SENG 2130 - ASSIGNMENT 2

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System Analysis and Design

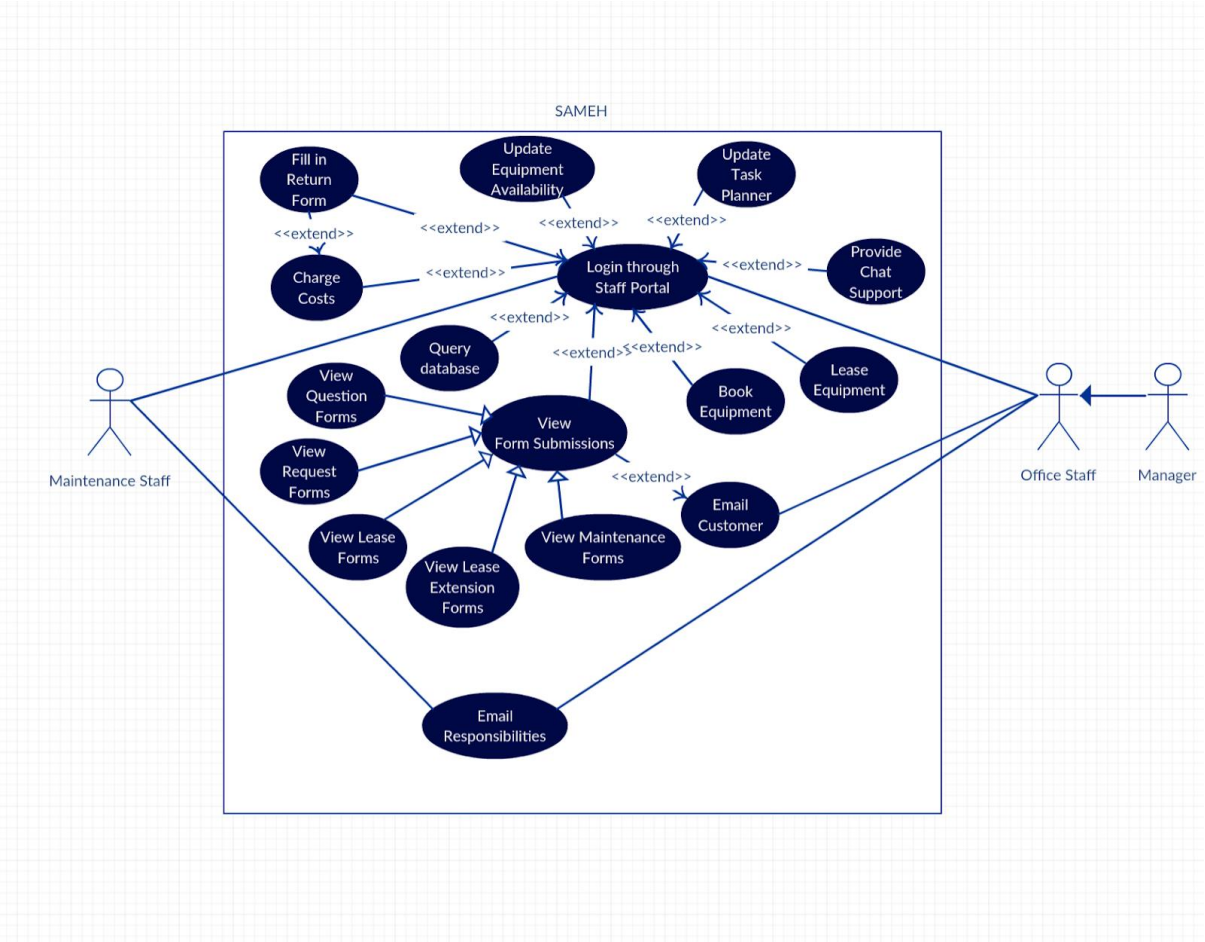
Introduction:

We began by coming up with multiple solutions for each of the 10 objectives and choosing which ones we thought would be the most efficient, effective, and most importantly, met the objectives of the company. These are the solutions we picked as a team.

Final Solutions:

1. A tool that provide an estimate of the cost of lease. Online forms for new lease, lease extension and scheduling maintenance. The enquirer's email submitted in the forms will be used to forward back a confirmation of the details.
2. The website has a FAQ section based on frequent questions from customers/clients. If the question is about equipment, the customer can check the details of the equipment through the booking system. If the question isn't urgent, they can lodge a question form online where the customer will get an e-mailed response of the answer to their question or they can use the online chat option to talk to office staff employees. If it is urgent, then they can call the head office.
3. A database to store the logs, that is accessible by all the authorized personnel in the organization.
4. All staff have access to an online staff portal, which has an online calendar where employees can see which jobs ready and which equipment is ready for hire. They can also communicate using a business email service.
5. Equipment availability status should be available online and the database should be kept up to date by Maintenance Staff. Equipment should not be hired if they're unavailable.
6. Before a staff member can accept that an item has been returned, they will need to fill out an online form which contains information such as the fuel level, any damages or any problems the customer found using the equipment. Then if its full they don't need to get any money. If it's not, they have to calculate the amount of fuel left and give the client invoice about the how much they have to pay.
7. We can use the thread of control. For example, when they multiple users request multiple things, each request goes to the system check which checks the availability and client account.
8. Customers only can loan the equipment from the website or from main office so if they loan the equipment from website, they can see which item is available, so there will be no need to check warehouse anymore.
9. Add an option on the lease form asking "If we had portable coffee machines available for hire, would you be interested in hiring such machine" to get data from clients and see if hiring out coffee machines would be profitable.
10. General expectation from clients and use of a scalable design will meet this objective.

Use Case Diagram:



Use Cases:

- Login through Staff Portal
- Provide Chat Support
- Update Task Planner
- Lease Equipment
- Book Equipment
- Update Equipment Availability
- Fill in Return Form
- Charge Costs
- Query Database
- Email Customer
- View Form Submissions
- View Maintenance Forms
- View Lease Forms
- View Lease Extension Forms
- View Request Forms
- View Question Forms
- Email Responsibilities

Use Cases: Intermediate Descriptions

Flow of Activities for Login Through Staff Portal
1. Staff member requests staff portal page. 2. Staff member enters username and password. 3. Staff member logs in. 4. System verifies user authentication details. 5. Staff member is logged in.
1. Invalid username and password a. User is presented failure message. b. After several failed attempts the account is locked out for a specific duration.

Flow of Activities for Staff Booking Equipment
1. Staff is logged in to staff portal. 2. Staff searches for the equipment on the website. 3. Staff books the equipment to the customer's account. 4. Online database is automatically updated.
1. Equipment could not be found. 2. Equipment could not be booked. a. Equipment is unavailable b. Customer account could not be found or verified.

Use Cases: Intermediate Descriptions

Flow of Activities for Staff Booking Equipment
1. Staff is logged in to staff portal. 2. Staff searches for the equipment on the website. 3. Staff leases the equipment to the customer's account and enters lease terms. 4. Online database is automatically updated.
1. Equipment could not be found. 2. Equipment could not be booked. a. Equipment is unavailable b. Customer account could not be found or verified.

Flow of Activities for Fill in Return Form
1. Maintenance Staff is logged in through staff portal. 2. Maintenance Staff finds the loan record and requests return form on the website. 3. Maintenance Staff inputs fuel level and other assessments of the equipment. 4. Maintenance Staff inputs costs of each assessment. 6. Maintenance Staff submits the return form. 7. Costs added to loan debt.
1. Fuel level field is not relevant to equipment returned.

Use Cases: Intermediate Descriptions

Flow of Activities for Charge Costs
1. Customer debt is present. 2. Staff prompts customer to pay. 3. System offers payment methods. 4. Staff chooses a payment method. 5. System awaits payment input and processes it. 6. System resolves customer debt.
1. Payment failed to be processed. a. Payment retry is presented. b. Customer debt is not resolved.

Flow of Activities for Query Database
1. Staff is logged into staff portal. 2. Staff chooses a database view. 3. Staff queries the view records. 4. System presents results for query.
1. No results shown for query. a. No matching record. b. Failure to communicate with the database.

Use Cases: Intermediate Descriptions

Flow of Activities for View Form Submission
1. Office Staff is logged into staff portal. 2. Office Staff receives notifications for new form submissions. 3. Office Staff views form. 4. System shows form details and how many times it has been viewed by staff. 5. Office Staff marks that form issue has been resolved. 6. Moves form to “resolved form” category.
1. Form has not been resolved. a. Staff contacts customer to resolve issue, and b. Staff Marks form resolved.

Flow of Activities for Email Customer
1. Staff logs into to the company’s customer service email. 2. Staff composes an email with a form response or other information. 3. Staff sends email to customer’s email address. 4. Email is forwarded to the recipient’s email. 5. Both parties exchange using email.
1. Email failed to be received by the intended receipt. a. Recipient’s email address was incorrect. b. Email has gone missing. 2. Customer does not respond. a. Email is no-reply. b. Customer did not see the email. c. Customer chose not to email back.

Use Cases: Intermediate Descriptions

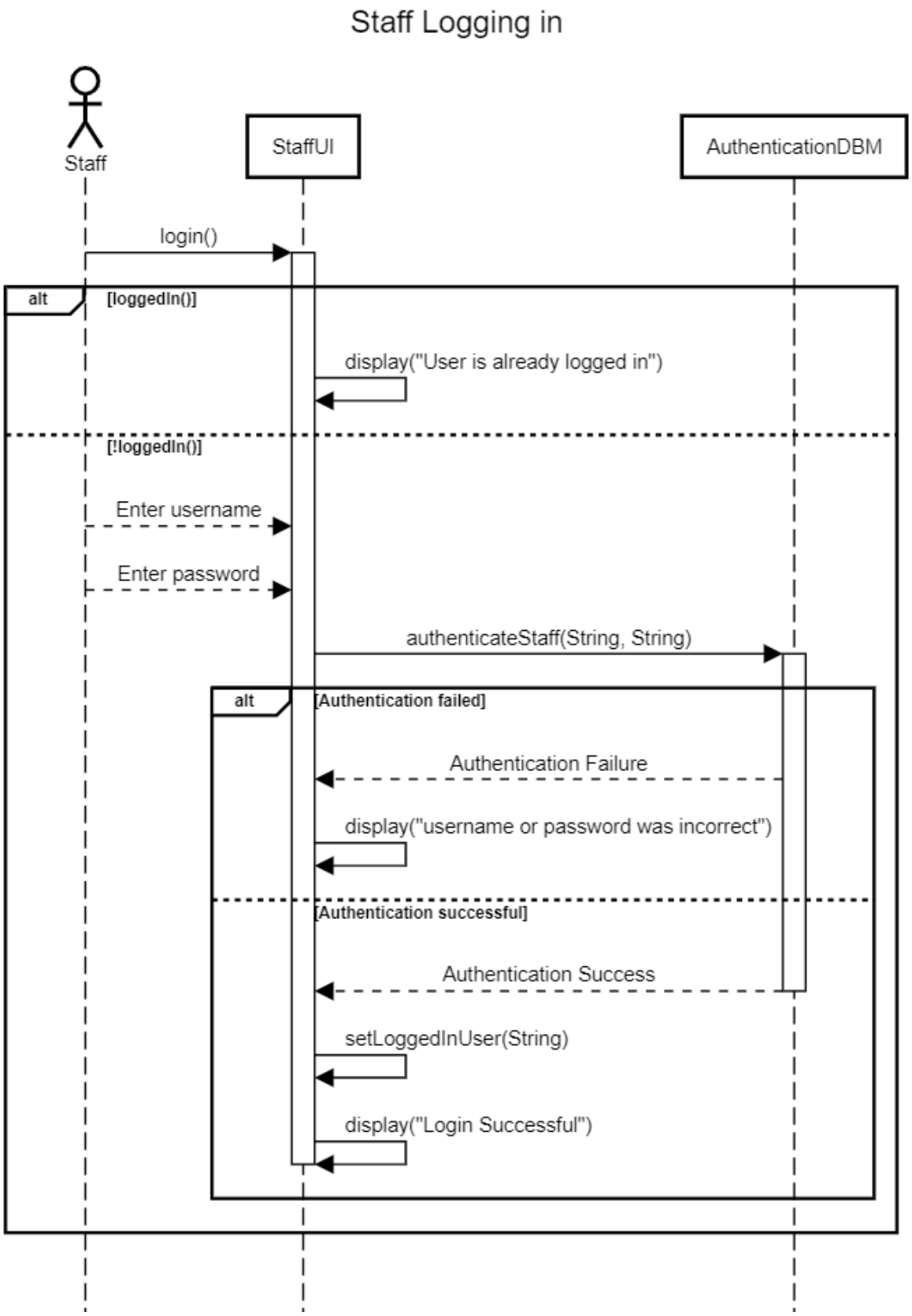
Flow of Activities for Update Equipment Availability
1. Staff is logged into staff portal. 2. Staff updates the status of the equipment. 3. Equipment availability is updated. 4. Equipment cannot be booked out until the equipment is available.
1. Equipment could not be found. 2. Maintenance Staff provide an estimate date of when the equipment will be ready for booking. 3. Staff adds Equipment to the database.

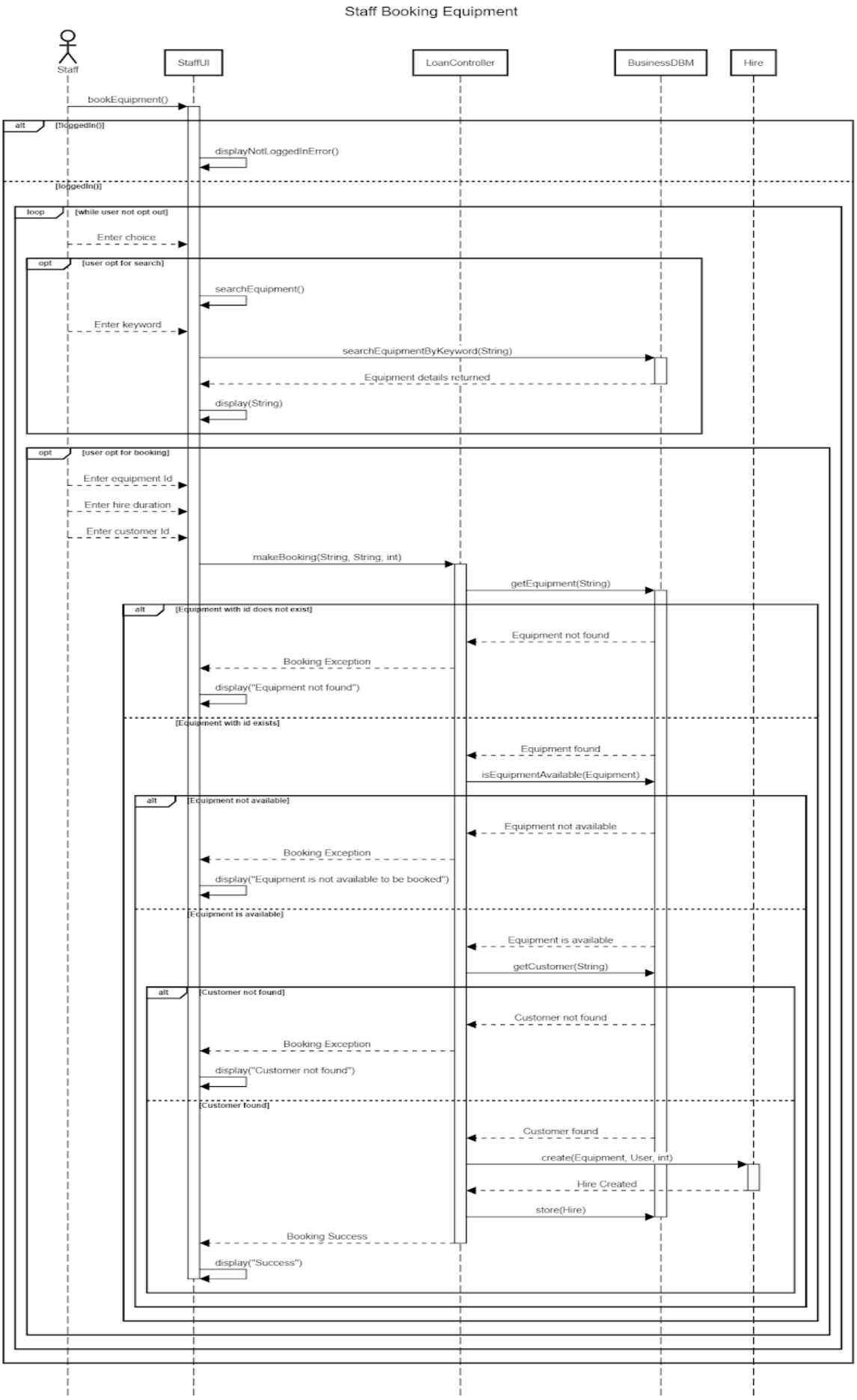
Flow of Activities for Provide Chat Support
1. Office Staff is logged into the staff portal. 2. Chat request is received. 3. Staff accepts chat request. 4. System presents user message. 5. Office Staff responds to enquiry. 6. Customer closes chat session once they are satisfied.
1. No enquiry is given a. Chat session ends automatically after a specific period of idling. 2. Chat session is not ended by customer. a. Customer has more enquiries. b. Customer forgets to end a session; Staff confirms with customer then ends it. c. Chat session ends automatically after a specific period of idling.

Use Cases: Intermediate Descriptions

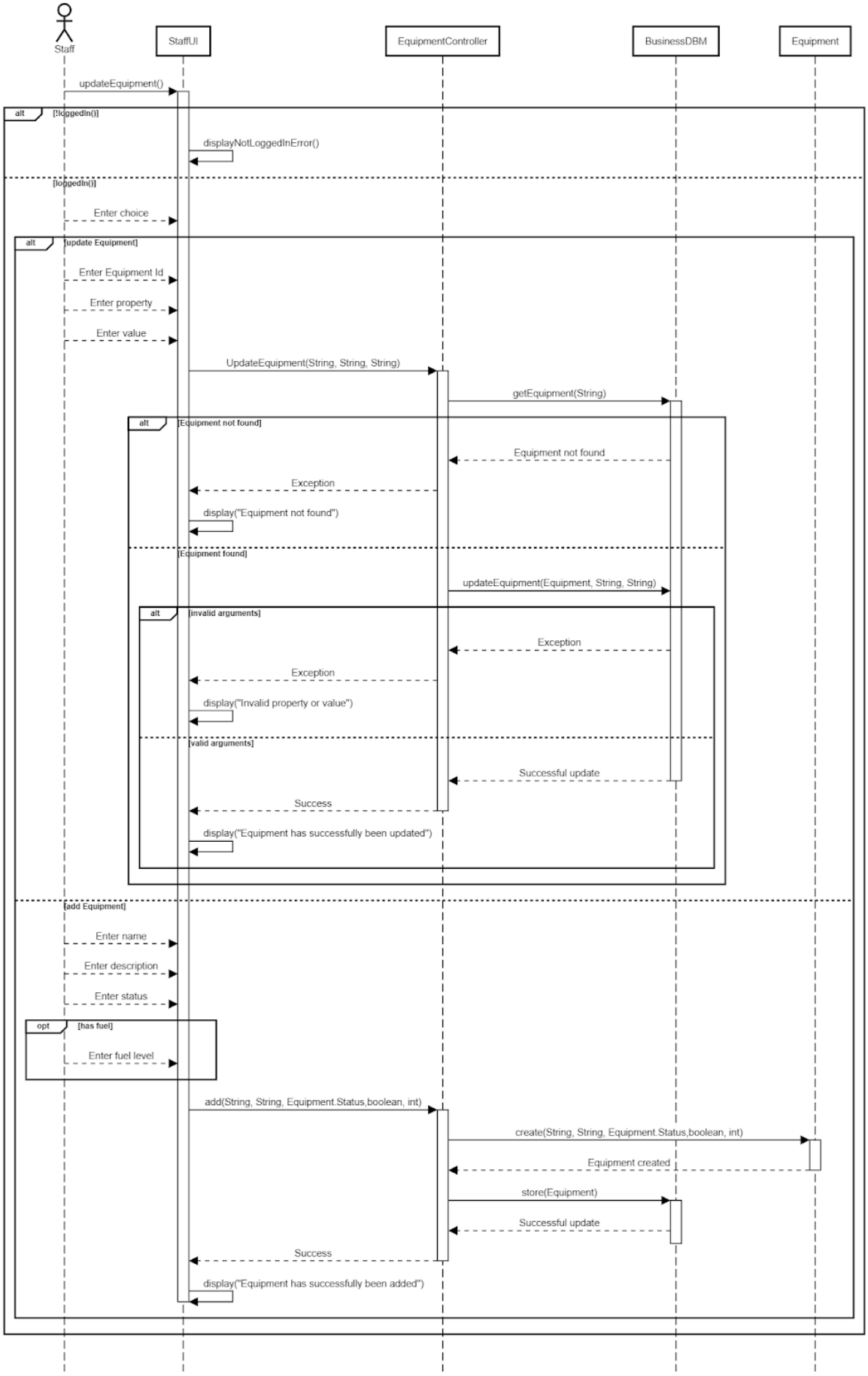
Flow of Activities for Update Task Planner
1. Office Staff is logged into staff portal. 2. Office Staff enters task for Maintenance Staff task in task planner. 3. Planner is updated with input information. 4. Maintenance Staff can see their duties and when it should be done. 5. Maintenance Staff checks off tasks. 6. Planner task is checked off.
1. There is no job to do a. Office Staff notifies the Maintenance Staff in task planner “There is no job to do”.

Flow of Activities for Email Responsibilities
1. Staff logs into to their business email. 2. Staff composes an email regarding a business matter. 3. Staff sends email to a Staff’s email address. 4. Email is forwarded to the recipient’s email 5. Both parties exchange using email
1. Email failed to be received by the intended receipt. a. Recipient’s email address was incorrect. b. Email has gone missing. 2. Staff does not respond. a. Email is no-reply. b. Staff did not see the email. c. Staff chose not to email back.

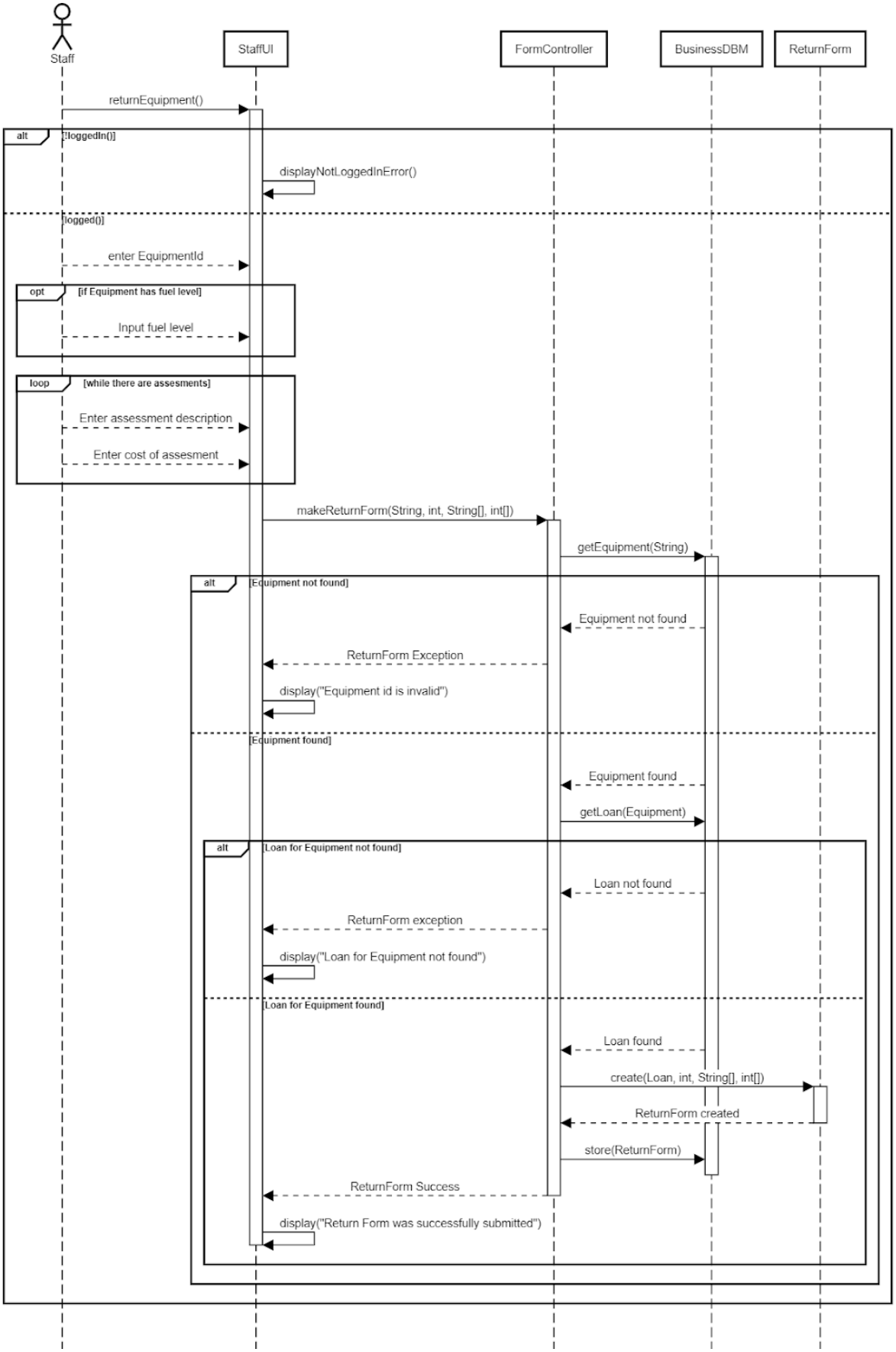

Staff Logging in
Staff
StaffUI
AuthenticationDBM
login()
alt
[loggedIn()]
display("User is already logged in")
[!loggedIn()]
Enter username
Enter password
authenticateStaff(String, String)
alt
[Authentication failed]
Authentication Failure
display("username or password was incorrect")
[Authentication successful]
Authentication Success
setLoggedInUser(String)
display("Login Successful")


Staff Booking Equipment
Staff
StaffUI
LoanController
BusinessDBM
Hire
bookEquipment()
alt
[!loggedIn()]
displayNotLoggedInError()
[loggedIn()]
loop
[while user not opt out]
Enter choice
opt
[user opt for search]
searchEquipment()
Enter keyword
searchEquipmentByKeyword(String)
Equipment details returned
display(String)
opt
[user opt for booking]
Enter equipment Id
Enter hire duration
Enter customer Id
makeBooking(String, String, int)
getEquipment(String)
alt
[Equipment with id does not exist]
Equipment not found
Booking Exception
display("Equipment not found")
[Equipment with id exists]
Equipment found
isEquipmentAvailable(Equipment)
alt
[Equipment not available]
Equipment not available
Booking Exception
display("Equipment is not available to be booked")
[Equipment is available]
Equipment is available
getCustomer(String)
alt
[Customer not found]
Customer not found
Booking Exception
display("Customer not found")
[Customer found]
Customer found
create(Equipment, User, int)
Hire Created
store(Hire)
Booking Success
display("Success")

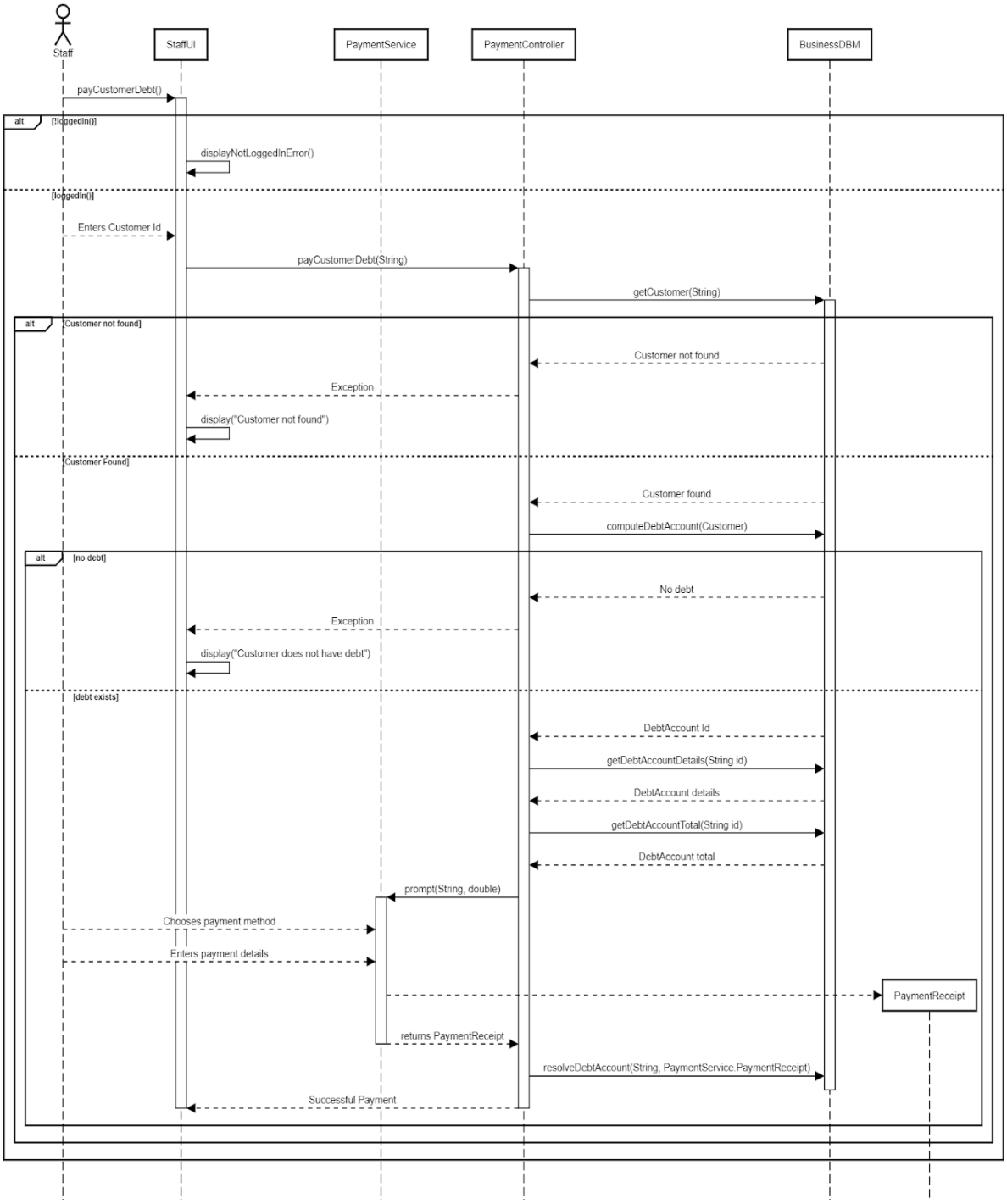
Update Equipment

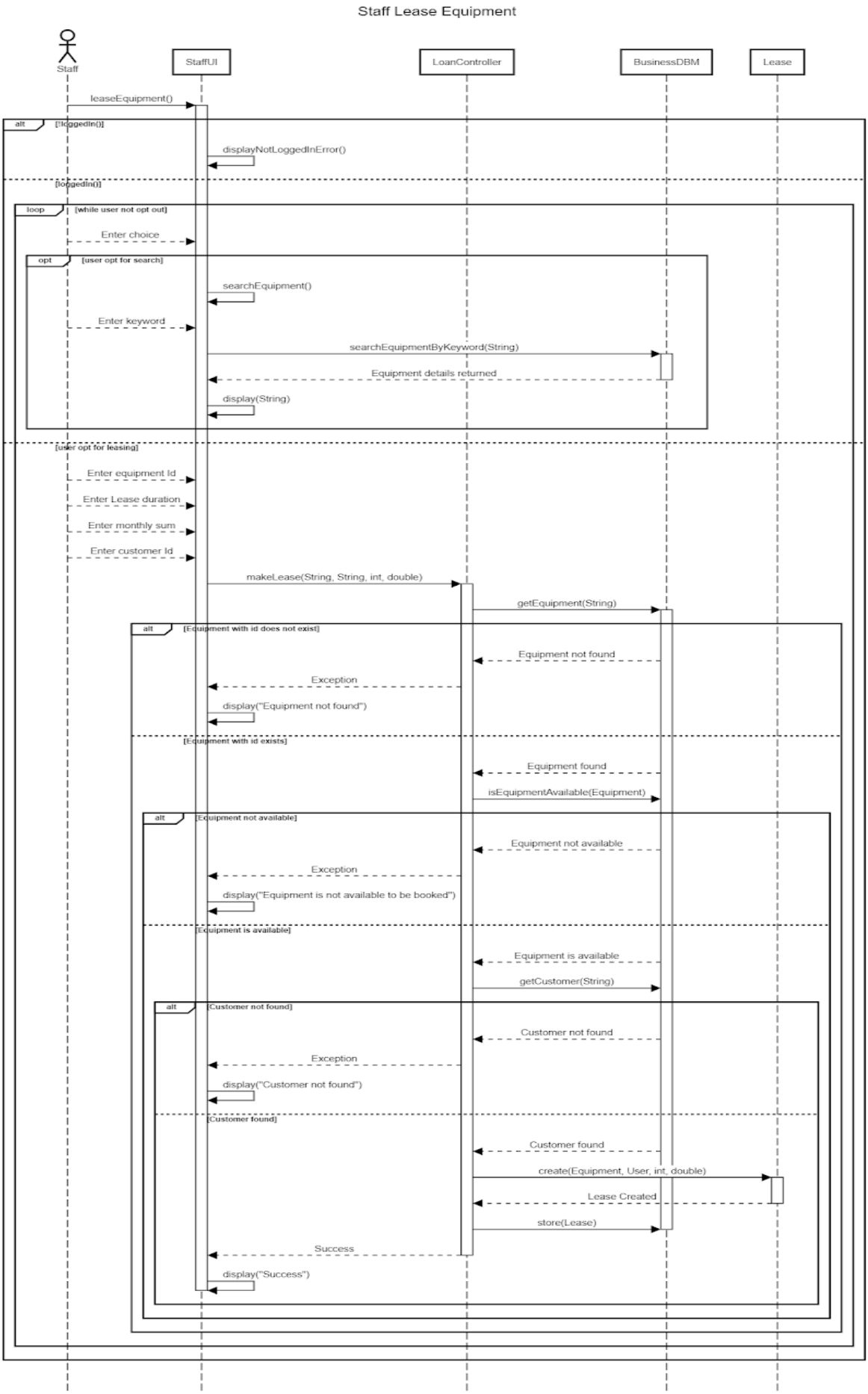


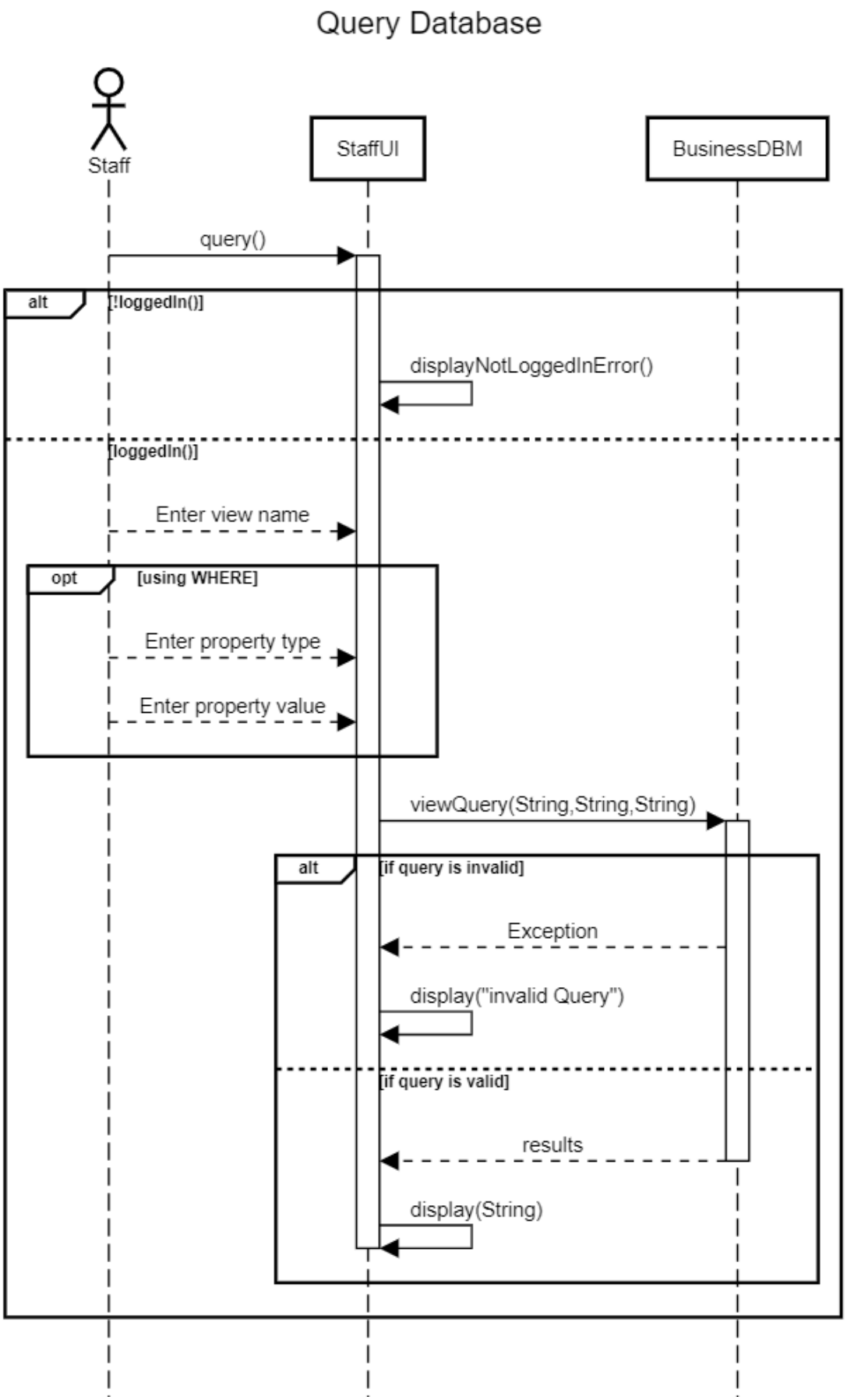
Fill in Return Form

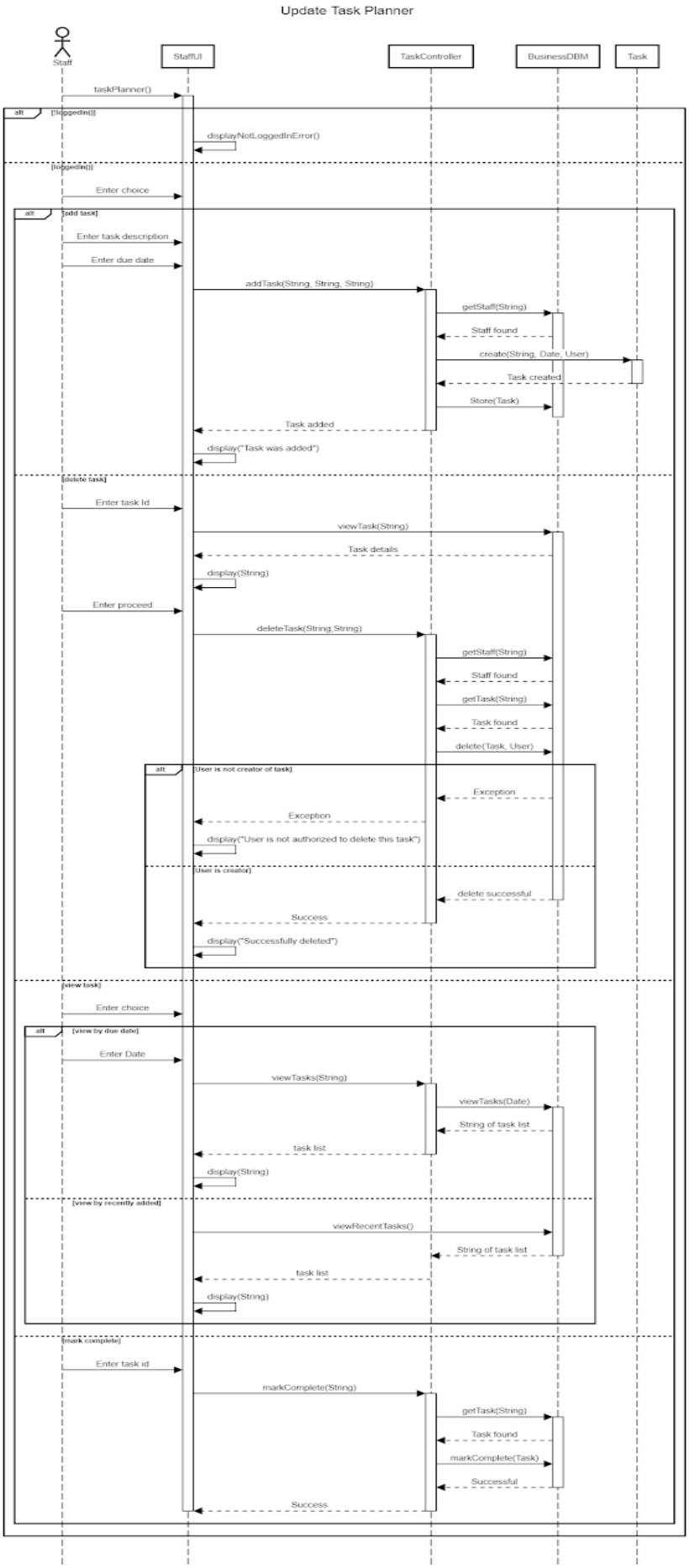


Charge Costs

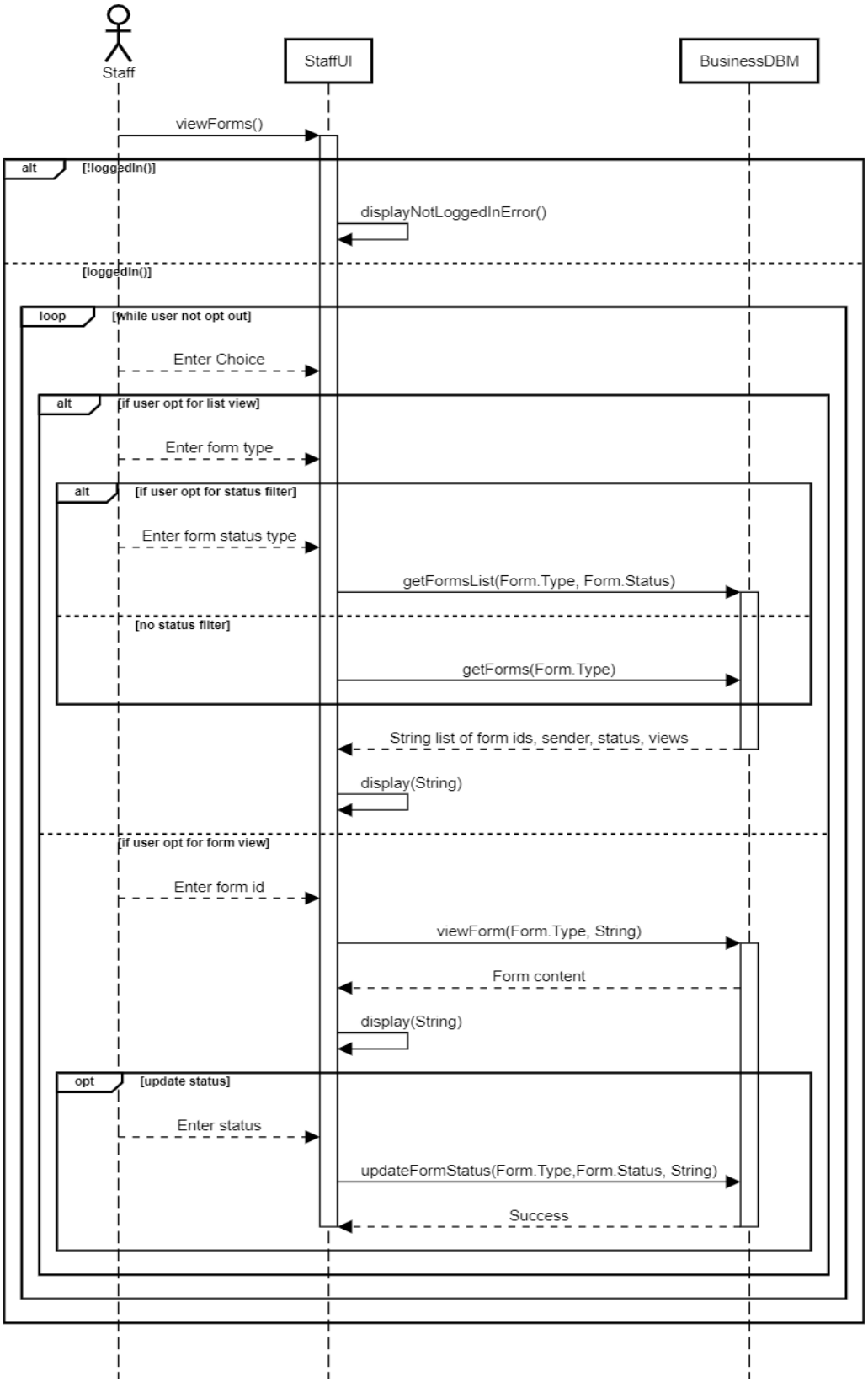



Staff Lease Equipment
Staff
StaffUI
LoanController
BusinessDBM
Lease
leaseEquipment()
alt
[!loggedIn()]
displayNotLoggedInError()
[loggedIn()]
loop
[while user not opt out]
Enter choice
opt
[user opt for search]
searchEquipment()
Enter keyword
searchEquipmentByKeyword(String)
Equipment details returned
display(String)
[user opt for leasing]
Enter equipment Id
Enter Lease duration
Enter monthly sum
Enter customer Id
makeLease(String, String, int, double)
getEquipment(String)
alt
[Equipment with id does not exist]
Equipment not found
Exception
display("Equipment not found")
[Equipment with id exists]
Equipment found
isEquipmentAvailable(Equipment)
alt
[Equipment not available]
Equipment not available
Exception
display("Equipment is not available to be booked")
[Equipment is available]
Equipment is available
getCustomer(String)
alt
[Customer not found]
Customer not found
Exception
display("Customer not found")
[Customer found]
Customer found
create(Equipment, User, int, double)
Lease Created
store(Lease)
Success
display("Success")


Query Database
Staff
StaffUI
BusinessDBM
query()
alt
[!loggedIn()]
displayNotLoggedInError()
[loggedIn()]
Enter view name
opt
[using WHERE]
Enter property type
Enter property value
viewQuery(String,String,String)
alt
[if query is invalid]
Exception
display("invalid Query")
[if query is valid]
results
display(String)


Update Task Planner
Staff
StaffUI
TaskController
BusinessDBM
Task
taskPlanner()
alt
[!loggedIn()]
displayNotLoggedInError()
[loggedIn()]
Enter choice
alt
[add task]
Enter task description
Enter due date
addTask(String, String, String)
getStaff(String)
Staff found
create(String, Date, User)
Task created
Store(Task)
Task added
display("Task was added")
[delete task]
Enter task Id
viewTask(String)
Task details
display(String)
Enter proceed
deleteTask(String,String)
getStaff(String)
Staff found
getTask(String)
Task found
delete(Task, User)
alt
[User is not creator of task]
Exception
Exception
display("User is not authorized to delete this task")
[User is creator]
delete successful
Success
display("Successfully deleted")
[view task]
Enter choice
alt
[view by due date]
Enter Date
viewTasks(String)
viewTasks(Date)
String of task list
task list
display(String)
[view by recently added]
viewRecentTasks()
String of task list
task list
display(String)
[mark complete]
Enter task id
markComplete(String)
getTask(String)
Task found
markComplete(Task)
Successful
Success

View Form Submission



Deployment strategy:
Due to the system layout and use, the best deployment strategy to launch the SAMEH system is a parallel deployment method. They key reason for using this strategy is that it allows a fall back onto the old system in case of unforeseen bugs or circumstances. Meaning that if there is a compatibility issue or an integration issue within the business model, they whole business workflow is not interrupted majorly.

Why this strategy?
When selecting a strategy, we looked at these different methods:

1. Direct Deployment
2. Parallel Deployment
3. Phased Deployment
4. Pilot Deployment

Direct Deployment was ruled out immediately as it offered no fallback or safety net incase of a system failure during the transfer period.

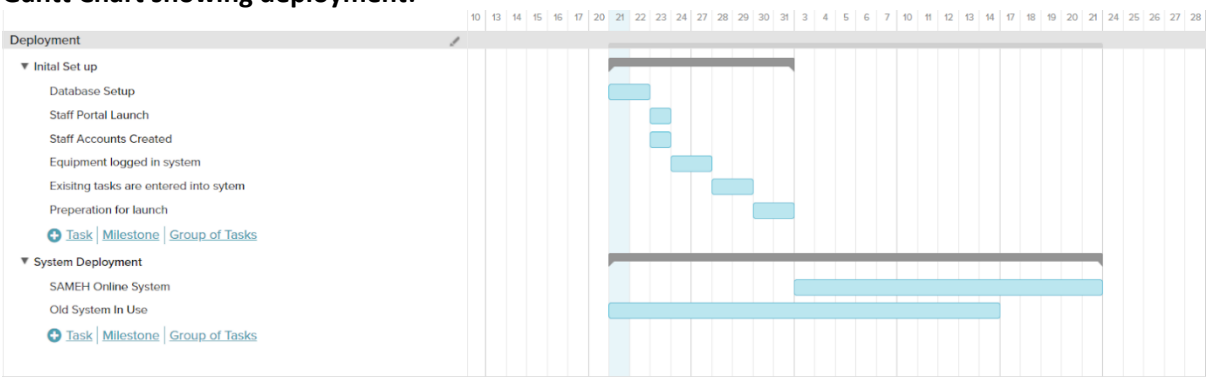
Phased Deployment, whilst a great method for larger systems, did not offer a good bases for our deployment as each part of the SAMEH system communicates with each other part, meaning that for the system to achieve its goals, the whole system would have to be functional. This ruled our Phased Deployment for our integration plan.

Pilot Deployment, much like Phased Deployment, is a great strategy, however as there is only one business/office workflow that the system will be used in, there is no way to have a pilot site. This means that it was ruled out of our plan.

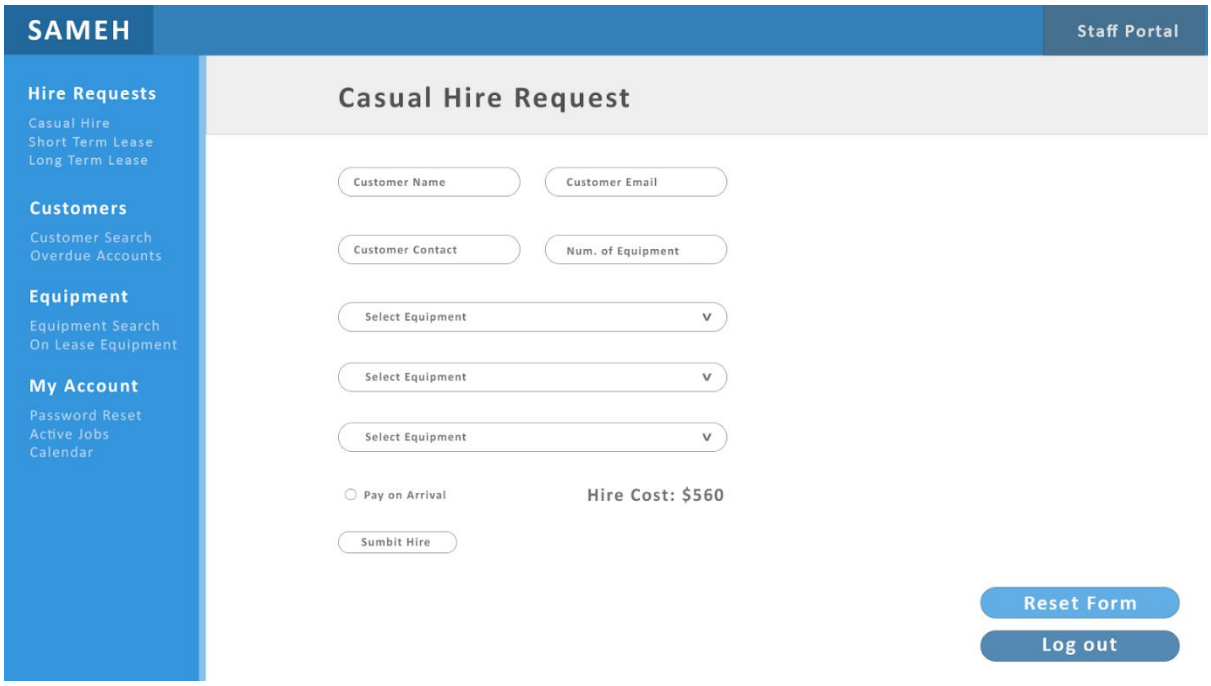
Deployment
With three of the four strategies being ruled out due to not fitting our needed criteria, Parallel Deployment was selected. The steps to deploy our SAMEH System will be as follows:

1. Database servers are setup to hold equipment and customer data
2. The staff portal is launched for internal usage
3. Staff accounts are created on the server
4. Equipment is added to the database
5. Existing jobs are added to the database and allocated to existing users
6. Manual entry forms are created in case of the need to fall back onto the old platform
7. Customer portal is launched
8. Test period where the SAMEH system is used, however the old workflow is not phased out until the end of the test period to allow for roll back if an error occurs
9. Once the test period is ended, the old workflow is phased out and any manual entries made during the test period are entered into the online portal

Gantt Chart showing deployment:



User Interface



User Interface: Book Equipment

The image above represents what a casual hire request form would look like to an office staff employee filling out the form when a customer calls to request to book an item. There are two main sections of the interface. The left side of the page has multiple hyperlinks grouped by their category, and the casual hire request form which fills the rest of the page. The office staff employee will have to input the customer's name, email, contact number, number of equipment they are requesting and the equipment they are requesting. They can also choose an option to pay for the equipment hire items upon arrival. A total hire cost is also shown beside "Pay on Arrival" so the staff member can inform the customer how much it will cost.

SENG2130 Systems Analysis and Design

Minutes of meeting

Group: AAFG Place: EF Building Date/Time: 15th May, 11am-1pm

In attendance
Ayden Khairis
Ahmed Abdelsalam
Faraz Zarnihki
Gavin Austin

Apologies
None

Agenda

- Matters arising from previous meeting
  - First Meeting
- Agenda items (as needed)
  - Discussion about what will take the most time and what needs to be prioritised
  - Going over the entire assignment and discussing how we all think we should approach the assignment
- Date, time and place for next meeting
  - 17th May, 10am, EF Building
- Matters for consideration at next meeting
  - Look at everyone's solutions for the problem at hand

Action sheet

Task	Responsible	Due	Notes
Proposed solutions	Everyone	17th May	

SENG2130 Systems Analysis and Design

Minutes of meeting

Group: AAFG Place: EF Building Date/Time: 17th May, 10am-12pm

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In attendance
Ayden Khairis
Ahmed Abdelsalam
Faraz Zarnihki

Apologies
Gavin Austin

Agenda

- Matters arising from previous meeting
  - Proposed solutions
- Agenda items (as needed)
  - Discussion of everyone's proposed solutions to the problem's SAMEH are having
  - Concluding on which solutions we are willing to accept together
  - Assigning jobs to every team member
- Date, time and place for next meeting
  - 21st May, 2pm, Auchmuty Group Study Room
- Matters for consideration at next meeting
  - Use Case Diagram and descriptions

Action sheet

Task	Responsible	Due	Notes
Use Case Diagram	Ahmed and Faraz	21st May	
Use Case Descriptions	Ahmed and Faraz	21st May	
Write up proposed solutions into document	Ayden and Gavin	21st May	

SENG2130 Systems Analysis and Design

Minutes of meeting

Group: AAFG Place: Auchmuty Group Study Room Date/Time: 21st May, 2-3pm

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In attendance
Ayden Khairis
Ahmed Abdelsalam
Faraz Zarnihki
Gavin Austin

Apologies
None

Agenda
- Matters arising from previous meeting
  - Use Case Diagram and Descriptions
  - Proposed Solutions finalised
- Agenda items (as needed)
  - Editing Use Case Diagram and Descriptions
  - Working on Class Diagram
  - Working on Sequence Diagrams
- Date, time and place for next meeting
  - 24th May, 10am, EF Building
- Matters for consideration at next meeting
  - Class Diagram
  - Sequence Diagrams

Action sheet

Task	Responsible	Due	Notes
Class Diagram	Ayden and Gavin	24th May	
Sequence Diagrams	Ahmed and Faraz	24th May	

SENG2130 Systems Analysis and Design

Minutes of meeting

Group: AAFG Place: EF Building Date/Time: 24th May, 10am-2pm

In attendance
Ayden Khairis
Ahmed Abdelsalam
Faraz Zarnihki
Gavin Austin

Apologies
None

Agenda
- Matters arising from previous meeting
  - Class and Sequence Diagrams
- Agenda items (as needed)
  - Editing Class and Sequence Diagrams
- Date, time and place for next meeting
  - 27th May, 12pm, EF Building
- Matters for consideration at next meeting
  - Deployment Strategy
  - User Interface Design

Action sheet

Task	Responsible	Due	Notes
Deployment Strategy	Ayden and Gavin	27th May	
User Interface Design	Ayden and Gavin	27th May	

SENG2130 Systems Analysis and Design

Minutes of meeting

Group: AAFG Place: EF Building Date/Time: 27th May, 12pm-2pm

In attendance
Ayden Khairis
Ahmed Abdelsalam
Faraz Zarnihki
Gavin Austin

Apologies
None

Agenda
- Matters arising from previous meeting
  - Deployment Strategy
  - User Interface Design
- Agenda items (as needed)
  - Check deployment strategy and user interface design
  - Final edits of assignment
  - Add all assignment items into a single file
- Date, time and place for next meeting
  - -
- Matters for consideration at next meeting
  - -

Action sheet

Task	Responsible	Due	Notes
Finalise Assignment	Ayden	31st May	
Submit Assignment	Faraz	31st May	