	System connects to server
		3	System loads up the current status of product production onto the system screen.

Alternate Scenarios
2* System cannot connect to server.

UC15: Product Production Progress

UC13	
Name	Product Production Progress
Actors	Admin, Production Department User
Purpose	Check the product production progress
Description	The current progress of product production is checked
Cross Reference	None
Pre-Conditions	A registered user must be logged in
Successful Post Conditions	Progress of product production is checked
Failure Post Conditions	Progress of product production cannot be checked

Typical Course of Events			
Actor Action		System Response	
1	User click on product production progress		
		2	System connects to server
		3	System loads up the progress of product production onto the system screen.

Alternate Scenarios
2* System cannot connect to server.

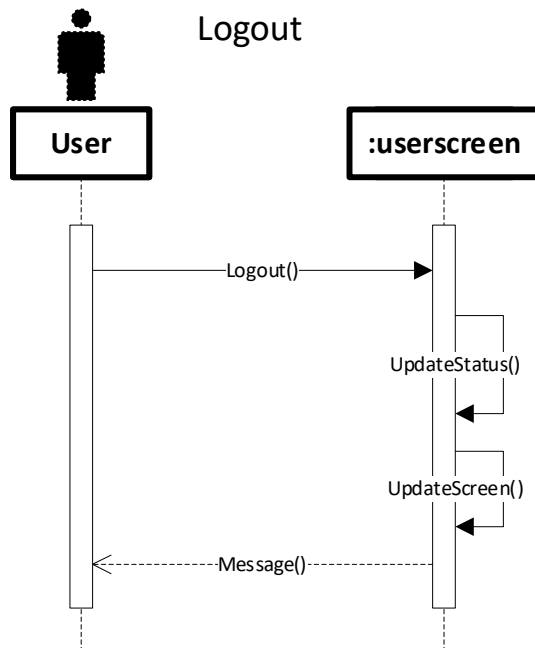
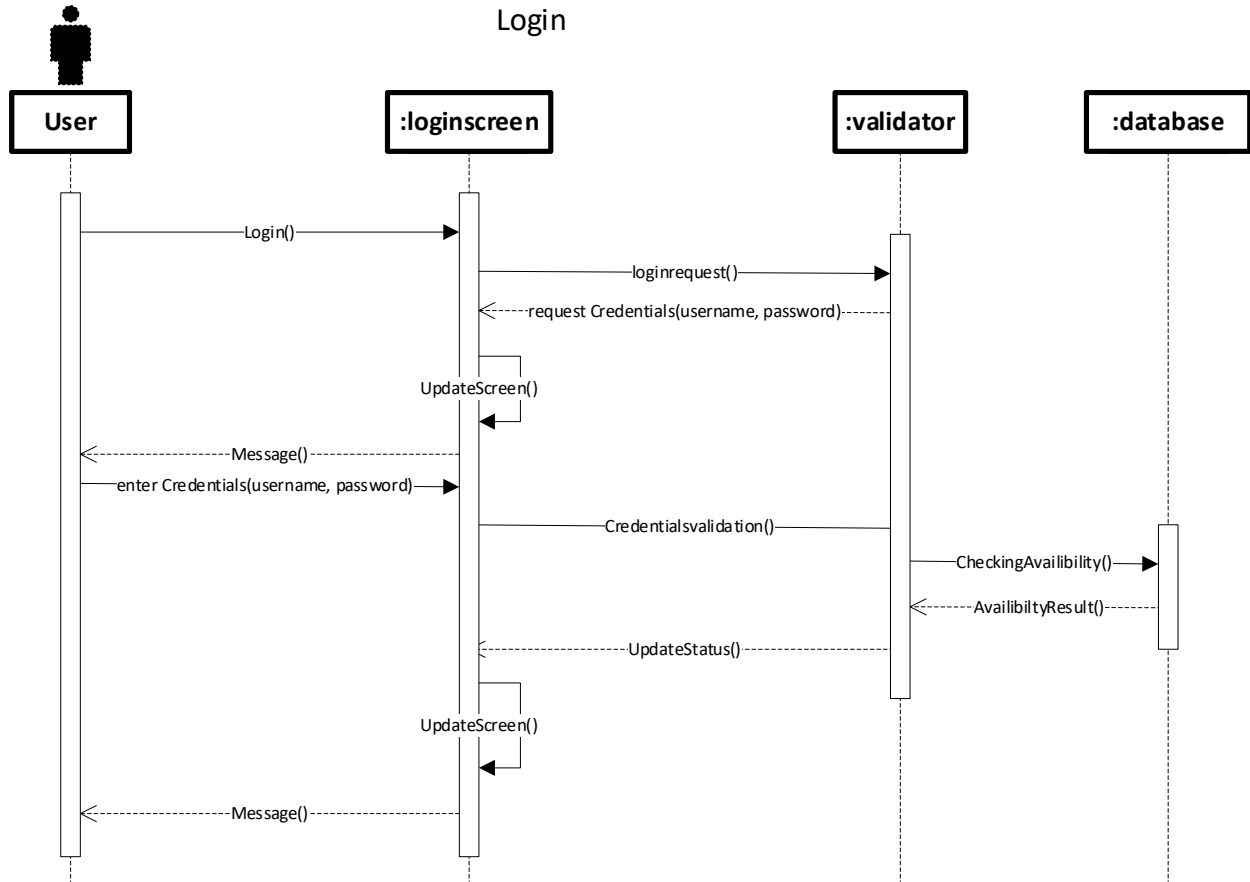
UC16: Product Order Progress

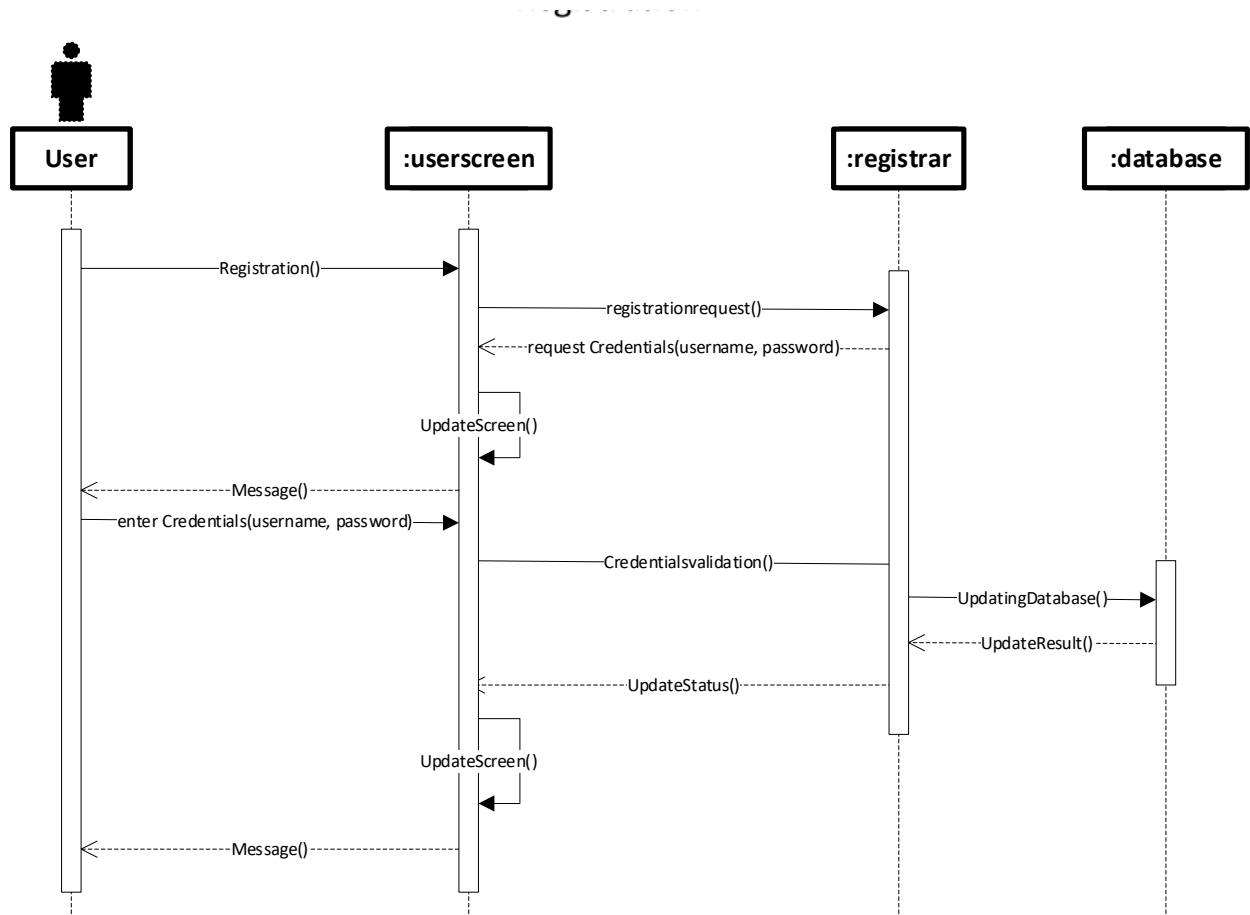
UC13	
Name	Product Order Progress
Actors	Admin, Production Department User, Sales Department User, Seller
Purpose	Check the product order production
Description	The current progress of product order is checked
Cross Reference	None
Pre-Conditions	A registered user must be logged in A product order must be already placed for the specific seller
Successful Post Conditions	Progress of product order is checked
Failure Post Conditions	Progress of product order cannot be checked

Typical Course of Events			
Actor Action		System Response	
1	User click on product order progress		
		2	System connects to server
		3	System loads up the progress of product production onto the system screen.

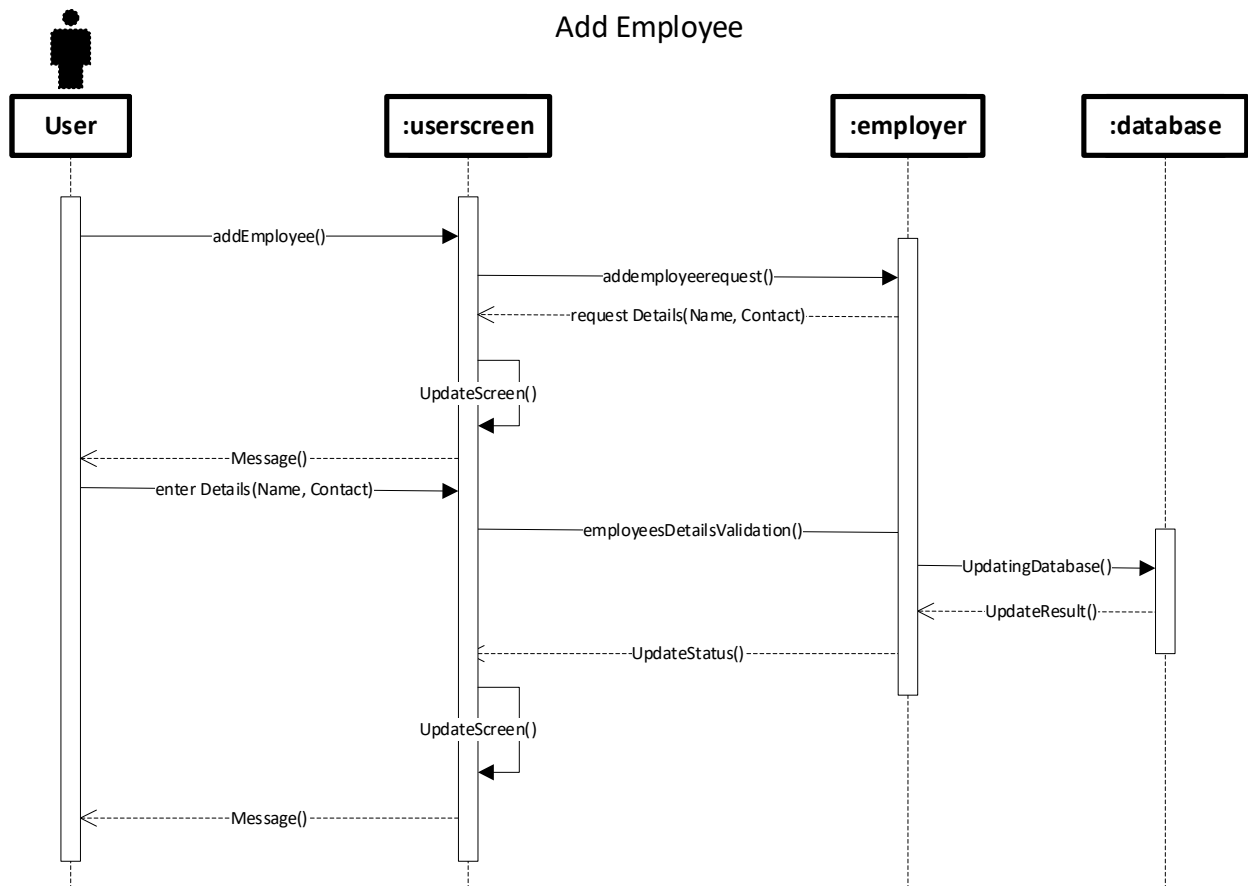
Alternate Scenarios
2* System cannot connect to server.

Sequence Diagram

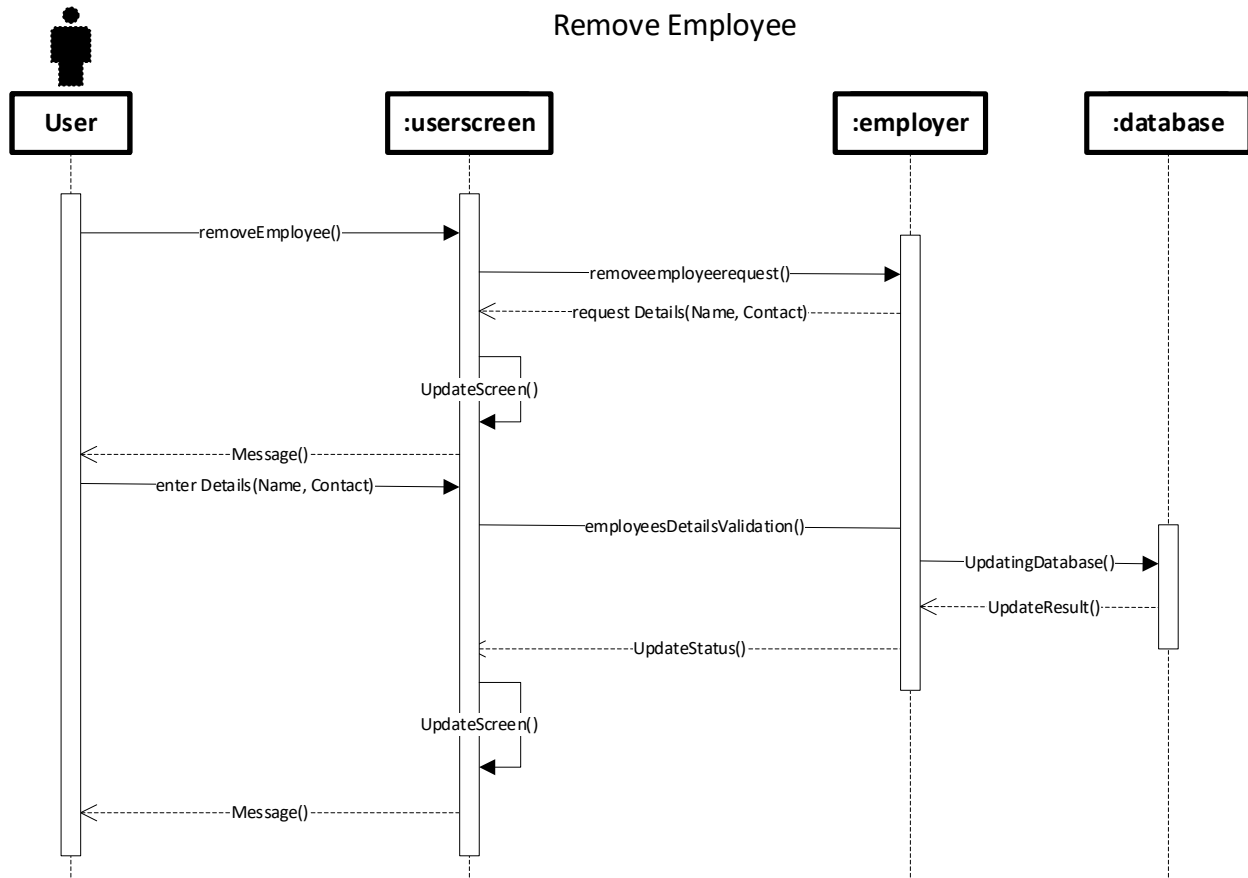


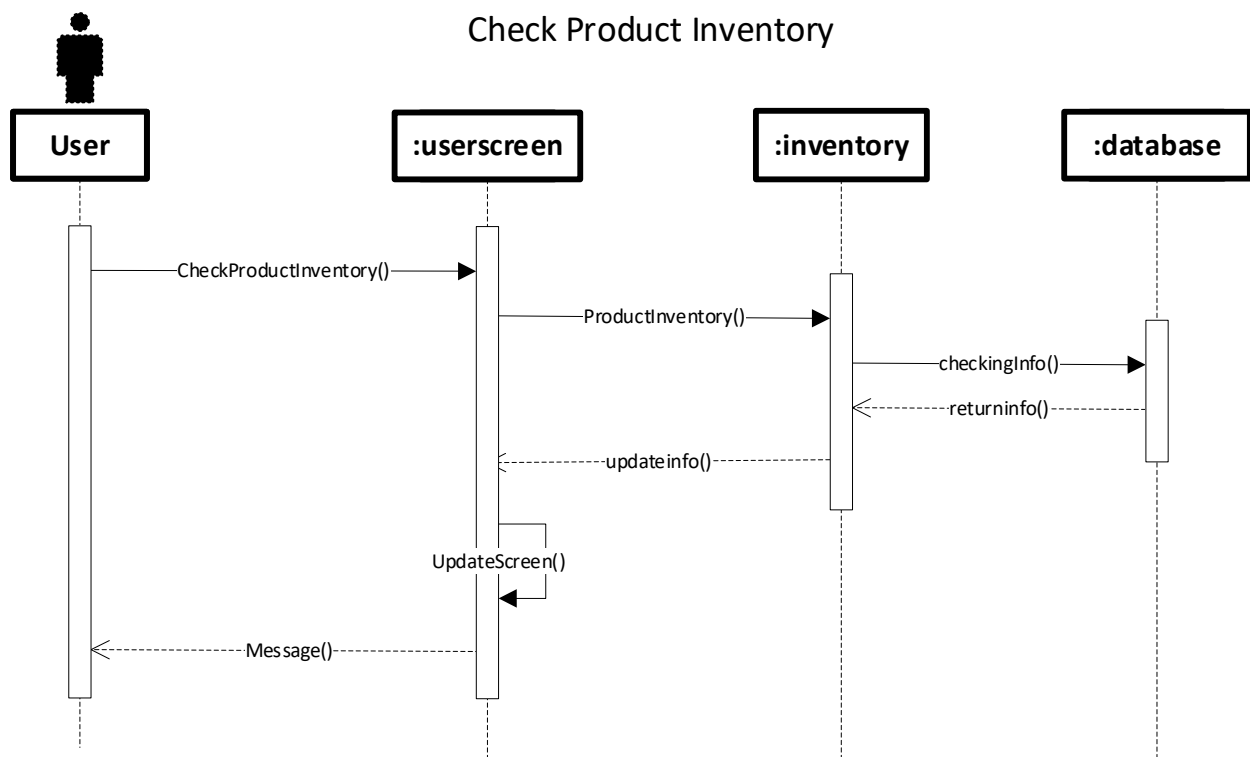
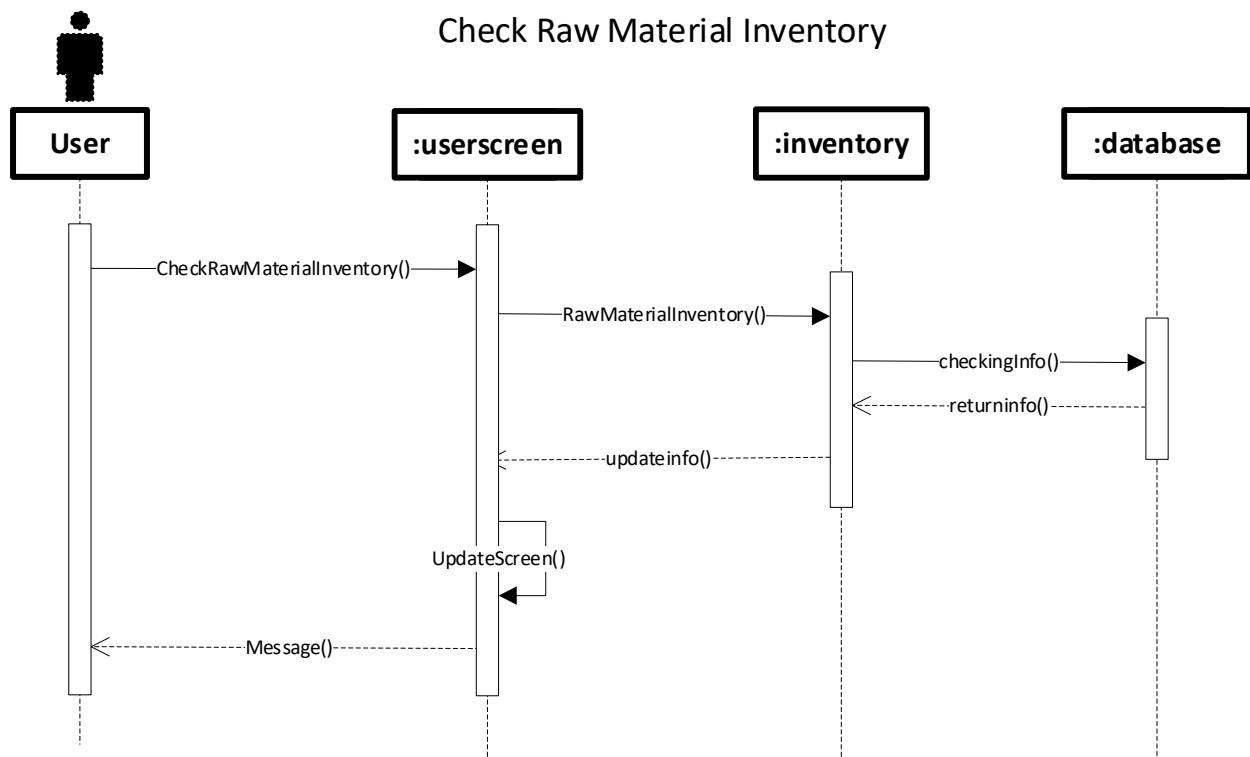


Add Employee

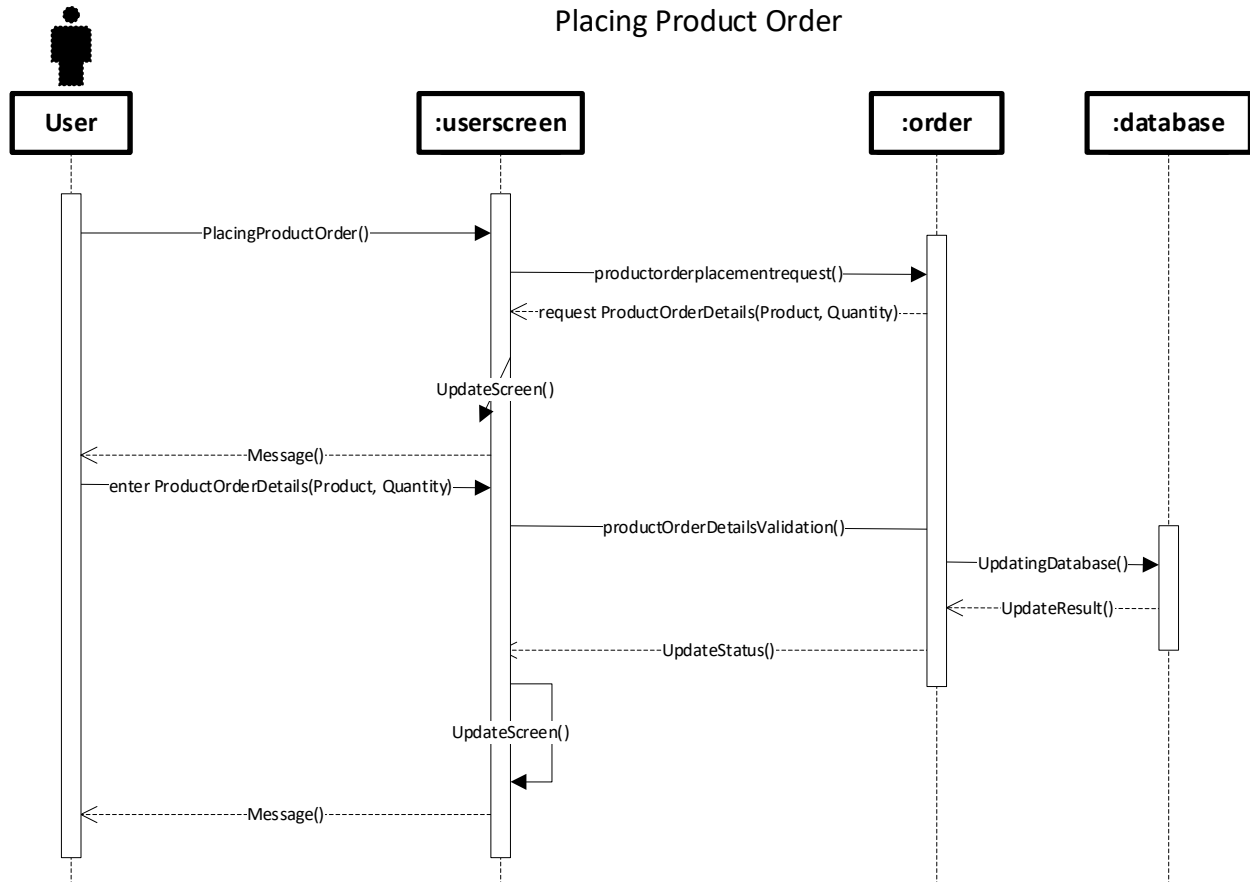


Remove Employee

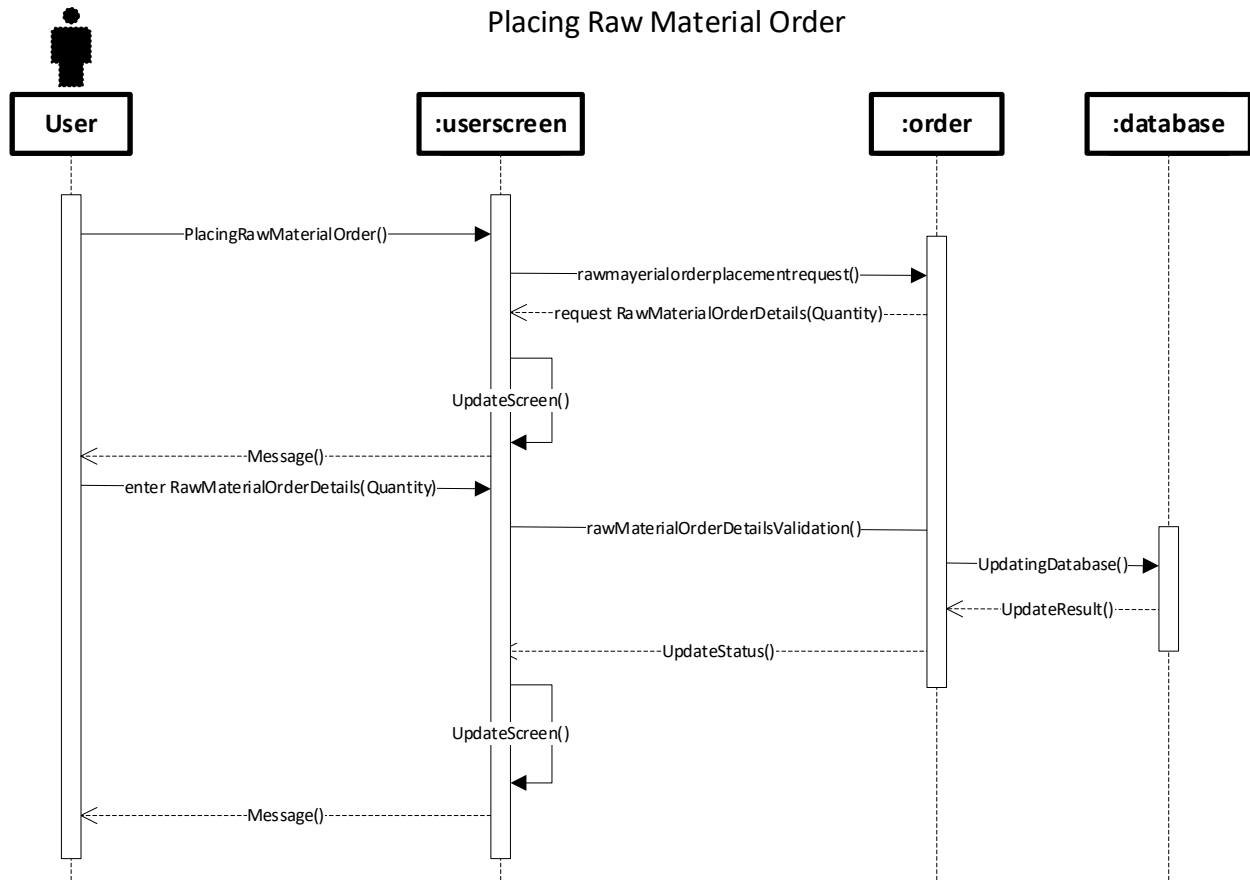


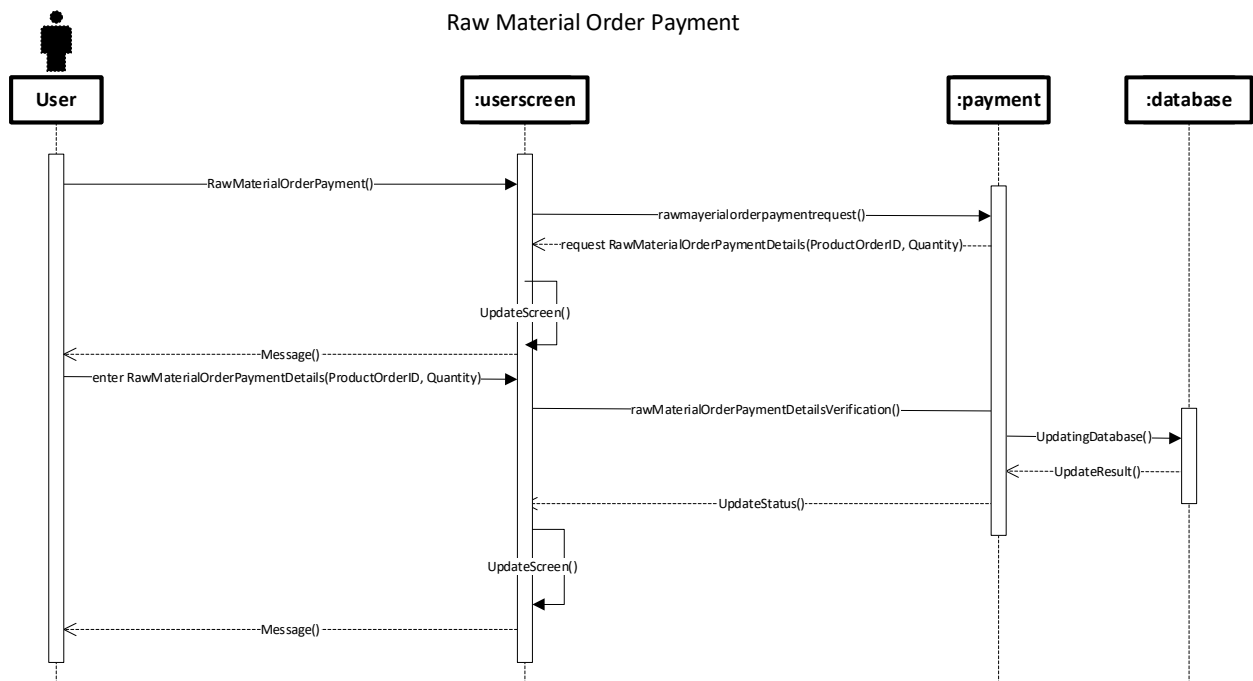
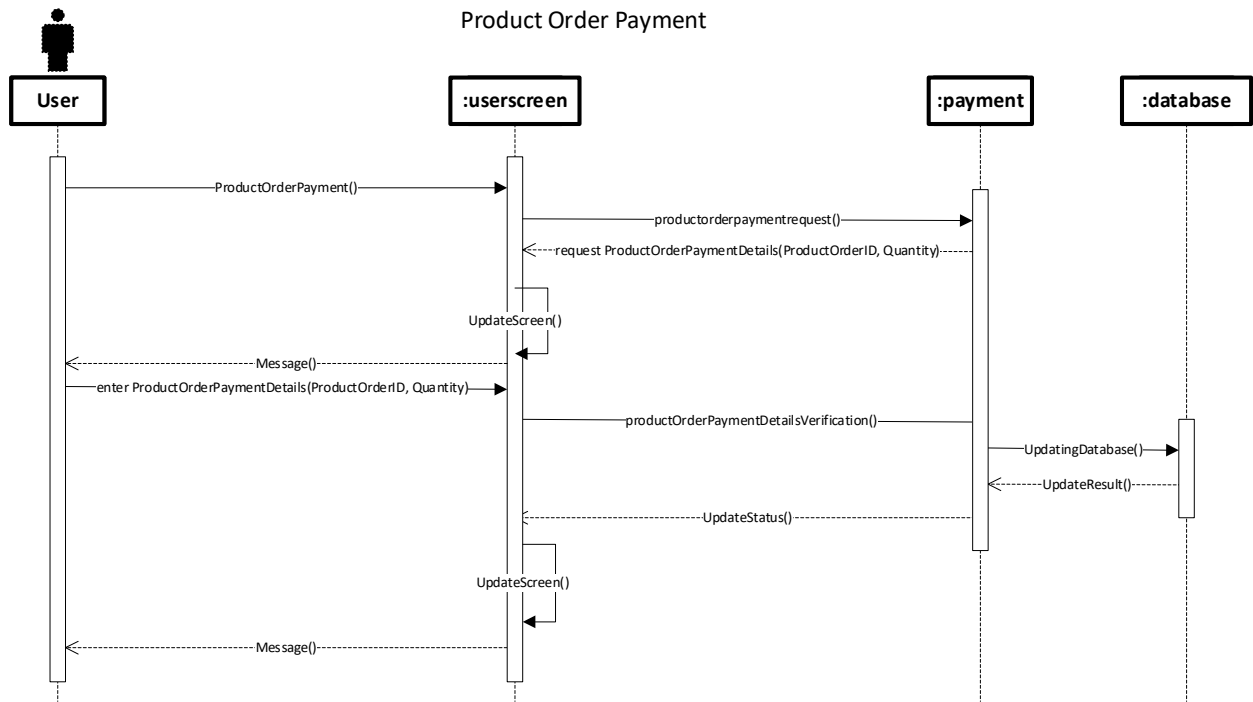


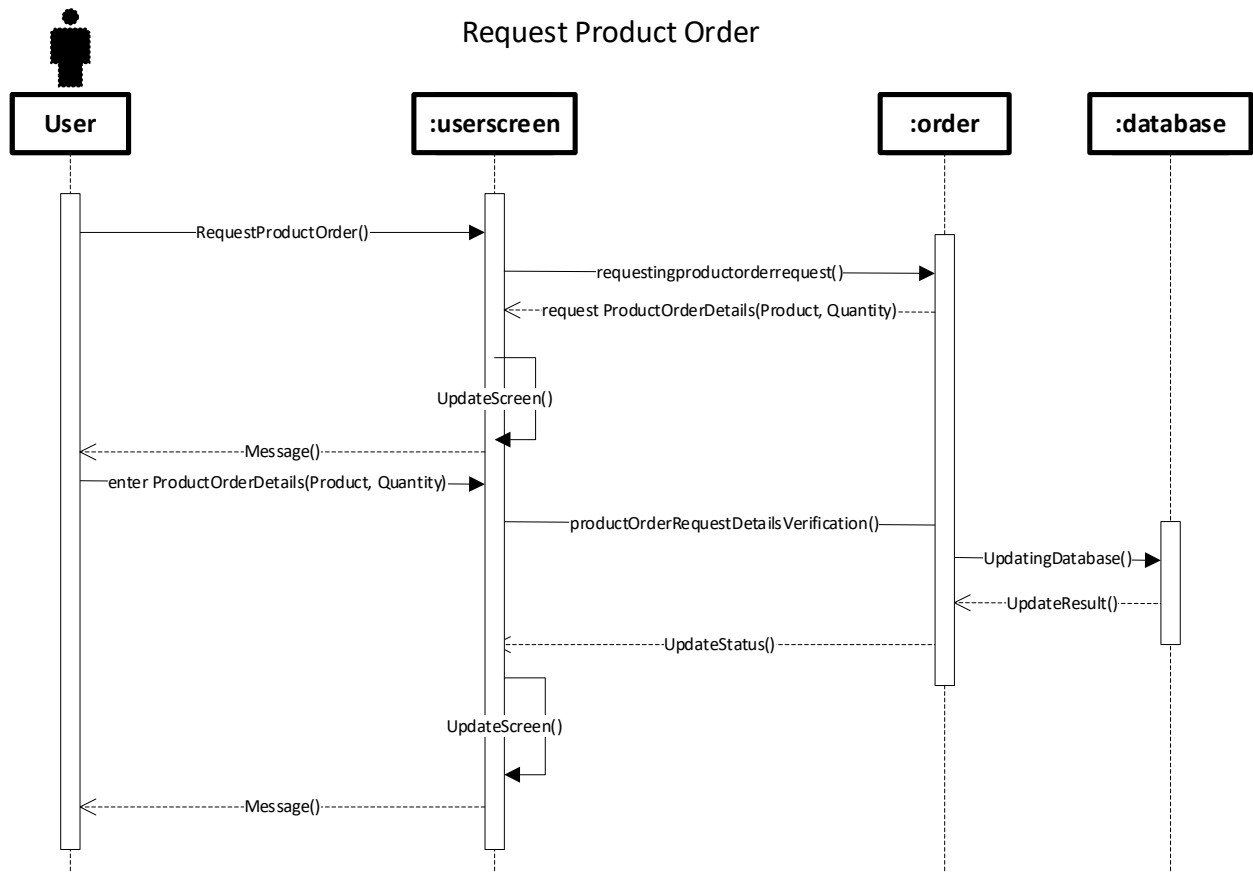
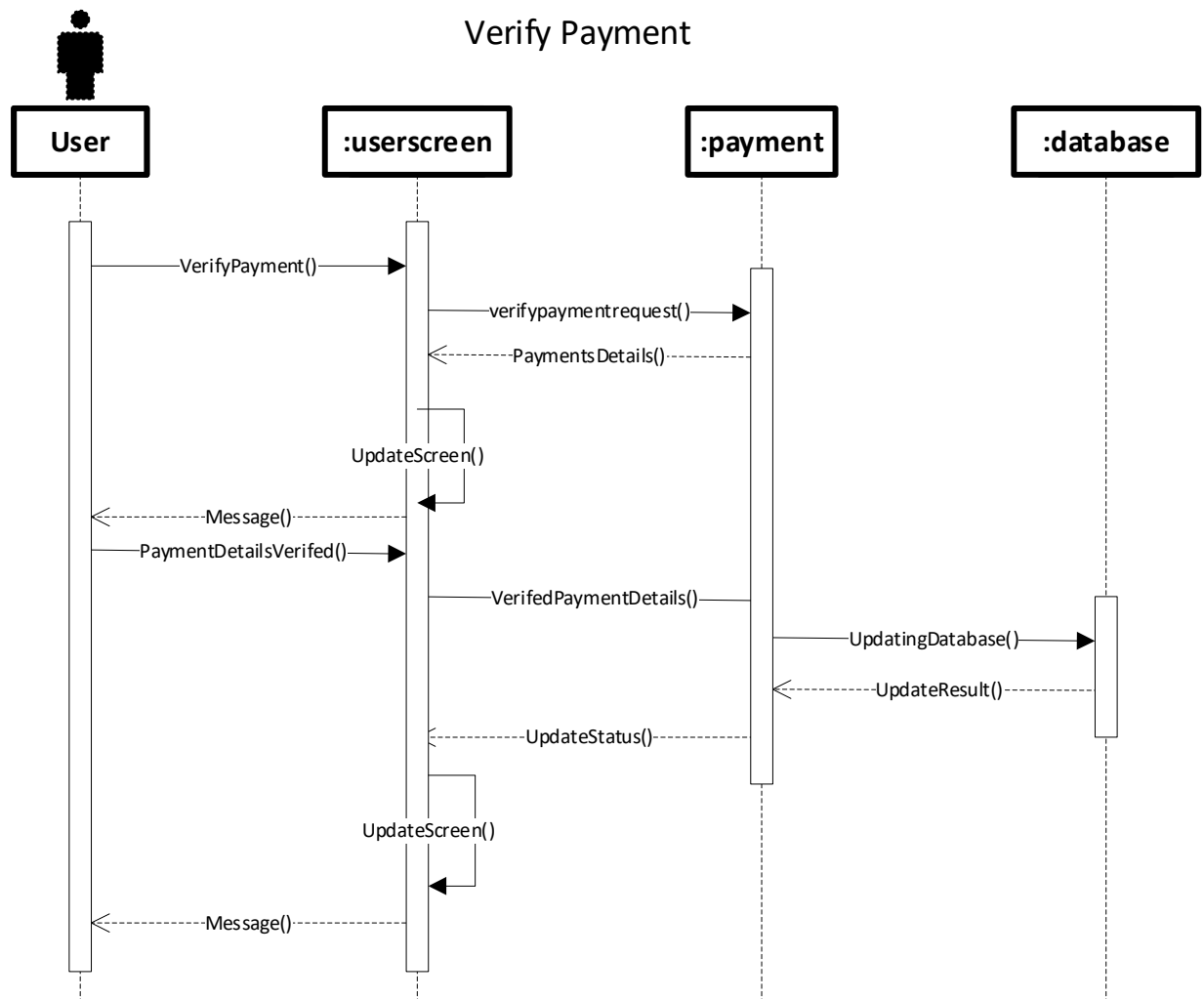
Placing Product Order

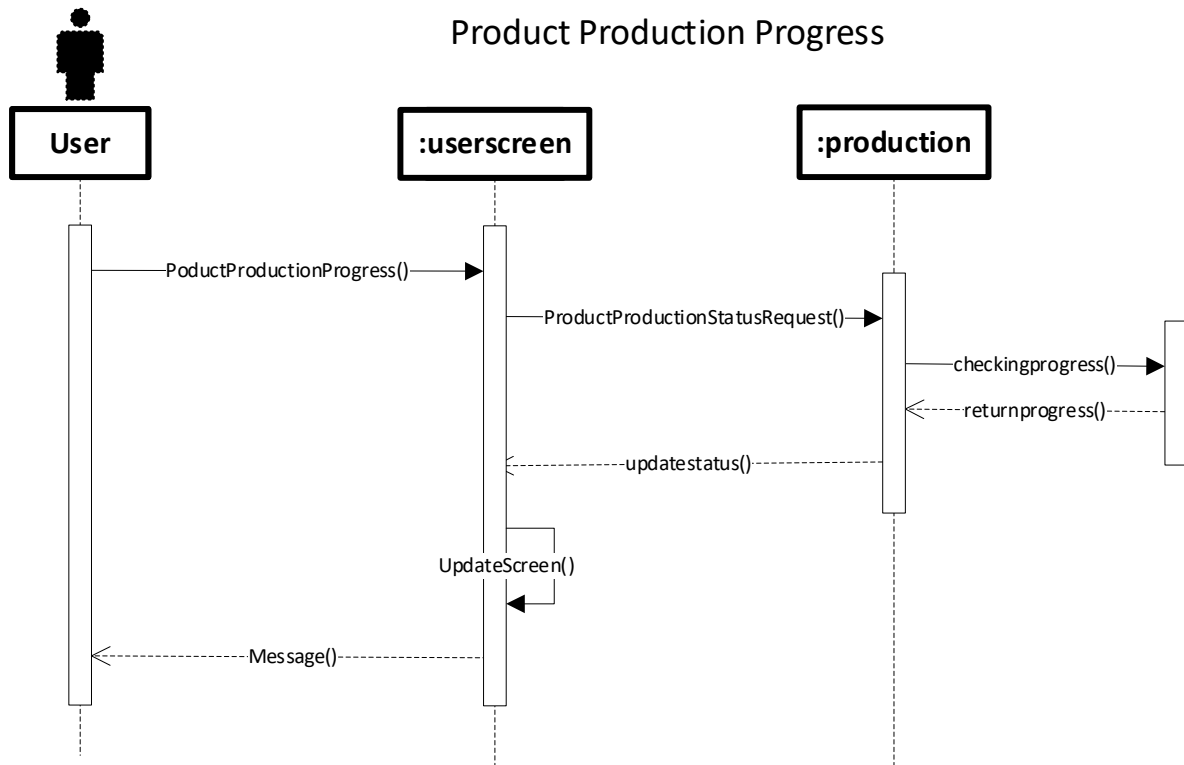
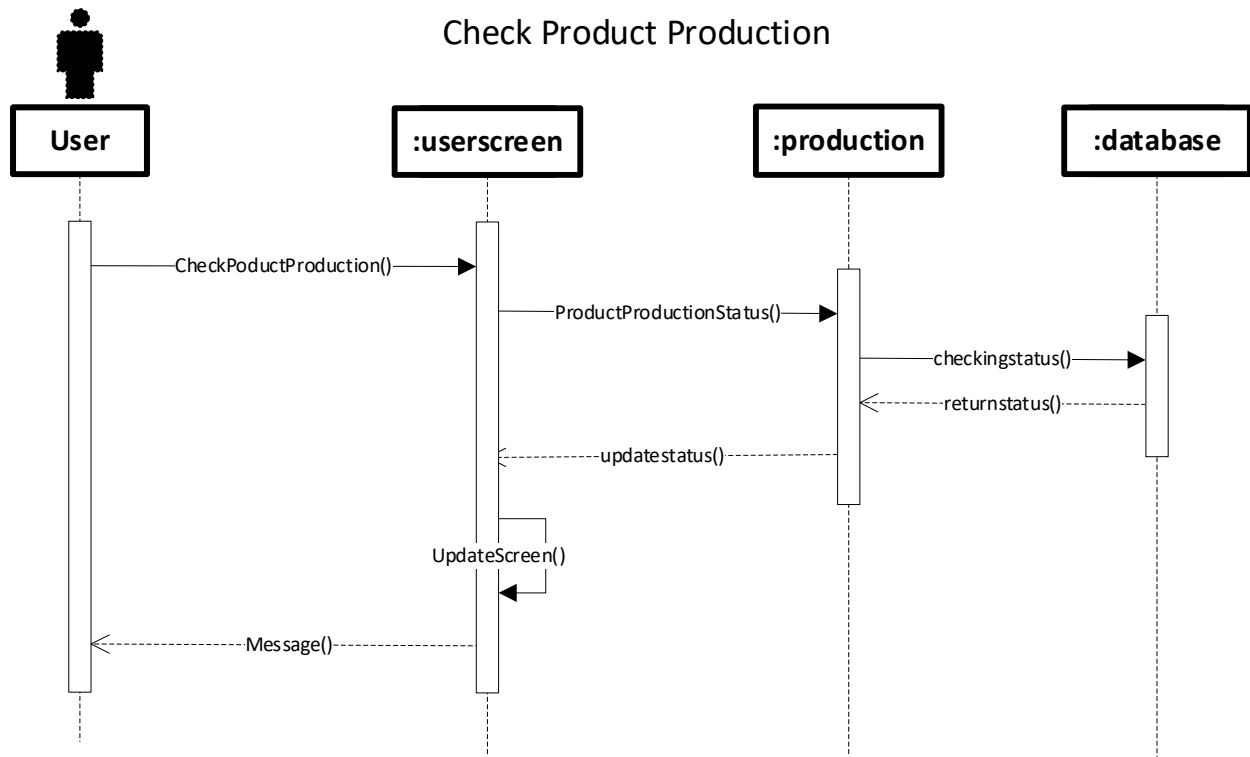


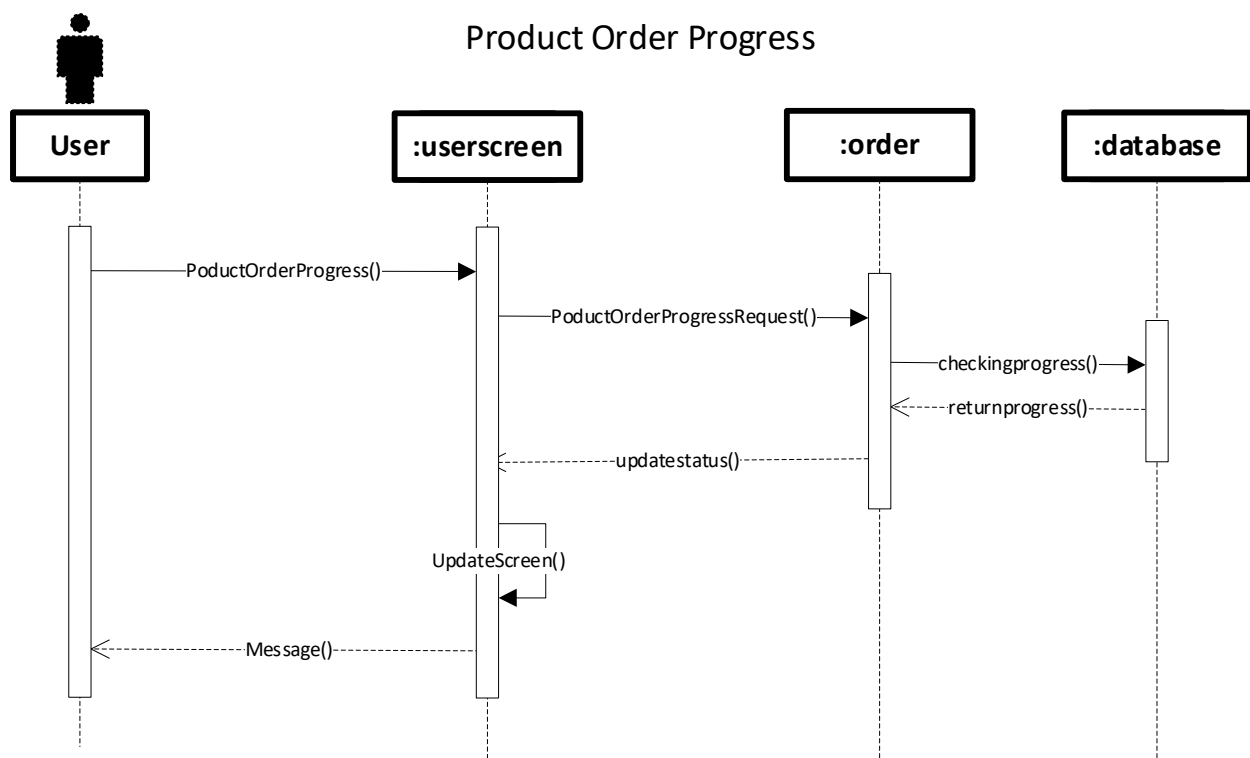
Placing Raw Material Order











System Sequence Diagram

