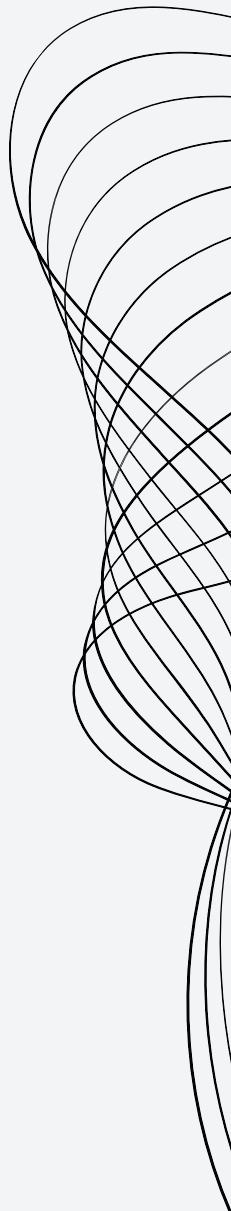




# **SAUDI PUBLIC COMMUNICATIONS**

Software engineering 1



# FUNCTIONAL REQUIREMENTS

## **1. A user shall be able to create an account.**

- 1.1 The system shall provide a registration form.
- 1.2 The system shall validate the user register information.
- 1.3 The system shall add new customers by entering their details such as name, contact information, and billing address.
- 1.4 The system shall display a confirmation message to the user.

## **2. A user shall be able to log in.**

- 2.1 The system shall provide a login form.
- 2.2 The system shall validate the user login information.
- 2.3 The system shall search in database if the user information exist.
- 2.4 If the information found, the system shall display a welcoming message to the user.
- 2.5 If the information was not found, the system shall ask the user to try again.
- 2.6 The system shall allow users to log out.
- 2.7 the employee shall be sent a unique number to distinguish an employee login form from a regular user one.

# FUNCTIONAL REQUIREMENTS

## **3. A user shall be able to view and subscribe to the available telecommunication bundles.**

3.1 The system shall display all the bundles with their features.

3.2 The system shall notify users about subscribed services and upcoming renewals.

3.3 The system shall add the user subscription information in the database.

3.4 The system shall send a verification message when the user subscribes to any bundle.

## **4. The user (manager) shall be able to print monthly reports showing how many customers each employee served.**

4.1 When an employee serves a customer, the system shall add the customer into the employee record.

4.2 The system shall add a bonus (determined by the manager) to employees per customer they served.

4.3 The system shall calculate the amount of bonus each employee deserves.

4.4 The system shall allow managers to print a report showing the employees, the number of customers they served, the bonus ratio, and the total bonus they deserve.

# FUNCTIONAL REQUIREMENTS

## **5. A user can request for maintenance, installation, or other local services.**

5.1 The system shall receive the request and create a service order contains details such as the requested service type, customer information and location.

5.2 The system shall assign resources to fulfill the service request. This could include technicians, engineers, or other personnel with the required skills and availability.

## **6. A user (employee) shall be able to review the local services requested by the user.**

6.1 The system shall display the service request's details

6.2 The system shall display the service completion details and test results.

# FUNCTIONAL REQUIREMENTS

## **7. A user shall be able to file a complaint as well as track its status and receive updates on its resolution.**

7.1 The system shall allow users to submit complaints through various channels (e.g., phone, email, online form).

7.2 The system shall categorize the complaint into the appropriate category (e.g., bundle subscription, local service, payment).

7.3 The system shall update the complaint status and provide resolution updates within an hour.

## **8. A user (employee) shall handle a complaint.**

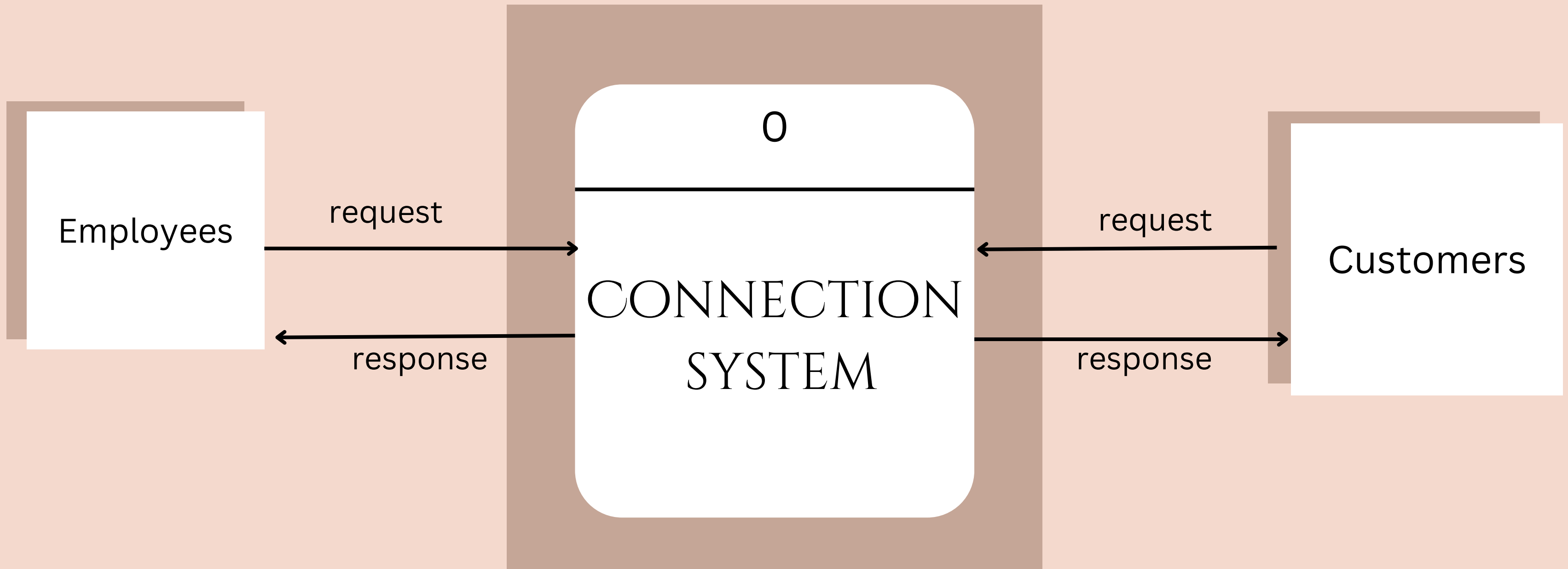
8.1 The system shall notify employees when a new complaint is filed.

8.2 The system shall automatically assign an employee according to the complaint category and employees' availability.

# NON FUNCTIONAL REQUIREMENTS

- **Security:** The system should have secure login and access controls to ensure that only authorized employees and customers can access the system.
- **Reliability:** The system shall be reliable and available 24/7 with minimal downtime time that shall not exceed five seconds.
- **User-Friendly Interface:** The system should have an intuitive and user-friendly interface that is easy to navigate. The average number of errors for experienced users shall not exceed 2 per hour of system use for both employees and customers.
- **Scalability:** The system shall be scalable to accommodate future growth and expansion of the telecommunication company.
- **Accessibility:** The system shall be accessible from multiple devices and platforms, such as desktop computers, laptops, tablets, and smartphones.
- **Performance:** The system has a processing speed of 500MP/second, with a response time of 0.1 second, giving the user a seamless and responsive experience.

# LEVEL 0 - CONTEXT DIAGRAM



# LEVEL I - DFD

```
graph TD
    subgraph Processes
        P1([1 Create an account])
        P2([2 log in])
        P3([3 View & subscribe to bundles])
        P4([4 view monthly report])
        P5([5 File a complaint])
        P6([6 view local services])
        P7([7 Request local service])
        P8([8 Handle a complaint])
    end

    subgraph DataStores
        DS1[Customer Record]
        DS2[Subscription Record]
        DS3[Local Service Record]
        DS4[Complaint Record]
        DS5[Employee Record]
    end

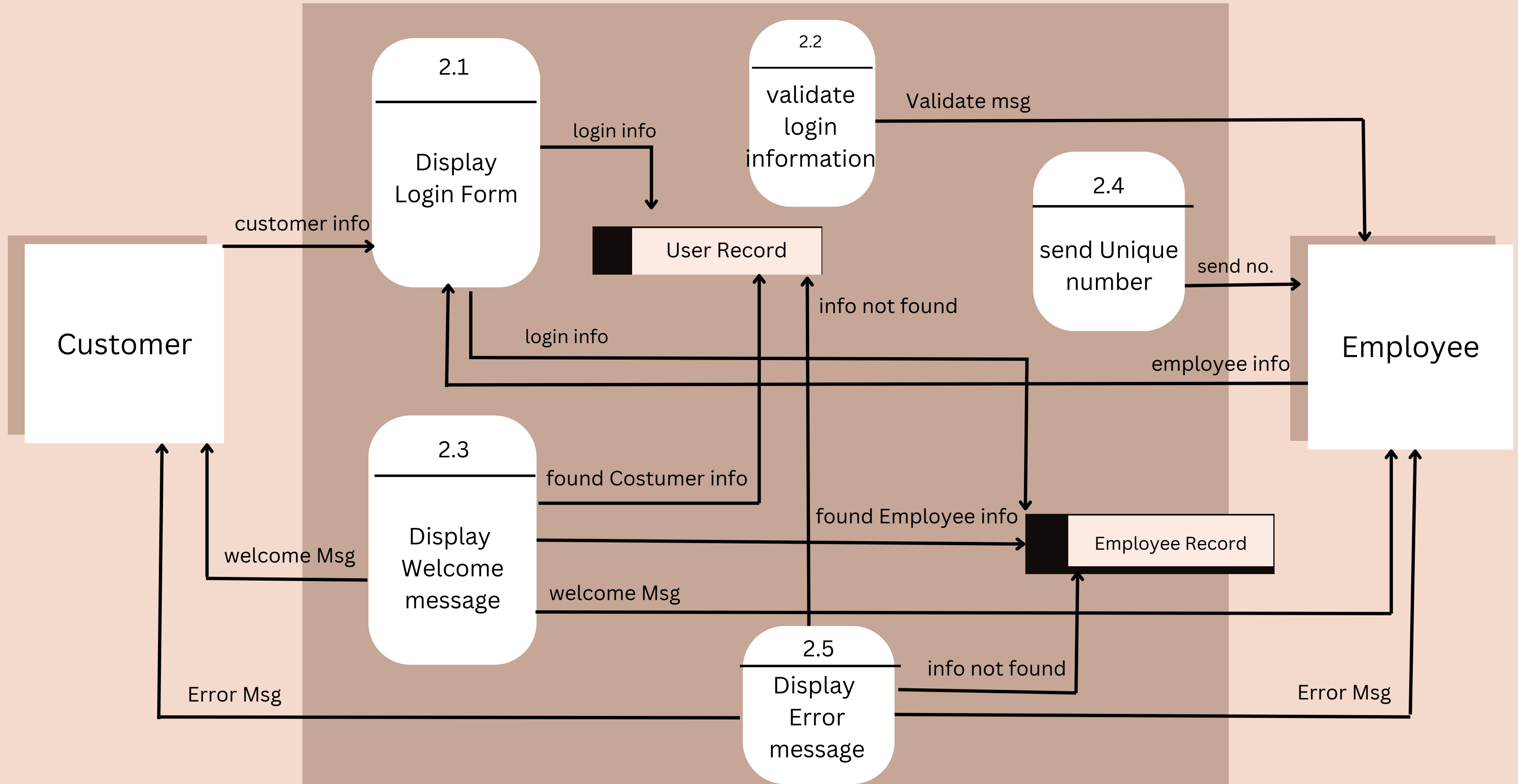
    P1 -- "new account" --> DS1
    P1 -- "Confirmation msg" --> P2
    P2 -- "customer info" --> P1
    P2 -- "customer info" --> DS1
    P3 -- "Subscription details" --> DS2
    P3 -- "Service details" --> P6
    P3 -- "Service details" --> DS3
    P4 -- "view report" --> DS2
    P4 -- "Response Report" --> P8
    P5 -- "Complaint details" --> DS4
    P5 -- "Complaint details" --> P8
    P6 -- "View local services" --> P3
    P7 -- "Service type" --> P8
    P7 -- "t respnse" --> P1
    P8 -- "Complaint response" --> P4
    P8 -- "Complaint response" --> P7

    I1[customer info] --> P2
    I2[Welcome msg] --> P1
    I3[View bundle] --> P3
    I4[emp] --> DS5
```

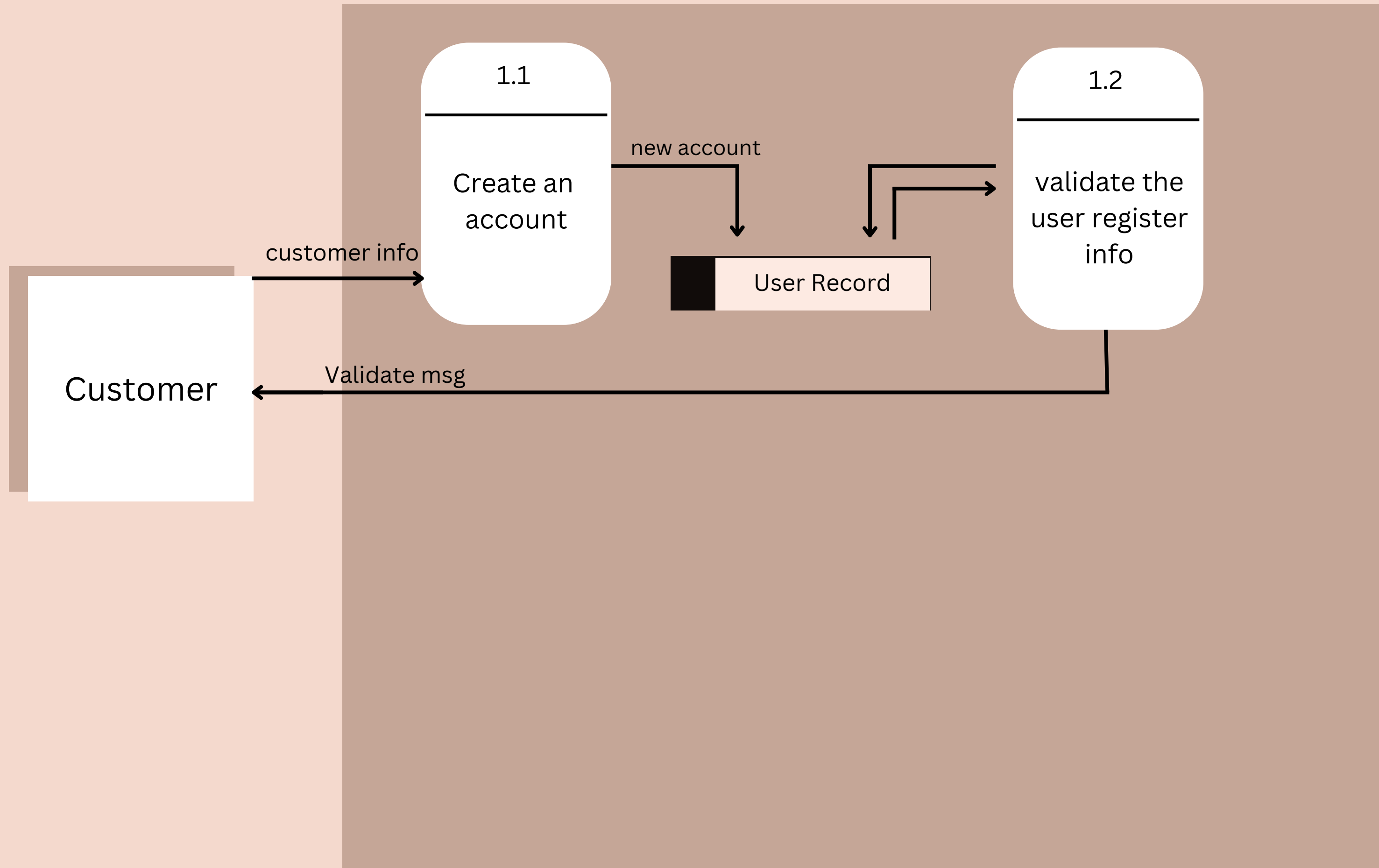
The diagram illustrates the Level I Data Flow Diagram (DFD) for a system. It features eight processes (numbered 1 to 8) and five data stores (represented by rectangles with a black header). The processes are: 1. Create an account, 2. log in, 3. View & subscribe to bundles, 4. view monthly report, 5. File a complaint, 6. view local services, 7. Request local service, and 8. Handle a complaint. The data stores are: Customer Record, Subscription Record, Local Service Record, Complaint Record, and Employee Record. The diagram shows the flow of data between these processes and data stores, including external inputs and outputs. Key data flows include: 'customer info' from an external source to process 2; 'Welcome msg' from an external source to process 1; 'new account' from process 1 to the Customer Record data store; 'Confirmation msg' from process 1 to process 2; 'customer info' from process 2 to process 1 and the Customer Record data store; 'Subscription details' from process 3 to the Subscription Record data store; 'Service details' from process 3 to process 6, the Local Service Record data store, and process 4; 'view report' from the Subscription Record data store to process 4; 'Response Report' from process 4 to process 8; 'Complaint details' from process 5 to the Complaint Record data store and process 8; 'Complaint response' from process 8 to process 4 and process 7; 'Service type' from process 7 to process 8; 't respnse' from process 8 to process 1; 'View bundle' from an external source to process 3; and 'emp' from an external source to the Employee Record data store.



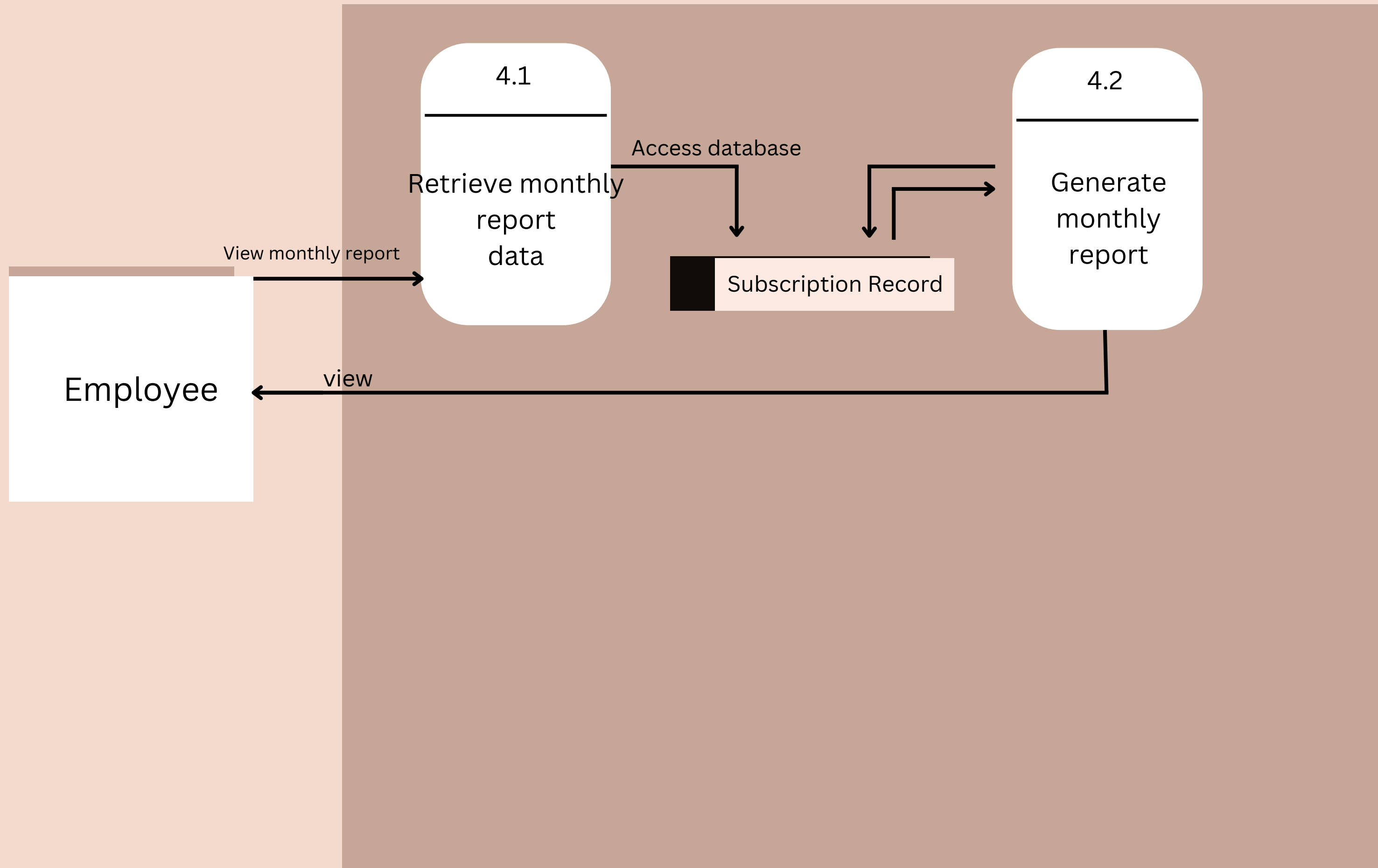
# CHILD DFD FOR LOGIN



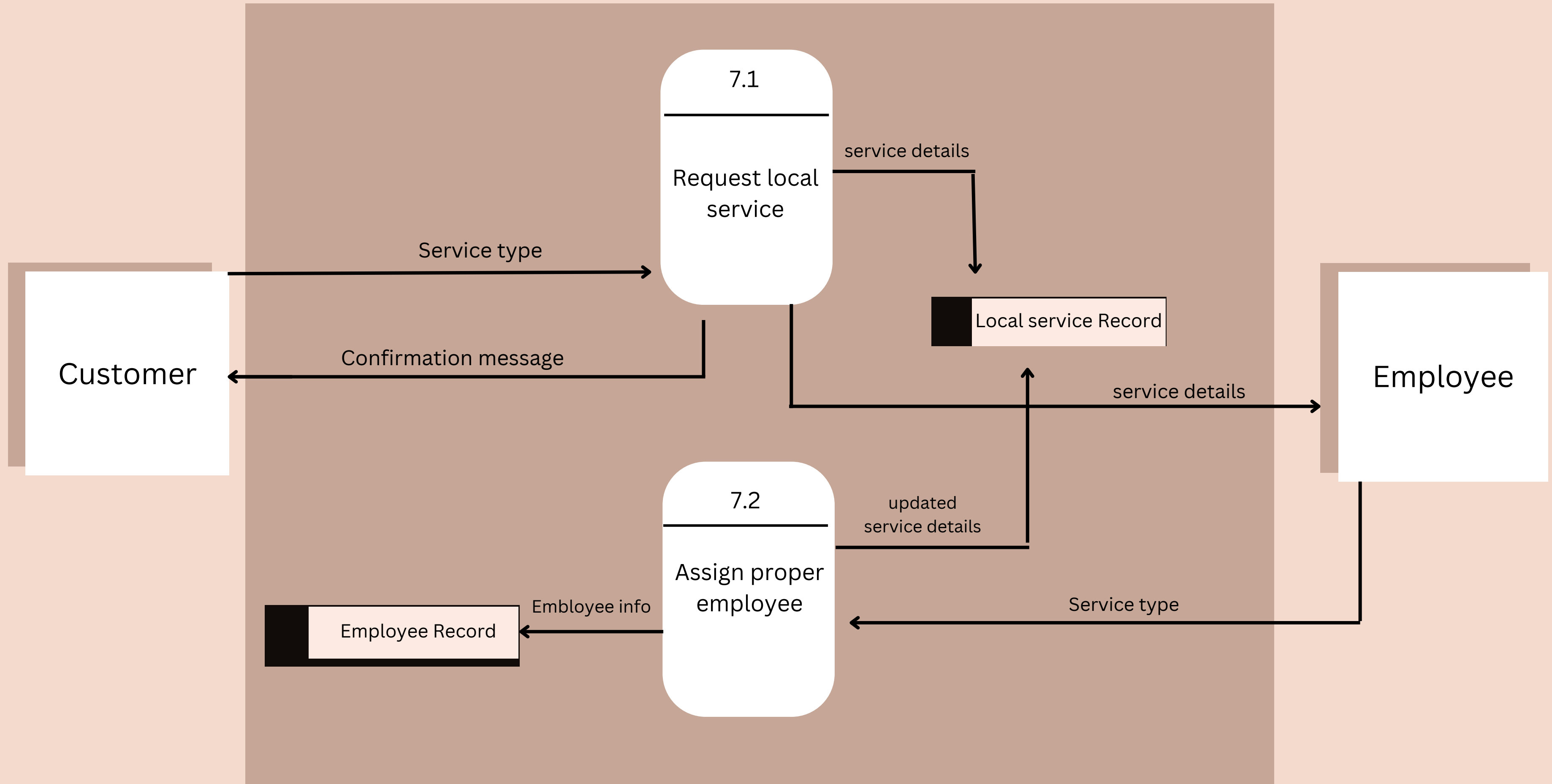
# CHILD DFD FOR CREATE ACCOUNT



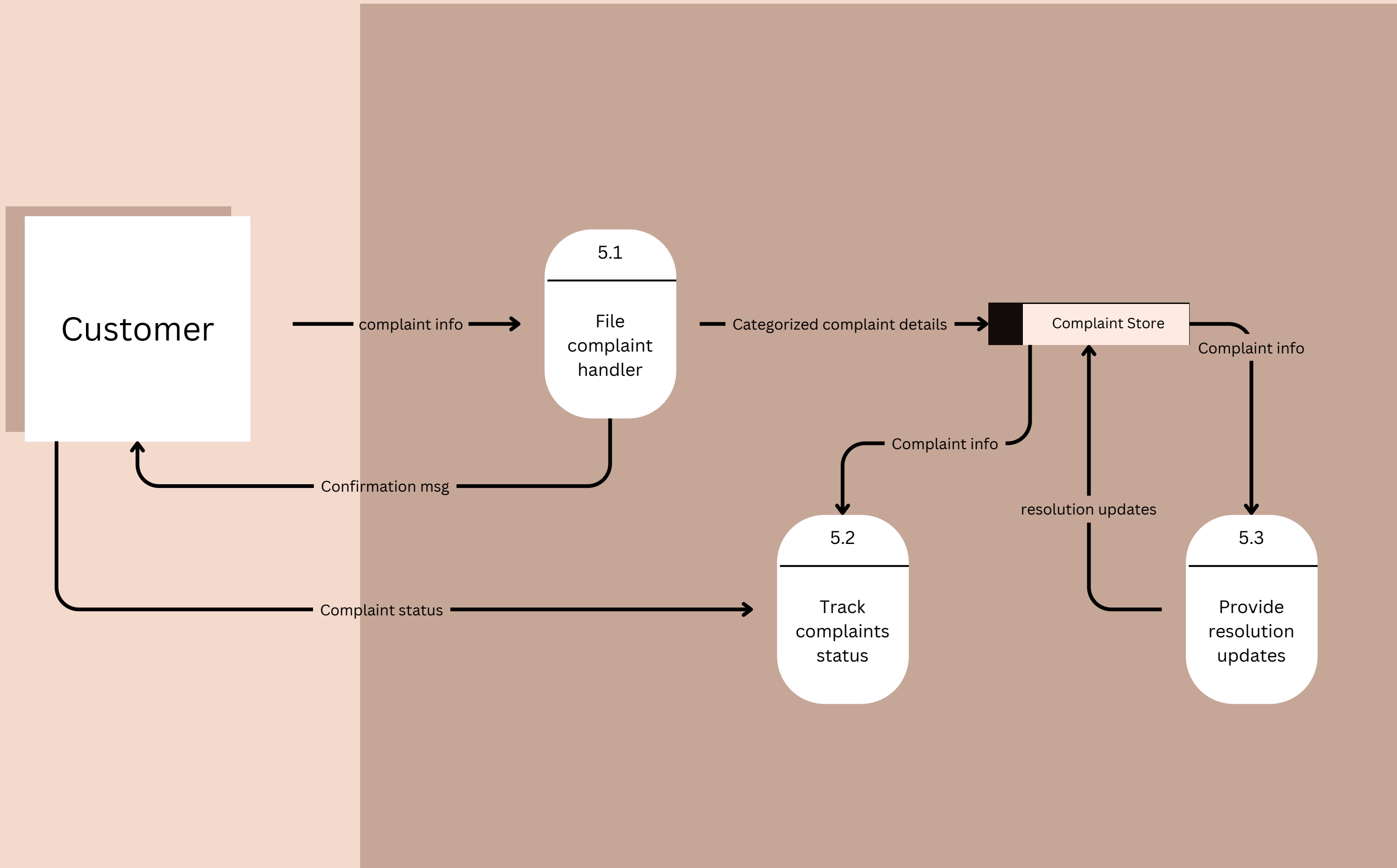
# CHILD DFD FOR VIEW MONTHLY REPORT



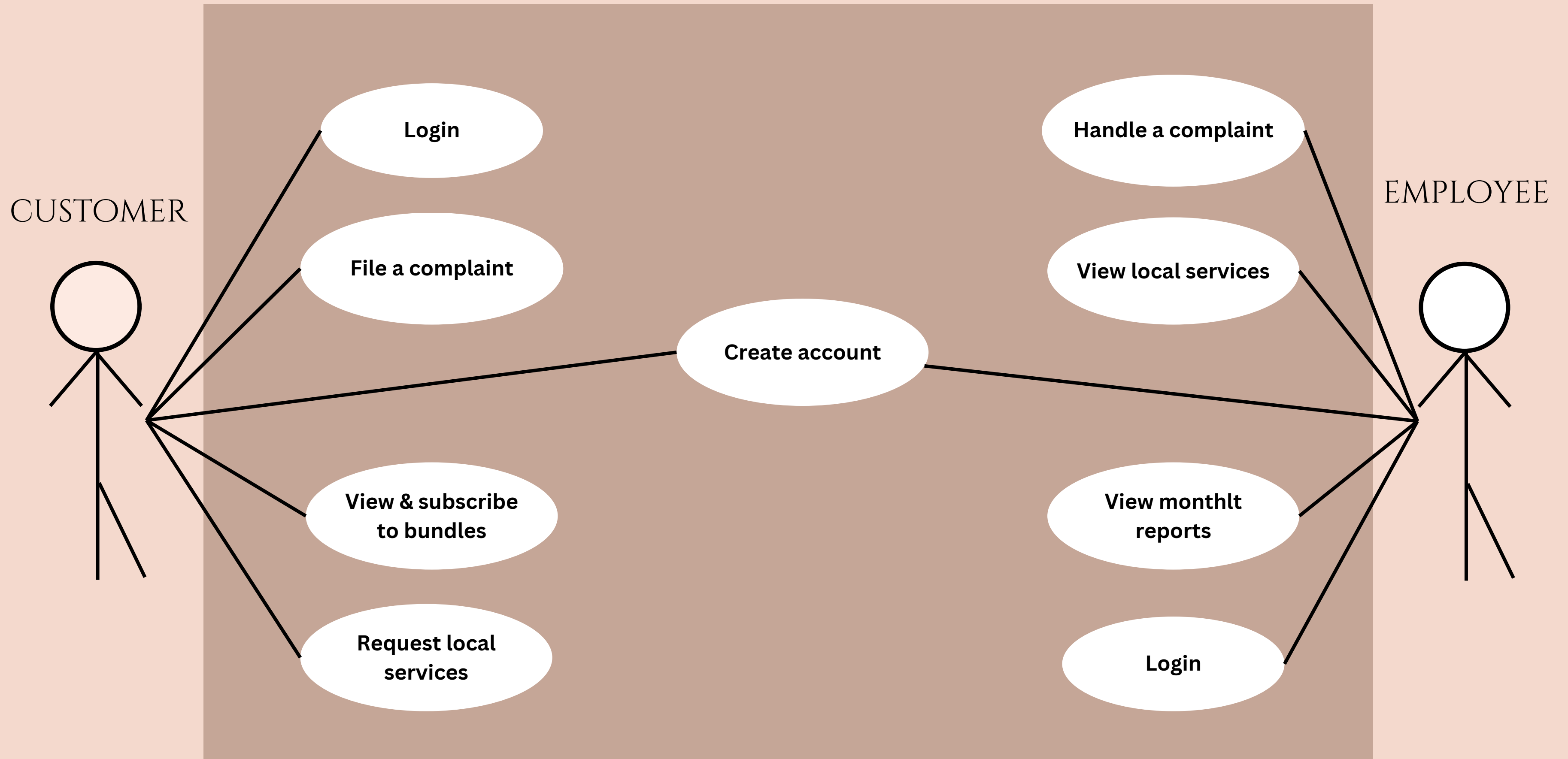
# CHILD DFD FOR LOCAL SERVICE



# CHILD DFD FOR FILE A COMPLAINT



# USE CASE



# I-CREATE AN ACCOUNT SCENARIO

<b>Actor</b>	Customer, Emp
<b>Description</b>	<ul style="list-style-type: none"><li>• The system shall provide a registration form.</li><li>• The system shall validate the user register information.</li><li>• The system shall add new customers by entering their details such as name, contact information, and billingaddress.</li><li>• The system shall display a confirmation message to the user.</li></ul>
<b>Data</b>	Both Customer's and employee personal information (name, email,password,phone number, address)
<b>Stimulus</b>	customer clicks on create button to create Account after writing their information.
<b>Response</b>	<ul style="list-style-type: none"><li>• The system presents a registration form to the customer</li><li>• The system validates the customer's registration information, ensuring that all required fields are filled and the data is in the correct format .</li><li>• The system adds the customer as a new customer, storing their details in the system's database.</li><li>• The system displays a confirmation message to the customer, confirming that their account has been successfully created.</li></ul>
<b>Comments</b>	<ul style="list-style-type: none"><li>• The registration form should clearly indicate which fields are required and provide helpful instructions</li><li>• If any validation errors are found, the system displays error messages next to the respective fields, indicating what needs to be corrected.</li></ul>

## 2- LOGIN SCENARIO

Actors	Costumer, Employee
Description	<ul style="list-style-type: none"><li>• The system shall provide a login form.</li><li>• The system shall validate the user login information.</li><li>• The system shall search in database if the user information exist.</li><li>• If the information found, the system shall display a welcoming message to the user.</li><li>• If the information was not found, the system shall ask the user to try again.</li><li>• The system shall allow users to log out.</li><li>• the employee shall be sent a unique number to distinguish an employeeogin form from a user one</li></ul>
Data	Customer personal infromation, emplyee personal information and their unique number.
Stimulus	Customer and employee click on the login form to enter their personal information
Respose	<ul style="list-style-type: none"><li>• Confirmation message will be sent to both customer and employee.</li><li>• unique number will be sent to the employee.</li></ul>
Comments	Efficient and quick delivery of verification messages to verify user information.



# 3-VIEW&SUBSCRIBE

<b>Actor</b>	User, Employee
<b>Description</b>	<ul style="list-style-type: none"><li>• The system shall display all the bundles with their features.</li><li>• The system shall notify users about subscribed services and upcoming renewals.</li><li>• The system shall add the user subscription information in the database.</li><li>• The system shall send a verification message when the user subscribes to any bundle.</li></ul>
<b>Data</b>	<ul style="list-style-type: none"><li>• Information about available bundles and their features.</li><li>• User information and current subscriptions.</li><li>• Verification messages and alerts.</li></ul>
<b>Stimulus</b>	<ul style="list-style-type: none"><li>• User logs into the system.</li><li>• User clicks on button to searches for available bundles.</li><li>• Userclicks on button selects a bundle and subscribes.</li></ul>
<b>Response</b>	<ul style="list-style-type: none"><li>• The system displays a list of all available bundles with their features.</li><li>• The system sends notifications to the user about subscribed services and upcoming renewals.</li><li>• The system adds user subscription information to the database.</li><li>• The system sends a verification message when the user subscribes to any bundle.</li></ul>
<b>Comments</b>	<ul style="list-style-type: none"><li>• Improving the user experience by ensuring an intuitive and user-friendly interface.</li><li>• Providing clear and detailed messages to users regarding subscription status and renewals.</li><li>• Ensuring the security and stability of the database for securely storing user subscription information.</li><li>• Efficient and prompt delivery of verification messages to verify user information.</li></ul>

# 4-FILE A COMPLAINT

<b>Actor</b>	Customer
<b>Description</b>	<ul style="list-style-type: none"><li>• A user shall be able to file a complaint as well as track its status and receive updates on its resolution.</li><li>• The system shall allow users to submit complaints through various channels (e.g., phone, email, online form).</li><li>• The system shall categorize the complaint into the appropriate category (e.g., bundle subscription, local service,payment).</li><li>• The system shall update the complaint status and provide resolution updates within an hour.</li></ul>
<b>Data</b>	<ul style="list-style-type: none"><li>• User Information (e.g., name, contact details)</li><li>• Complaint Details (e.g., category, description)</li><li>• Complaint Status</li><li>• Resolution Updates</li></ul>
<b>Stimulus</b>	<ul style="list-style-type: none"><li>• User clicks on to fill in complaint.</li><li>• User clicks to request status update.</li></ul>
<b>Response</b>	<ul style="list-style-type: none"><li>• User clicks on the cocomplaint form to receive a response to complaint.</li></ul>
<b>Comments</b>	The system allows customers to provide feedback on the resolution process. Customer feedback is stored in the system for future reference and continuous improvement.

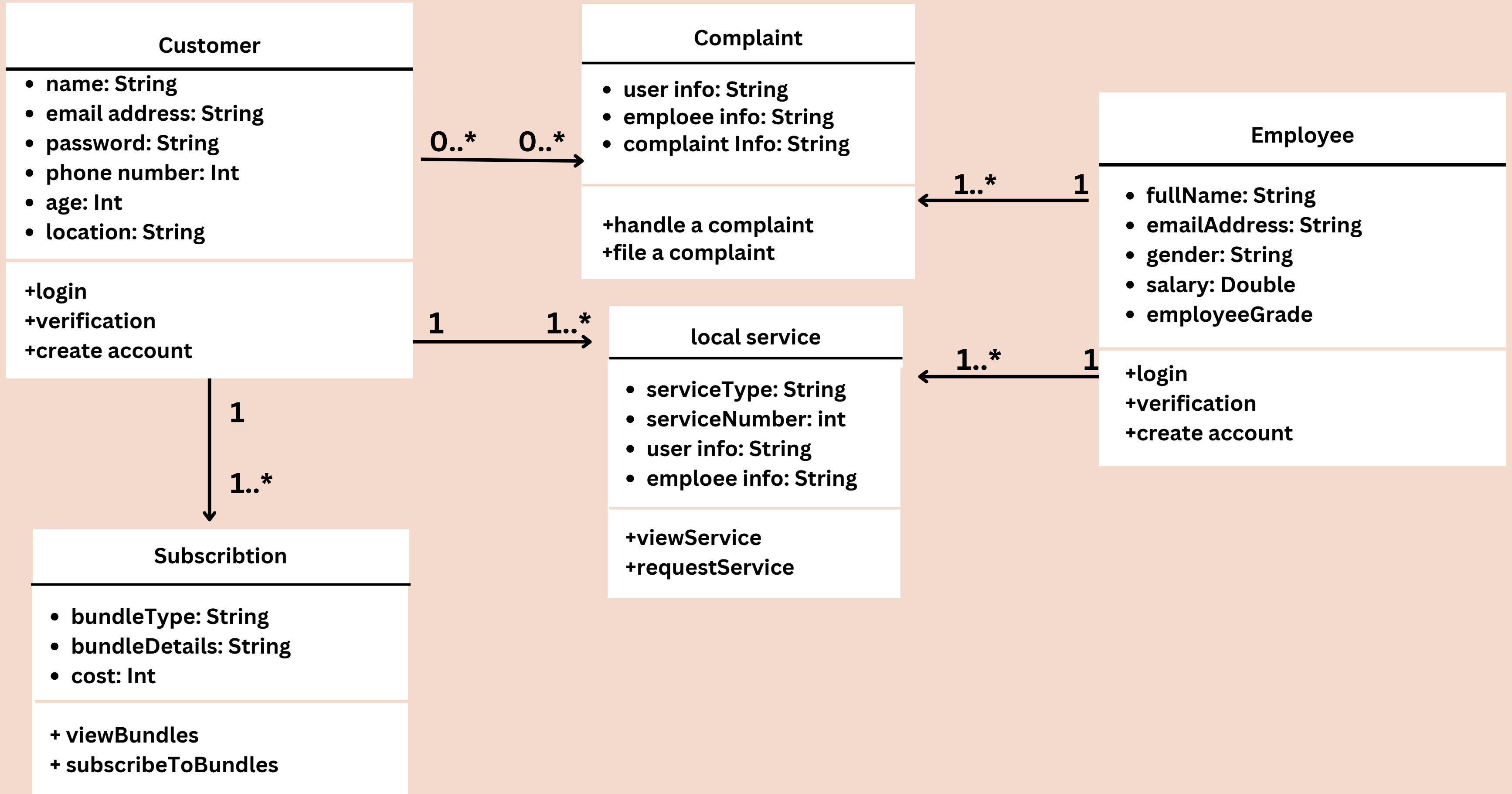
# 5-HANDLE A COMPLAINT

<b>Actor</b>	Employee
<b>Description</b>	This use case involves the user, who is an employee, reviewing local services requested by other users and handling complaints. The system provides functionalities to display service request details, service completion details, test results, as well as notify employees about new complaints. It also automatically assigns employees based on the complaint category and their availability.
<b>Data</b>	<ul style="list-style-type: none"><li>• <b>Service Request Details:</b> Information about the service requested, such as type, date, time, location, and specific requirements.</li><li>• <b>Service Completion Details:</b> Information about the completed service, including service provider, date and time of completion, test results, and additional notes or documentation.</li><li>• <b>Complaint Category:</b> Categorization of complaints, such as bundle subscription, local service, or payment.</li></ul>
<b>Stimulus</b>	The employee interacts with the system to review local services or handle a complaint.
<b>Response</b>	Display Service Request Details: The system displays the details of the service request, providing the user with information about the requested service.
<b>Comments</b>	The system needs to store and retrieve data related to service requests, service completion details, test results, and complaints.

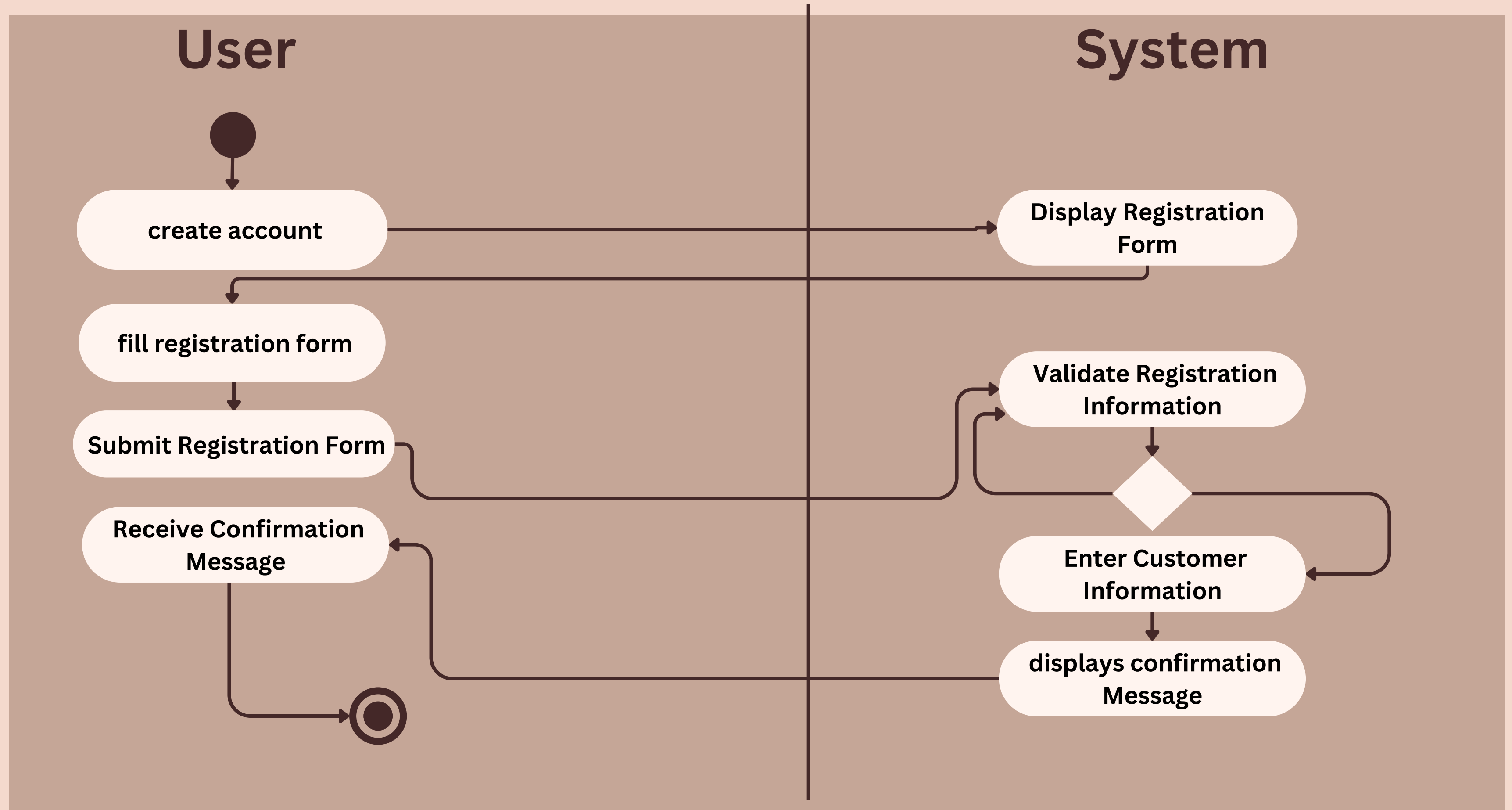
# 6- REQUEST LOCAL SERVICE

<b>Actor</b>	User, Employee
<b>Description</b>	The user can request for maintenance, installation, or other local services.
<b>Data</b>	<ul style="list-style-type: none"><li>• Information about the requested service type.</li><li>• User information and location.</li><li>• Verification messages and alerts.</li></ul>
<b>Stimulus</b>	<ul style="list-style-type: none"><li>• User logs into the system.</li><li>• User searches for available local services.</li><li>• User selects a service and make a request.</li></ul>
<b>Response</b>	<ul style="list-style-type: none"><li>• The system displays a list of all local services.</li><li>• The system sends confirmations message when new service requested.</li><li>• The system adds service information to the database.</li></ul>
<b>Comments</b>	<ul style="list-style-type: none"><li>• Improving the user experience by ensuring an intuitive and user-friendly interface.</li><li>• Providing clear and detailed messages to users regarding their service request.</li><li>• Efficient and prompt delivery of confirmation messages.</li></ul>

# CLASS DIAGRAM



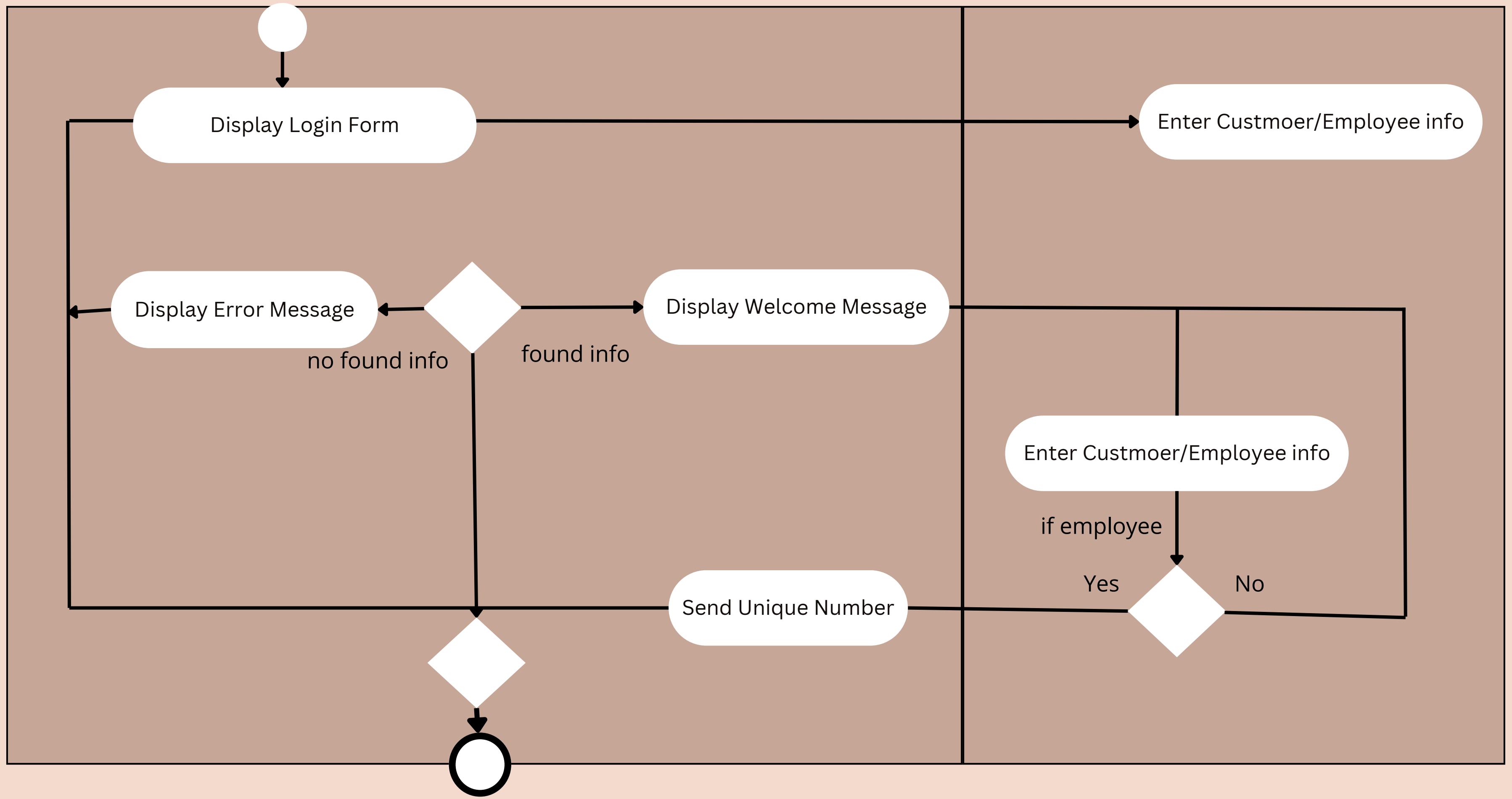
# CREATE ACCOUNT ACTIVITY MODEL



# LOGIN ACTIVITY MODEL

**System**

**User**



# ACTIVITY DIAGRAM (HANDLE A COMPLAINT)

User  
(employee)

System

Views  
Complaints

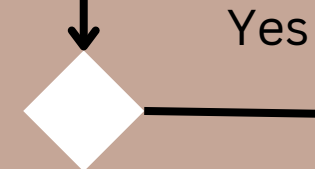
Displays  
Complaint

Selects  
Complaint

Retrieves  
Complaint Details

Reviews Service  
Completion Details

Local Service



Handles  
Complaint

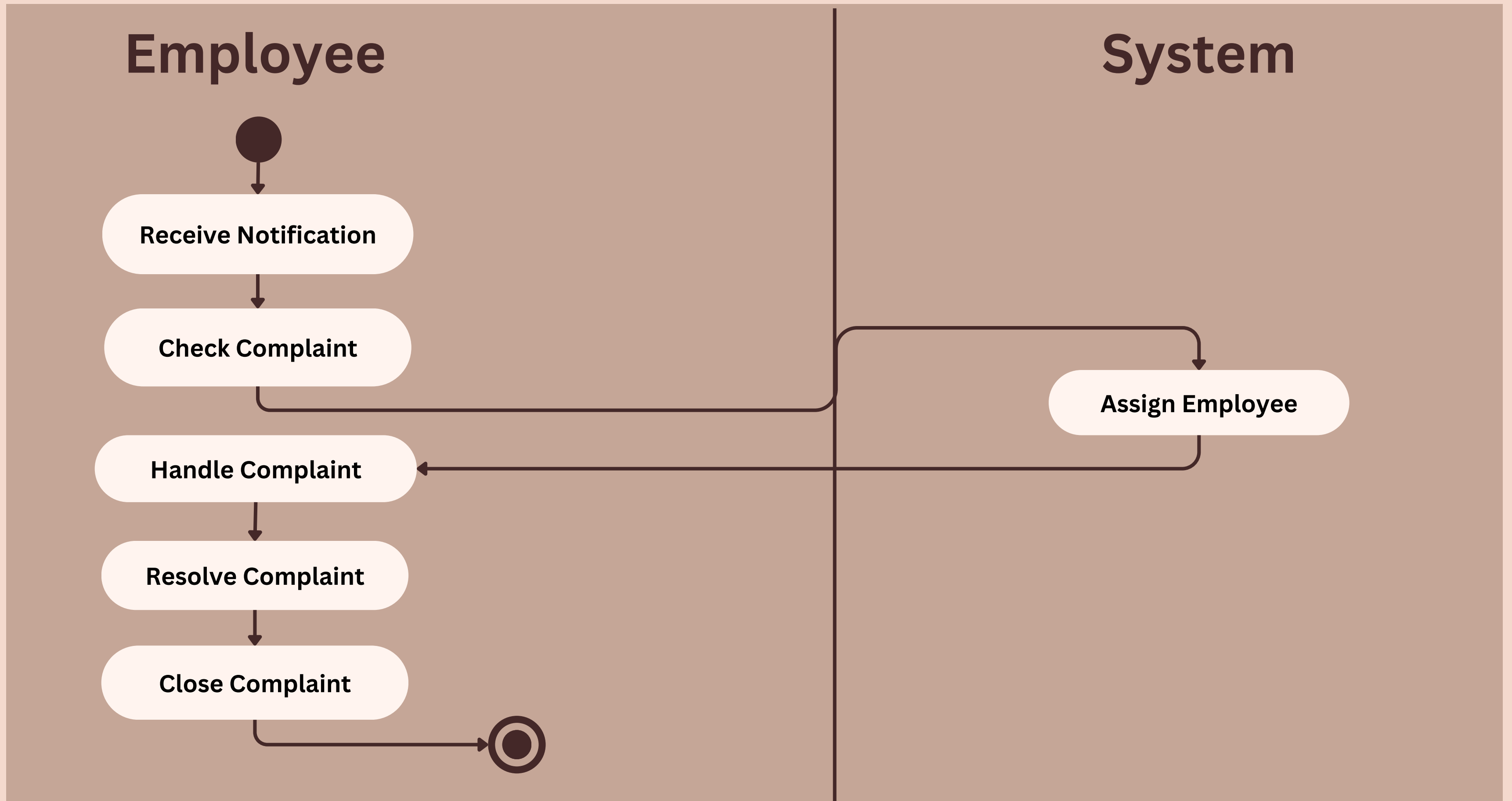
Assigns Employee

Updates  
Complaint Status

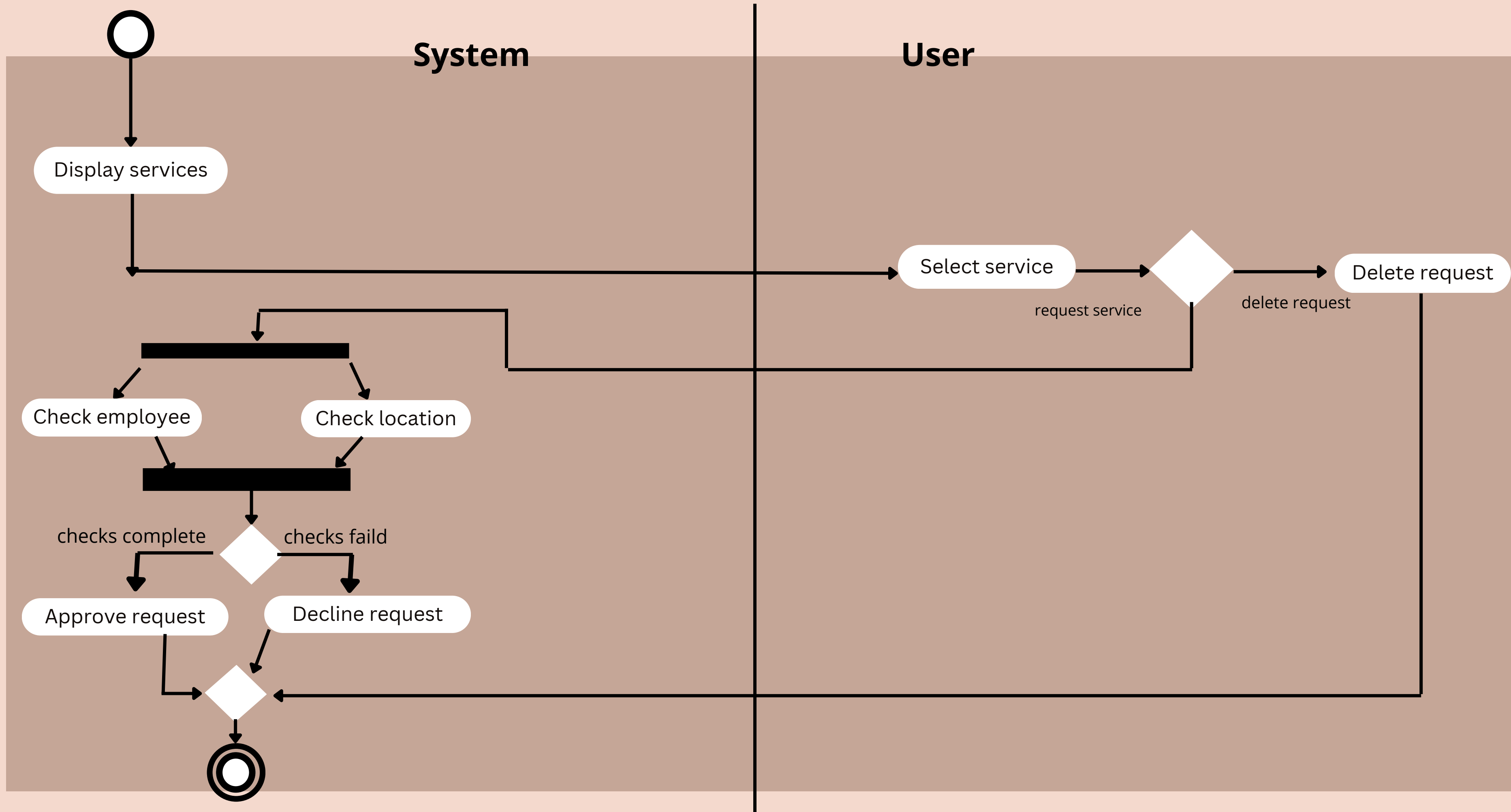




# ACTIVITY DIAGRAM FOR HANDLE A COMPLAINT



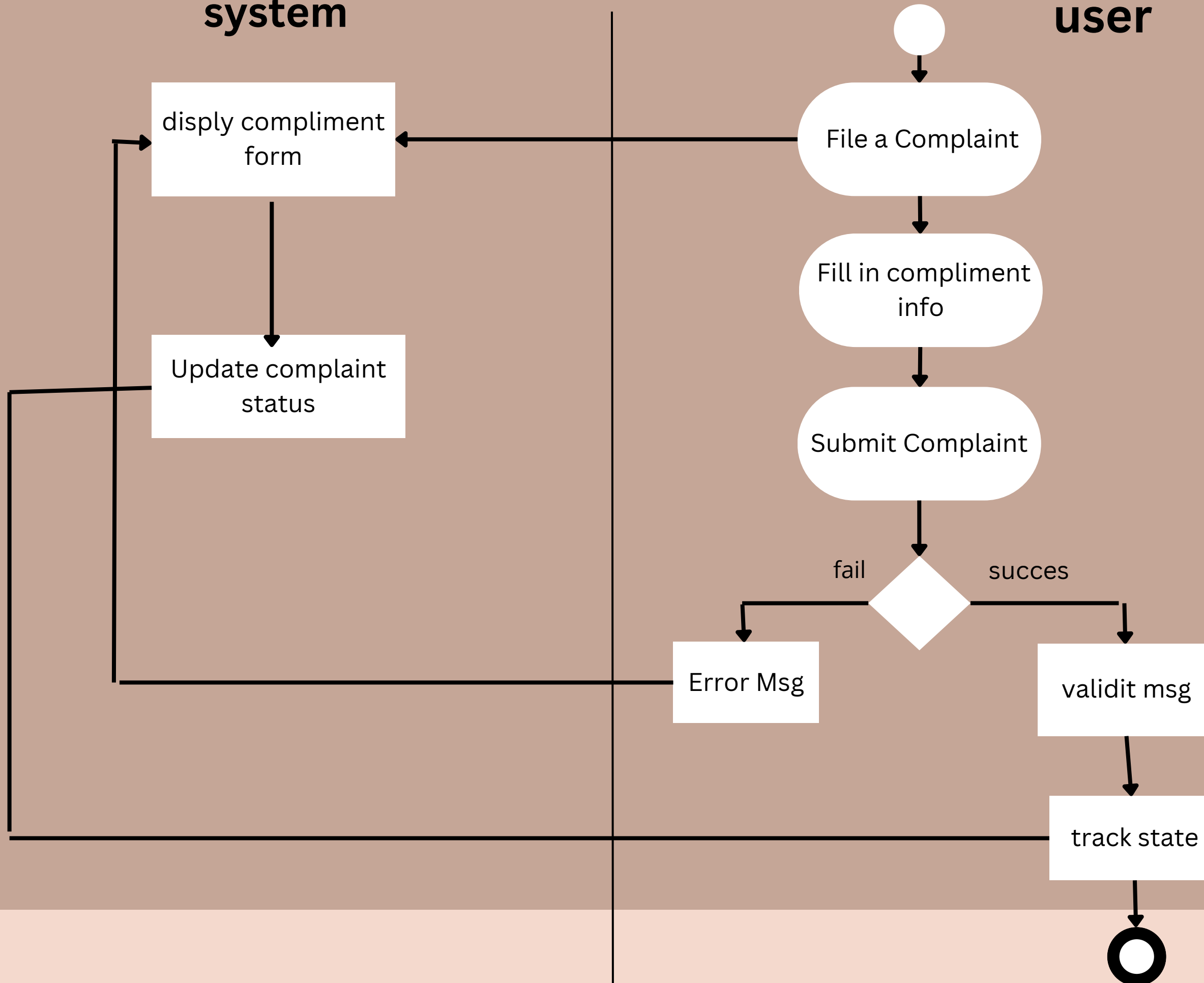
# LOCAL SERVICES REQUEST ACTIVITY MODEL



# FILE COMPLIMENT

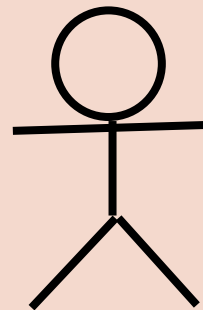
**system**

**user**



Create  
account

User:



Sign up

Validation  
Form

User Record

Request  
registration

Validate sign up  
info

User info matched

Provide registration  
information

Matching info

alt

[ sgin up OK ]

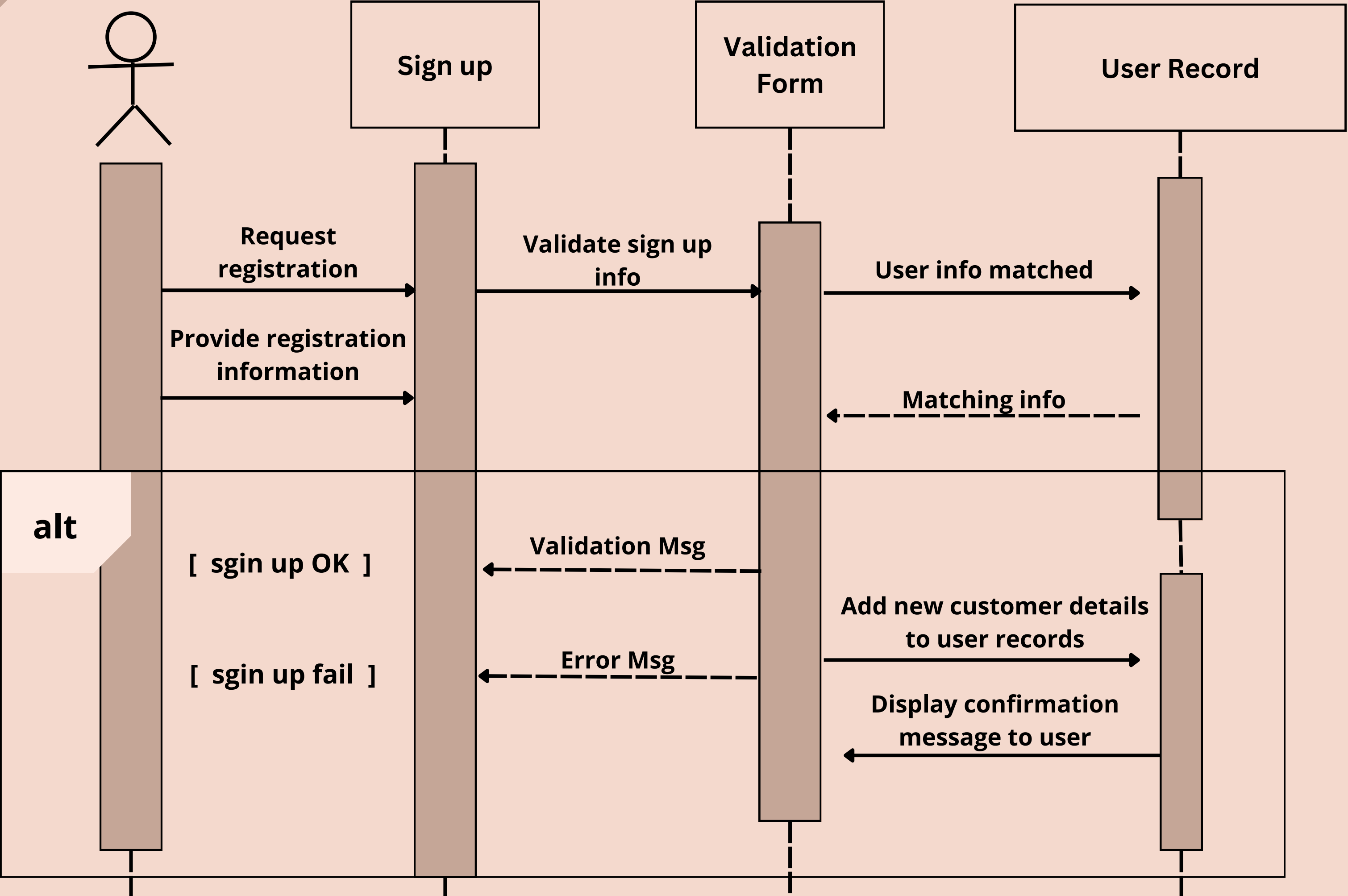
Validation Msg

[ sgin up fail ]

Error Msg

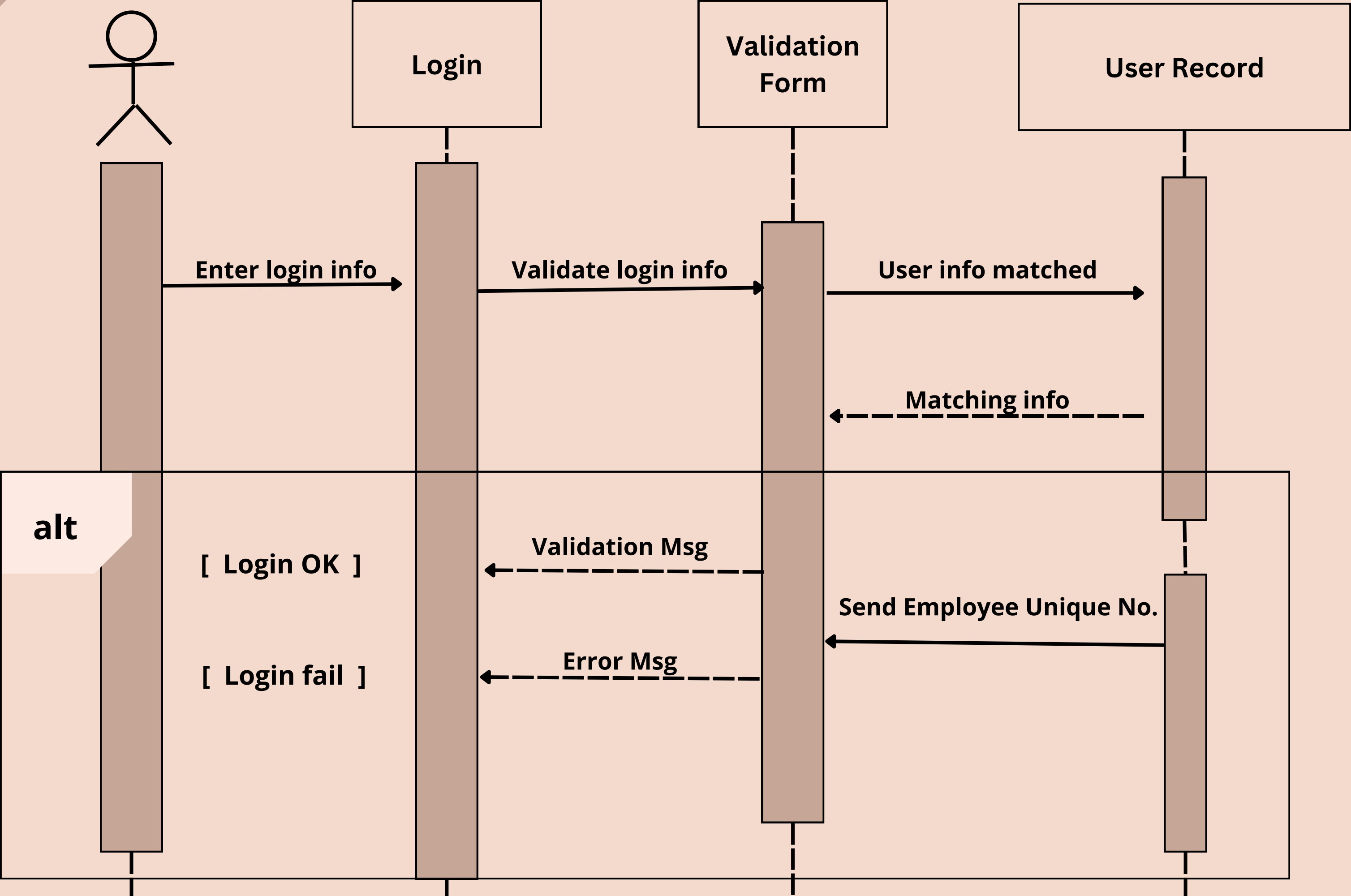
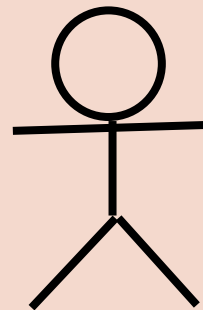
Add new customer details  
to user records

Display confirmation  
message to user



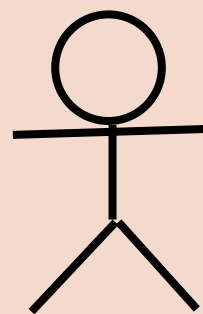
Login

User:



# Local service

User:



Request

Check

Local Service Record

Choose service

Check service

Service info

Check customer location

alt

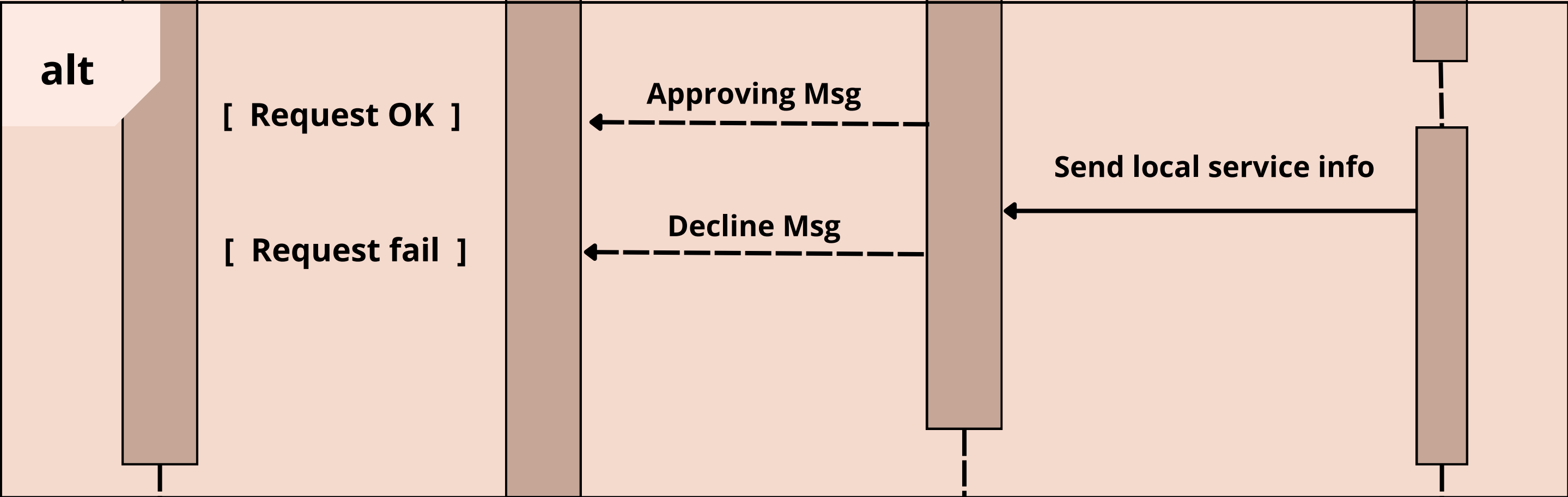
[ Request OK ]

Approving Msg

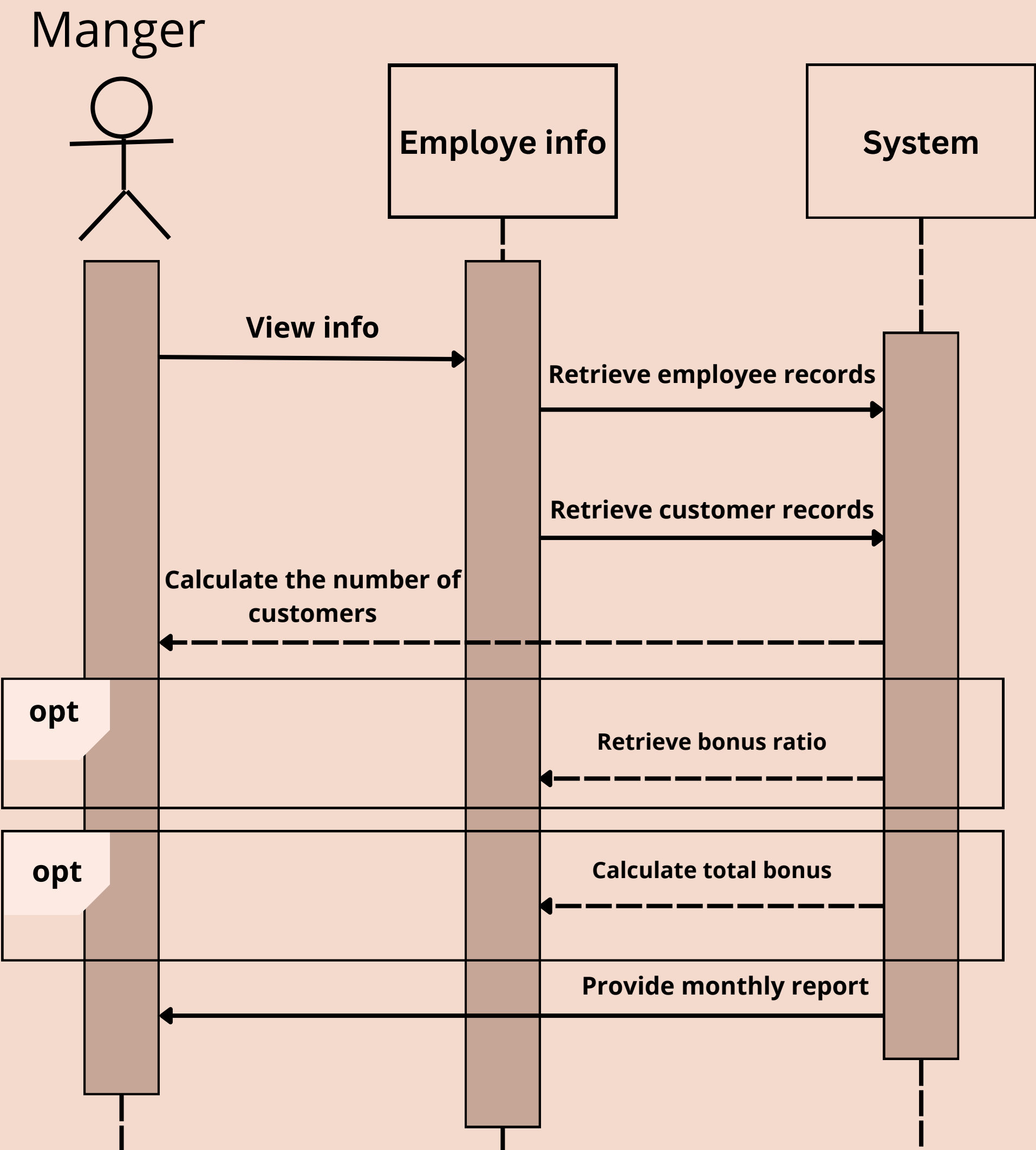
[ Request fail ]

Decline Msg

Send local service info

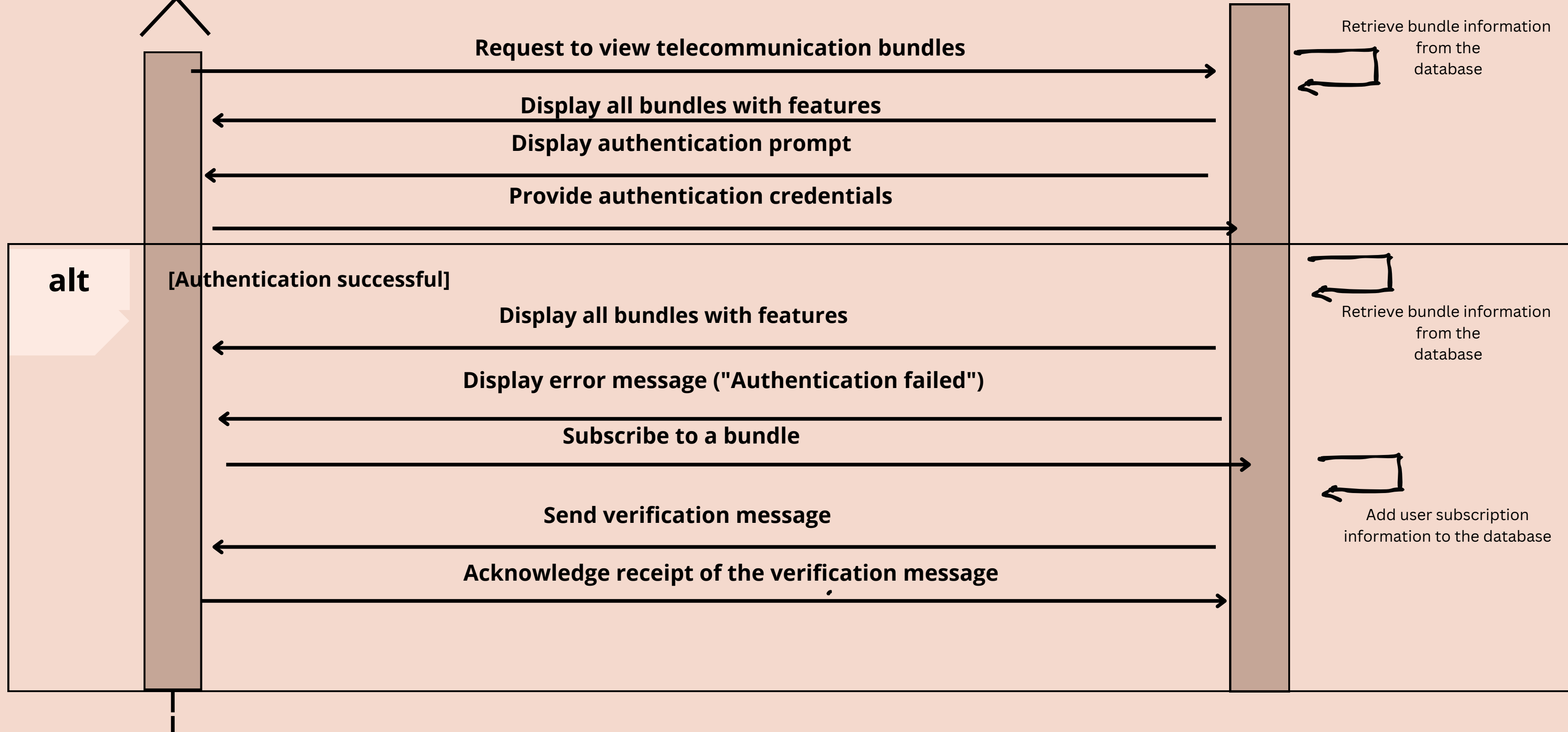
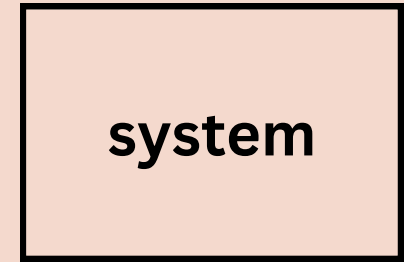
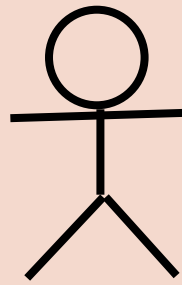


Monthly reports



**View & subscribe  
to bundles**

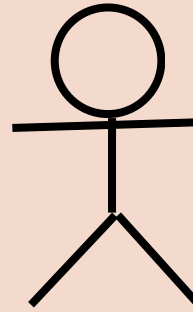
User:





# File a complaint

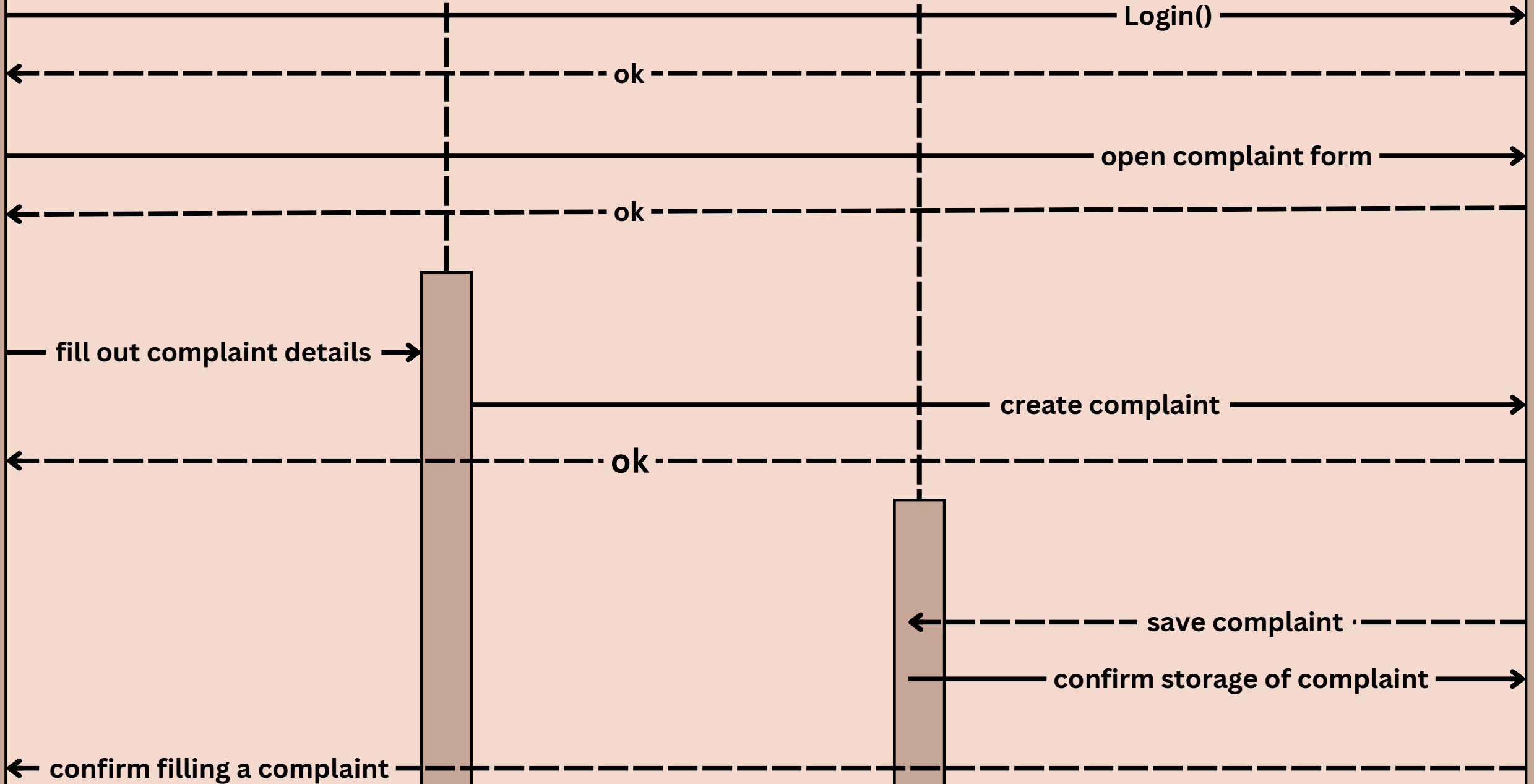
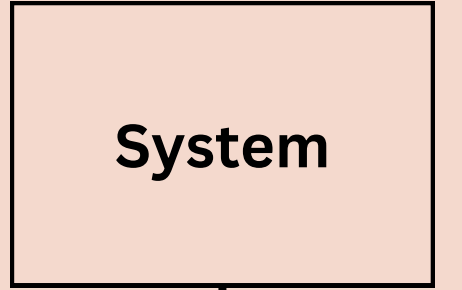
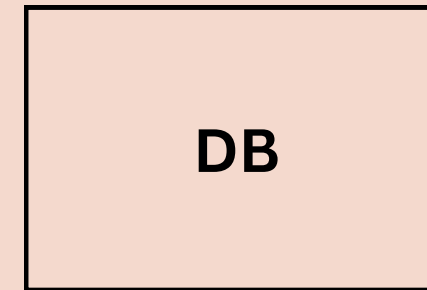
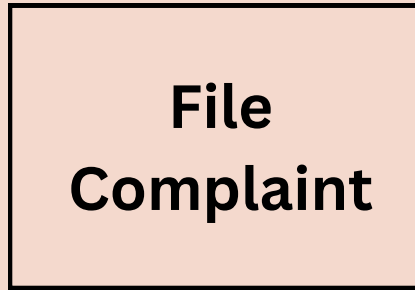
Customer



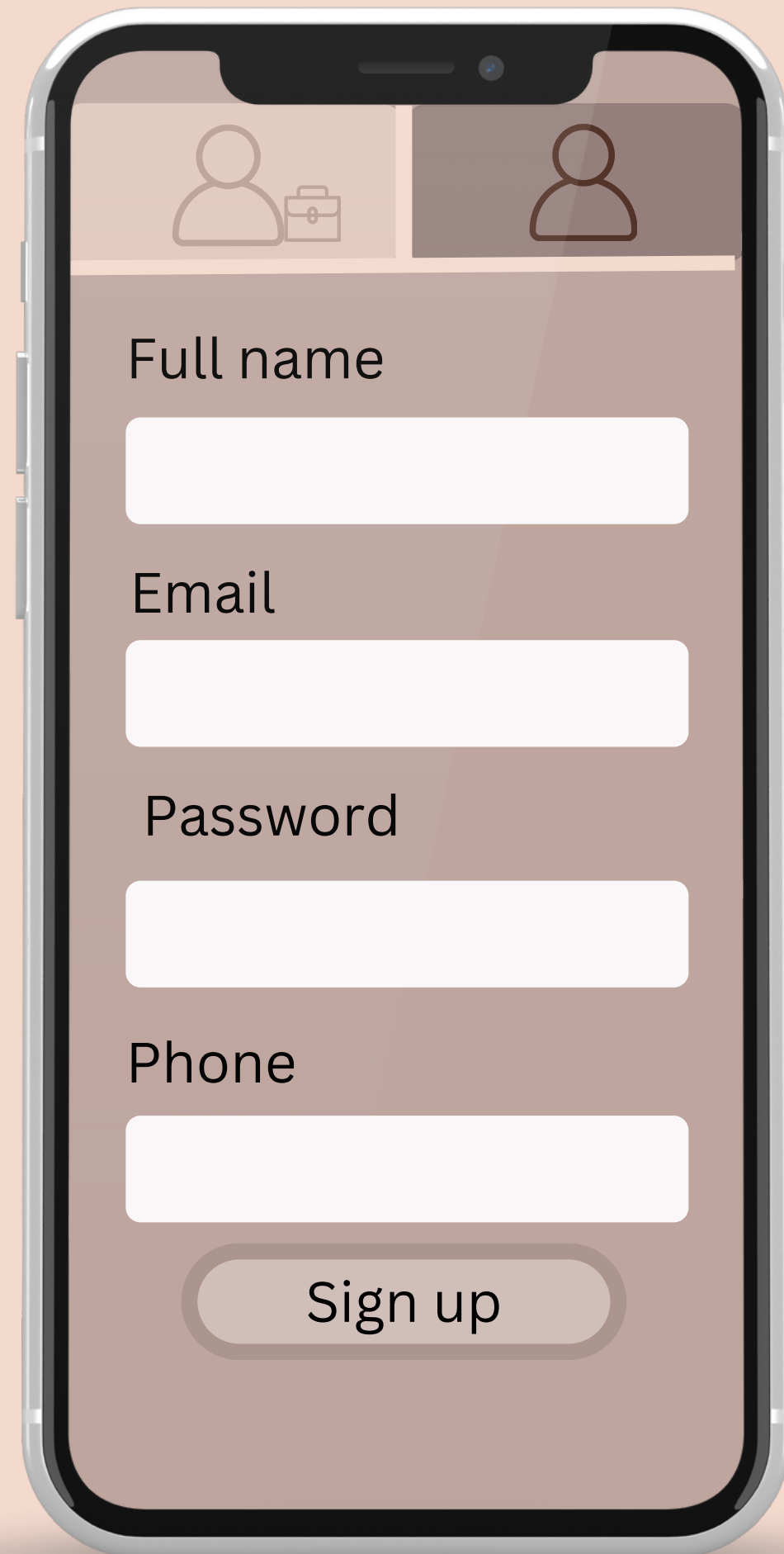
File Complaint

DB

System



## Create account



Mobile app registration screen. The header features two icons: a person with a briefcase and a person. The form contains four input fields: 'Full name', 'Email', 'Password', and 'Phone'. A 'Sign up' button is at the bottom.

Full name

Email

Password

Phone

Sign up



Mobile app phone verification screen. The header features a person icon. The form contains a 'Phone' label, a country code dropdown showing '+699', a phone number input field, and a 'phone verification' label above four empty verification boxes. A 'verified' button is at the bottom.

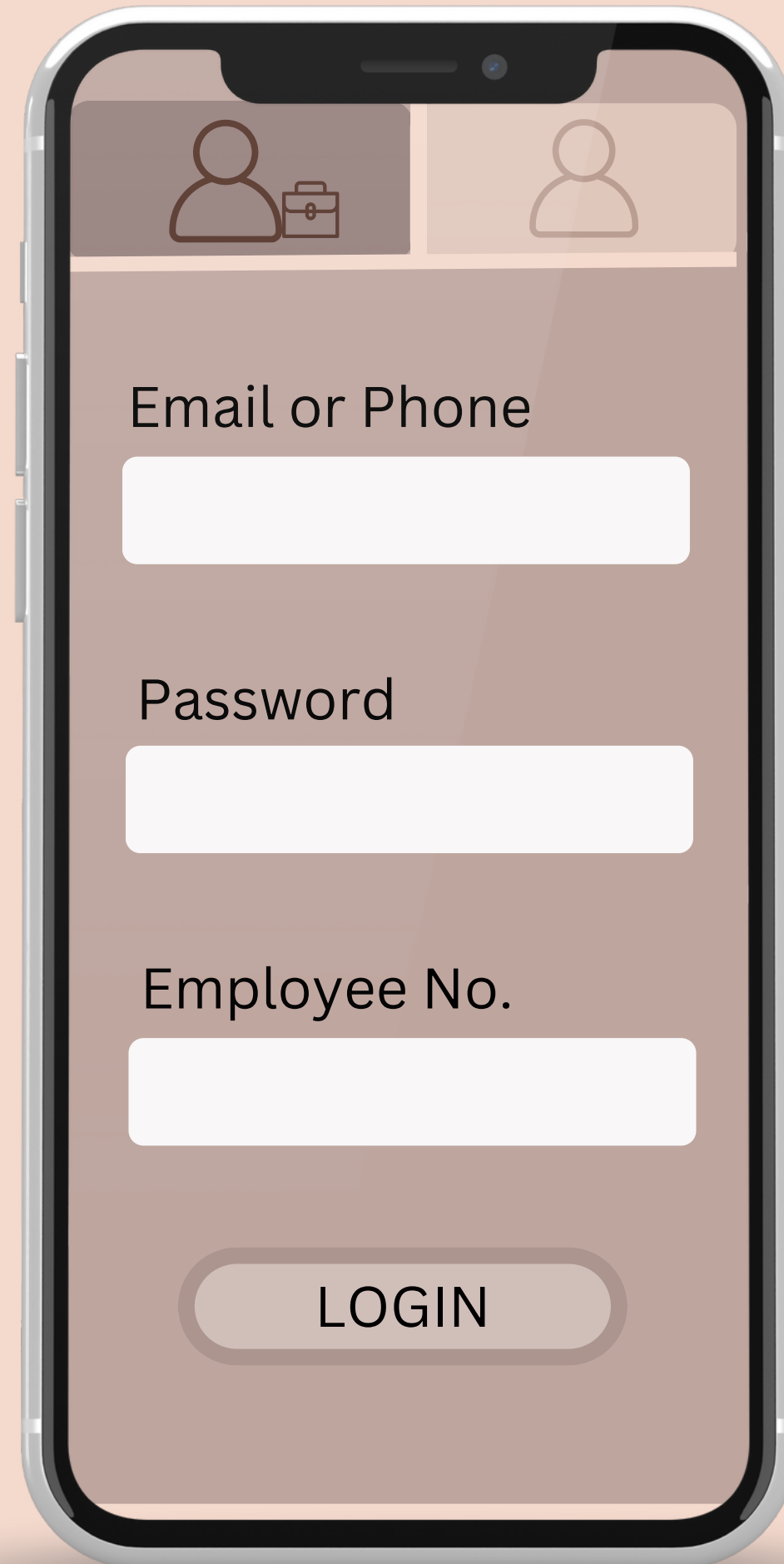
Phone

+699

phone verification

verified

**Login**



The image shows a smartphone screen with a login interface. At the top, there is a header bar with two icons: a person with a briefcase on the left and a person icon on the right. Below the header, there are three input fields, each with a label above it: "Email or Phone", "Password", and "Employee No.". Each field is a white rectangle with rounded corners. At the bottom of the screen, there is a button with the text "LOGIN" in capital letters. The background of the phone screen is a light brown color.

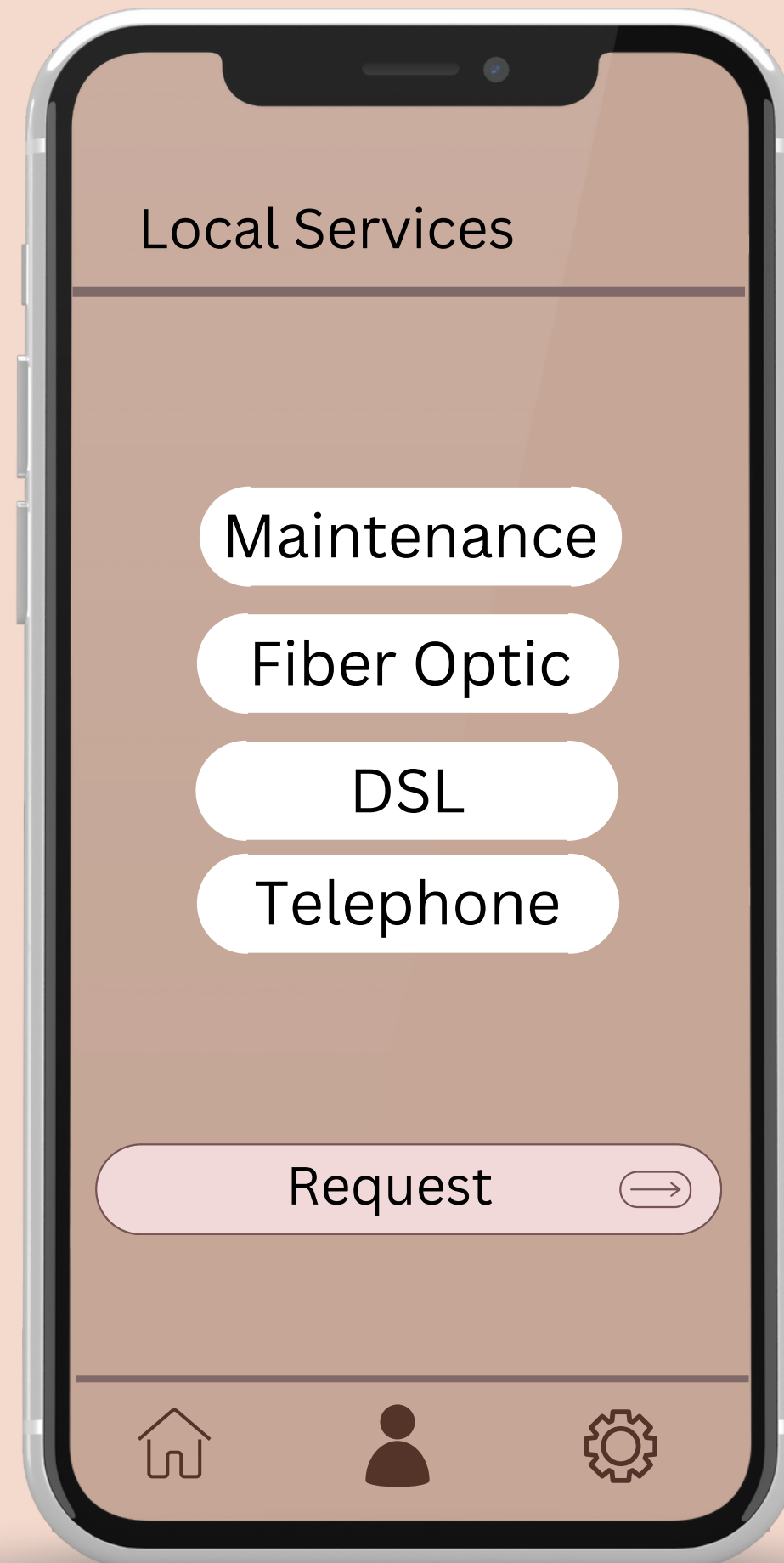
Email or Phone

Password

Employee No.

LOGIN

## Local service



Subscribe

SUBSCRIBE

USERNAME

PASSWORD:




Select Bundle:

Basic bundle

standared bundle

premun bundle

Subscribe



## File complaint

### COMPLAINT

What's the complaint about?

☐

Product

☐


Service


What has happened ?


Please tell us about the incident including as many details as possible

How can we make things right ?

SUBMIT







Monthly reports



BONUS RATIO

TOTAL BONUS

Print report