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SWE-215 SRS document

TEAM 1

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1. Introduction

a. Problem Statement

KFUPM residents have had complaints about the maintenance service that's offered in the university.

Complaints included:

Long waiting times for service. Whenever a resident reports a problem to the maintenance department it takes a long duration of time for the service to arrive and it leaves the resident unhappy with the experience. That can be especially frustrating if it's an urgent request such as water leakage or malfunctioning AC.

Unsatisfactory fixing of problems and overall poor service. More often than not the handling by the maintenance department of resident requests is not optimal. Either the problem is left unfixed or future problems occur due to poor service.

Lack of clarity on how to specifically report or describe problems. Residents have had difficulties with reporting problems that they face to the maintenance department. That's because they lack technical knowledge about their appliances and furniture. That makes the request harder for the maintenance department as they don't know what and who to send to the resident to fix the problem.

Given these issues that the residents and maintenance department deal with it is clear to see that there's a need for an application that helps them to carry-out maintenance requests.

b. Needs

These are the list of the needs from potential users of the application:

- Reaching the maintenance department quickly to report problems.
- Ability to report problems clearly to the maintenance department by using visual or textual aids and categorization.
- Faster respond to requests.
- Conclusive handling of requests.
- Writing complaints in an easy and efficient way.
- Specifying location of service request.
- Organizing requests to optimize service.
- Providing an overall good experience to the residents.

c. Product Overview

The K-Maintenance system is envisioned to automate the process of communication between the maintenance department, labor and community members. It is intended to make the activities of reporting issues, raising complaints and responding to them more of a seamless and intuitive process, with minimal human interference. Community members will be able to report problems they are facing by selecting the category and providing any additional details with their preferred format, whether it be a textual description, an image or even a video. One of the features of the system provide is the sorting algorithm that calculate the estimated time of arrival of the servicemen, according to the availability of labor and the urgency of the reported issues. Another system feature is the feedback modulo, where

users are able to express their satisfaction level towards the applied service. The system is designed to add many other features in upcoming releases.

2. Product features and user requirements

a. Requirements List

1. The system shall provide multiple maintenance services.
2. The system shall be user-friendly.
3. The system shall be platform independent.
4. The system shall allow the user to use KFUPM ID and password as credentials to login.
5. The system shall allow the user to request maintenance services.
6. The system shall allow the user to track their requests.
7. The system shall display the estimated time of arrival of the serviceman to the user.
8. The system should allow the user to see their previous requests.
9. The system shall allow the user to choose a preferred time for the service.
10. The system should allow the user to rate the service.
11. The system should allow the user to write their feedback about the given service.
12. The system should allow the user to attach images, videos, and documents while making the request.
13. The system should allow the user to select the category of their required service.
14. The system should allow the user to cancel their unhandled requests.
15. The system shall limit the user's requests to one request per category.
16. The system shall reset the limiter after 24 hours of placing the order.
17. The system shall allow the user to re-order their unhandled requests.
18. The system should allow the user to make suggestions to improve the service.
19. The system shall allow the user to issue service complaints.
20. The system may provide troubleshooting tips for small and frequent problems.
21. The system shall allow the user to select from pre-set frequent, common requests.
22. The system shall allow the user to specify the location of the request.
23. The system should display a queue of the number of requests if all the servicemen are busy.
24. The system shall analyze the priority of the request to sort it for the service provider.
25. The system shall allow the serviceman to view the assigned request.
26. The system shall allow the serviceman to confirm request handling.
27. The system shall allow the serviceman to report successful handling of the request.
28. The system shall allow the serviceman to report unsuccessful handling of the request and state the cause of failure.
29. The system shall allow the admin to view incoming requests.
30. The system shall allow the admin to assign requests to the serviceman.
31. The system shall allow the admin to sort requests by priority.
32. The system shall allow the admin to sort requests by time precedence.
33. The system shall allow the admin to sort requests by category.
34. The system shall allow the admin to view and respond to complaints.
35. The system shall allow the admin to view the servicemen ratings.

36. The system shall allow the admin to view the contact information of the user.

b. *Requirements Categorization Table*

Table 1 Requirements Categorization Table

| Requirement Sr. | Brief description | Importance (High, Medium, Low) | Difficulty (High, Medium, Low) |
|-----------------|---|--------------------------------|--------------------------------|
| R1 | The system shall provide multiple maintenance services like electrical, plumbing and more. | High | Medium |
| R2 | The system shall be user friendly. Simple user interface with multiple ways of interaction. | High | Low |
| R3 | The system shall be platform independent. The system should be available in the web and multiple smartphone operating systems. | High | Medium |
| R4 | The system shall allow the user to use KFUPM ID and password as credentials to login. The KFUPM login system should be integrated into the system. | High | Low |
| R5 | The system shall allow the user to request maintenance services through the application. | High | Low |
| R6 | The system shall allow the user to track their requests. The user can see the flow of the request handling. | High | Medium |
| R7 | The system shall display the estimated time of arrival of the serviceman to the user. The user can see it by viewing request info. | High | Low |
| R8 | The system should allow the user to see their previous requests. The user can access their list of previous requests in the system. | Medium | Low |
| R9 | The system shall allow the user to choose a preferred time for the service. When requesting service, the user shall specify the time of request to avoid being absent in time of request. | High | Low |

| | | | |
|-----|---|--------|--------|
| R10 | The system should allow the user to rate the service. The user can rate the service on a scale of 5 stars. | Medium | Low |
| R11 | The system should allow the user to write their feedback about the given service. The user can add comments to the rating of service to further describe their experience. | Medium | Low |
| R12 | The system should allow the user to attach images, videos, and documents while making the request. The user can include attachments in their request from their phone or computer to further explain the problem to the serviceman. | Medium | Medium |
| R13 | The system shall allow the user to select the category of their required service. The user can select from categories when creating service requests. | High | Low |
| R14 | The system should allow the user to cancel their unhandled requests. If the request has not been handled the user can cancel it and it will be removed. | Medium | Low |
| R15 | The system should limit the user's requests to one request per category. The user cannot make more than one request in the same category to avoid spamming. | Medium | High |
| R16 | The system shall reset the limiter after 24 hours of placing the order. The user can make requests in the previously selected category. | High | High |
| R17 | The system shall allow the user to re-order their unhandled requests. If a request is left unhandled the user can re-order it to try to get it done. | High | Medium |
| R18 | The system should allow the user to make suggestions to improve the service through suggestion boxes. | Medium | Low |
| R19 | The system shall allow the user to issue service complaints. The user can raise | High | Low |

| | | | |
|-----|---|--------|--------|
| | complaints to the admin regarding given service. | | |
| R20 | The system may provide troubleshooting tips for small and frequent problems through textual help. | Low | Low |
| R21 | The system shall allow the user to select from pre-set frequent, common requests. The user can select from a list of frequent requests for quick request creation. | High | Low |
| R22 | The system shall allow the user to specify the location of the requests by building number, room number. | High | Medium |
| R23 | The system should display a queue of the number of requests if all the servicemen are busy to indicate when's the user service will be sent. | Medium | Medium |
| R24 | The system shall analyze the priority of the request to sort it for the service provider. This will help the admins with assigning requests. | High | High |
| R25 | The system shall allow the serviceman to view the assigned request. The serviceman can check the list of assigned requests to view description and location. | High | Medium |
| R26 | The system shall allow the serviceman to confirm request handling to notify the admin of completed requests. | High | Low |
| R27 | The system shall allow the serviceman to report successful handling of the request to indicate that the request has been handled successfully. | High | Low |
| R28 | The system shall allow the serviceman to report unsuccessful handling of the request and state the cause of failure to indicate that the request has been handled unsuccessfully. | High | Low |

| | | | |
|-----|--|------|--------|
| R29 | The system shall allow the admin to view incoming requests to check the list and manage it. | High | Medium |
| R30 | The system shall allow the admin to assign requests to the serviceman to send service to the users. | High | Medium |
| R31 | The system shall allow the admin to sort requests by priority. | High | High |
| R32 | The system shall allow the admin to sort requests by time precedence. | High | High |
| R33 | The system shall allow the admin to sort requests by category. | High | High |
| R34 | The system shall allow the admin to view and respond to complaints. The admin can manage users' complaints through the application. | High | Low |
| R35 | The system shall allow the admin to view the servicemen ratings to overlook servicemen performance. | High | Low |
| R36 | The system shall allow the admin to view the contact information of the user to contact them in case of users' absence or emergency. | High | Low |

3. Stakeholders, Users and User Characteristics

a. *Stakeholders, Users, User characteristics*

1. Stakeholders

- a. KFUPM administration
- b. KFUPM students
- c. KFUPM faculty members
- d. KFUPM residents
- e. KFUPM Maintenance Department

2. Users

- a. KFUPM Maintenance Department labor
- b. KFUPM community members
- c. KFUPM Maintenance Department administration

3. User Characteristics

- a. KFUPM Maintenance Department labor:
 - Low technical knowledge
 - Smart devices with modest abilities
- b. KFUPM community members:
 - Average to high technical knowledge
 - Smart devices with average to high abilities
- c. KFUPM Maintenance Department administration:
 - Average to high technical knowledge
 - PCs and Smart devices with high abilities

b. *User/Functionality Matrix*

Table 2 User / Functionality Matrix

| User | Main functionalities | Typical Computer Literacy (High, Average, Low) | Typical Educational Level (High school, College degree) | Expected Frequency of System Usage (Several times a day, Daily, Weekly, Monthly) |
|------------|----------------------------|--|---|--|
| User | R4-R15 , R17-R19 , R21,R22 | High | High school | Weekly |
| Admin | R29-R36 | Average | College degree | Daily |
| Serviceman | R25-R28 | Low | Diploma | Daily |

c. *Constraints*

- The project must be implemented using the simplified Rational Unified Process.
- UML must be used as a modeling language.
- Modeling work must be done on Enterprise Architect.
- MS Project must be used for project management and tracking.

d. Assumptions

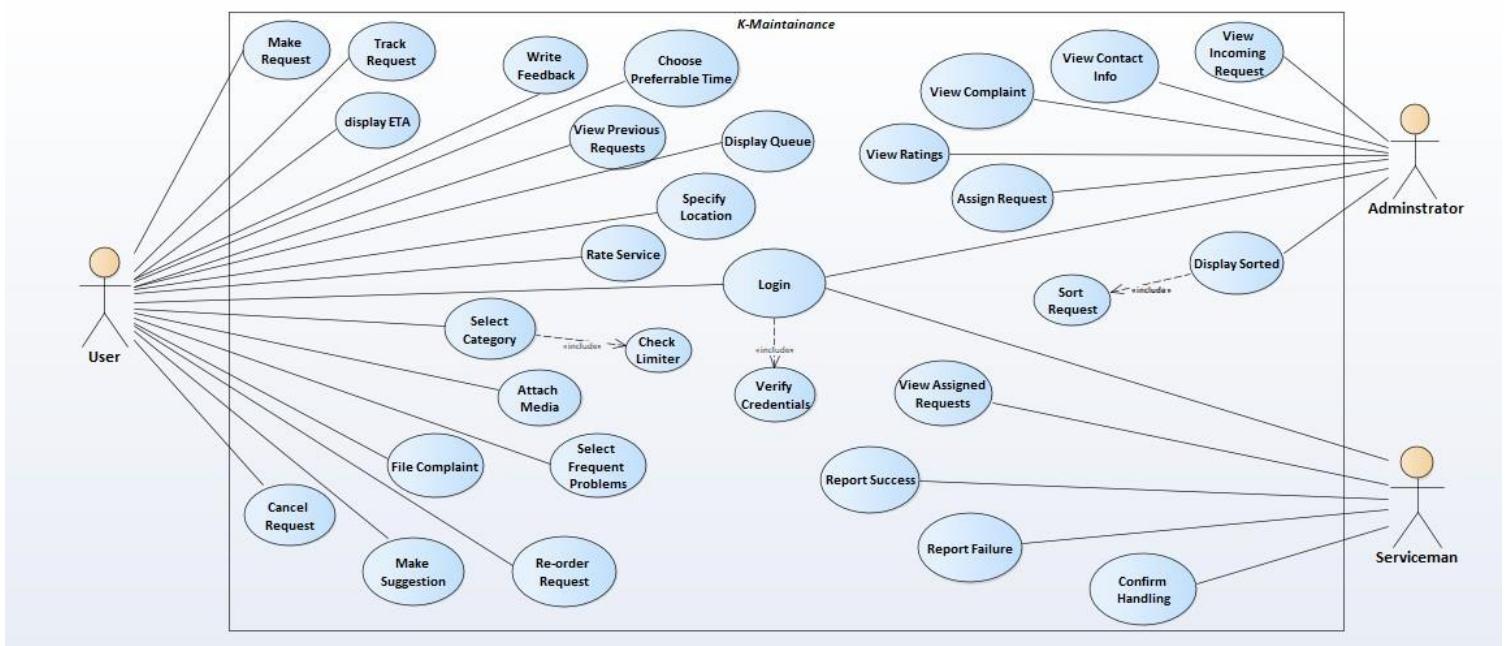
- KFUPM Maintenance Department administration is responsible for training labor.
- Existing system that deals with servicemen management (availability, working hours, salary, reward system, etc.)

e. Dependencies

- This system is given the ability by KFUPM ICTC Department to use KFUPM Login System.
- The maintenance department's cooperation in developing the system.
- Sufficient budget to complete the project.

4. System Requirements

a. Use Cases Diagram



4. System Requirements

a. Use Case Diagram

[Review Submission 1]

b. Use Case Description

| | |
|----------------------------------|---|
| Use Case Number | 1 |
| Use Case Name | Make request |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 24, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. User is logged in to the system3. The user has not reached request limit. |
| Successful Post Condition | <ol style="list-style-type: none">1. Request is made2. Request is assigned to serviceman |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user enters the homepage after logging in.
2. The user selects “Make request”.
3. The user specifies type of request.
4. The user selects from the list of preset requests.
5. The user specifies request’s location.
6. The user confirms the request.
7. End use case.

Alternate flows:

2.1.1 Display message of “Request limit has been reached, try again in *Time countdown for next request*”.

2.1.2 Go to 7.

6.1.1 Display message of “Our servicemen are busy, your request cannot be handled at specified time”.

6.1.2 Display option “Add request to queue”.

6.1.3 Display option “Change request details”.

6.1.4 Display option “Cancel request”.

6.1.2.1 Request is added to the queue.

6.1.3.1 Go to 3.

6.1.4.1 Go to 7.

| | |
|------------------------|-----------------|
| Use Case Number | 2 |
| Use Case Name | Track request |
| Author/Source | Hashim Alghamdi |

| | |
|----------------------------------|--|
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing request |
| Successful Post Condition | 1. The user views the progress of the request |
| Actors | User |
| Priority | High |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user enters the homepage after logging in.
2. The user selects “Track requests”.
3. The user views requests list.
4. The user chooses request.
5. The user views request progress.
6. End use case.

Alternate flows:

- 3.1.1 Display message of “No requests found”.
- 3.1.2 Go to 6.

| | |
|----------------------------------|---|
| Use Case Number | 3 |
| Use Case Name | Display ETA |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing request 4. User is viewing the request progress |
| Successful Post Condition | <ul style="list-style-type: none"> 1. The user can see the estimated time of arrival of the serviceman |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user is viewing the request progress.
2. The user selects “Display ETA”.
3. The user views the estimated time of arrival of the serviceman.
4. End use case.

Alternate flows:

None.

| | |
|----------------------------------|--|
| Use Case Number | 4 |
| Use Case Name | View previous requests |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing processed request |
| Successful Post Condition | <ul style="list-style-type: none"> 1. The user views previous requests |
| Actors | User |
| Priority | Medium |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user enters the homepage after logging in.
2. The user selects “Previous requests”.
3. The user views requests list.
4. The user chooses a processed request from the list.
5. The user views the request’s details.
6. End use case.

Alternate flows:

2.1.1 Display message of “No requests found”.

2.1.2 Go to 6.

| | |
|----------------------------------|--|
| Use Case Number | 5 |
| Use Case Name | Write feedback |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ul style="list-style-type: none">1. Connection to the internet2. User is logged in to the system3. Existing processed request |
| Successful Post Condition | <ul style="list-style-type: none">1. Feedback is sent to the admin |
| Actors | User |
| Priority | Medium |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins by selecting “Previous requests”.

2. The user views requests list.
3. The user chooses a processed request from the list.
4. The user writes the feedback.
5. The user selects “Send feedback”.
6. End use case.

Alternate flows:

2.1.1 Display message of “No requests found”.

2.1.2 Go to 6.

| | |
|----------------------------------|---|
| Use Case Number | 6 |
| Use Case Name | Choose preferable time |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system |
| Successful Post Condition | 1. Admin is informed with user's preferred time for service |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user selects “Make request”.
2. The user selects “Preferred time”.
3. The user specifies preferred time of service.
4. End use case.

Alternate flows:

3.1.1 Display message of “No available servicemen at *Chosen time by user* ”.

3.1.2 Go to 2.

| | |
|----------------------------------|--|
| Use Case Number | 7 |
| Use Case Name | Display queue |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing request 4. All available servicemen are busy with other requests |
| Successful Post Condition | <ol style="list-style-type: none"> 1. The user views request queue |
| Actors | User |
| Priority | Medium |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user selects “Track request”
2. The user views requests list
3. The user chooses request
4. The user views request progress
5. The user selects “Display queue”
6. The user views request queue
7. End use case

Alternate flows:

2.1.1 Display message of “No requests found”.

2.1.2 Go to 7.

| | |
|----------------------------------|--|
| Use Case Number | 8 |
| Use Case Name | Specify location |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. User is logged in to the system |
| Successful Post Condition | 1. Location of request is specified |
| Actors | User |
| Priority | High |
| Difficulty | Medium |
| Version | 1.0 |

| | |
|--------------------------|-------|
| Related Use Cases | None. |
|--------------------------|-------|

Main Flow

1. The use case begins when the user selects “Make request”
2. The user selects “Location”
3. The user specifies the location of the request
4. End use case

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 9 |
| Use Case Name | Logout |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system |
| Successful Post Condition | <ol style="list-style-type: none"> 1. User logs out of the system |
| Actors | User, Admin, Serviceman |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |

| | |
|--------------------------|-------|
| Related Use Cases | Login |
|--------------------------|-------|

Main Flow

1. The use case begins when the user selects the hamburger menu.
2. The user selects “Logout”.
3. End use case.

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 10 |
| Use Case Name | Add description |
| Author/Source | Hashim Alghamdi |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. The user is in the process of making request. |
| Successful Post Condition | <ol style="list-style-type: none"> 1. A brief description of the problem is added to the request. |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |

| | |
|--------------------------|-------|
| Related Use Cases | None. |
|--------------------------|-------|

Main Flow

1. The use case begins when the user selects “Make request”.
2. The user selects “Description”.
3. The user writes the description.
4. End use case.

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 11 |
| Use Case Name | Login |
| Author/Source | Salman Al-Ghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet |
| Successful Post Condition | <ol style="list-style-type: none"> 1. Actor is logged in to the system |
| Actors | User, Servicemen, Administrator |

| | |
|--------------------------|--------------------|
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | Verify Credentials |

Main Flow

1. The use case begins when the user enters his credentials.
2. The system checks his credentials for verification.
3. The system confirms the credentials.
4. The user is logged in.
5. End use case.

Alternative flow:

- 2.1. The system rejects the login request.
- 2.2. The system asks the user if he wants to login again.
 - 2.2.1 If yes, go to 1.
 - 2.2.2 If no, close the application.
- 2.3. Go to 5

| | |
|------------------------|-----------------------|
| Use Case Number | 12 |
| Use Case Name | View Assigned Request |

| | |
|----------------------------------|---|
| Author/Source | Salman Al-Ghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User logged in to the system. 3. Existing request 4. Administrator assigned the request to the serviceman |
| Successful Post Condition | <ol style="list-style-type: none"> 1. The serviceman read the description and found the location of the request. |
| Actors | Servicemen |
| Priority | High |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the serviceman selects “View Requests”
2. The system displays all the assigned requests by the administrator.
3. The system displays the description and location of each request.
4. The servicemen select “back”
5. End use case.

Alternate flows:

None.

| | |
|----------------------------------|--|
| Use Case Number | 13 |
| Use Case Name | Report Success |
| Author/Source | Salman Al-Ghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the Internet2. Serviceman is logged in to the system3. Existing request4. Administrator assigned request to the serviceman5. Serviceman accepted the request6. Serviceman operates the required request. |
| Successful Post Condition | <ol style="list-style-type: none">1. The administrator adds the report to the system's database.2. The system notify the user that the request is completed.3. The system removes the request from the serviceman's assigned requests list. |
| Actors | Servicemen |
| Priority | High |

| | |
|--------------------------|-------|
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the serviceman selects “View Requests”
2. The system displays all the assigned requests by the administrator.
3. The serviceman selects the required request.
4. The serviceman selects “Success”
5. The serviceman confirms once again by selecting “Yes”
6. End user case.

Alternate flows:

None.

| | |
|-------------------------|------------------|
| Use Case Number | 14 |
| Use Case Name | Report Failure |
| Author/Source | Salman Al-Ghamdi |
| Date of Creation | October 25, 2019 |

| | |
|----------------------------------|--|
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the Internet 2. Serviceman is logged in to the system 3. Existing request 4. Administrator assigned request to the serviceman 5. Serviceman accepted the request 6. Serviceman operates the required request. |
| Successful Post Condition | <ol style="list-style-type: none"> 1. The administrator adds the report to the system's database. 2. The system notify the user that the request is completed. 3. The system asks the user if he wants to request another service. 4. If yes, the system re-submits the request so that another serviceman could handle it. 5. If not, the system removes the request from the serviceman's assigned requests list. |
| Actors | Servicemen |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the serviceman selects “View Requests”
2. The system displays all the assigned requests by the administrator.
3. The serviceman selects the confirmed request.

4. The serviceman selects “Failure”
5. The serviceman confirms once again by selecting “Yes”
6. End user case.

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 15 |
| Use Case Name | Confirm Handling |
| Author/Source | Salman Al-Ghamdi |
| Date of Creation | October 25, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the Internet 2. Serviceman is logged in to the system 3. Existing request 4. Administrator assigned request to the serviceman 5. Serviceman views assigned requests. |
| Successful Post Condition | <ul style="list-style-type: none"> 1. The system updates the status of the request as taken. 2. The system updates the status of the serviceman as busy. 3. The user receives a notification that the serviceman is on his way. |
| Actors | Servicemen |

| | |
|--------------------------|-------|
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the serviceman selects “View Requests”
2. The system displays all the assigned requests by the administrator.
3. The serviceman selects one requests.
4. The serviceman selects “Handle Request”
5. The serviceman confirms by selecting “Yes”
6. End use case.

Alternate flows:

None.

| | |
|-------------------------|------------------|
| Use Case Number | 16 |
| Use Case Name | Cancel Request |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |

| | |
|----------------------------------|--|
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing unhandled request |
| Successful Post Condition | <ol style="list-style-type: none"> 1. Request has been canceled. 2. The system saves the unhandled request to the user profile. |
| Actors | User |
| Priority | Medium |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

1. The use case begins when the user is viewing the request progress.
2. The user selects “Cancel Request”.
3. The user confirms canceling the request.
4. End use case.

Alternate flows:

None.

| | |
|------------------------|----|
| Use Case Number | 17 |
|------------------------|----|

| | |
|----------------------------------|--|
| Use Case Name | Make Suggestions |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system |
| Successful Post Condition | <ul style="list-style-type: none"> 1. Suggestions have been sent. 2. Suggestions have been saved in the system for further considerations. |
| Actors | User |
| Priority | Medium |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

5. The use case begins when the user is viewing the request progress.
6. The user selects “Make Suggestions”.
7. The user enters their suggestions through text box.
8. End use case.

Alternate flows:

None.

| | |
|----------------------------------|--|
| Use Case Number | 18 |
| Use Case Name | File Complaints |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. User is logged in to the system3. Rejected request |
| Successful Post Condition | <ol style="list-style-type: none">1. Complaints have been filed. |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user enters the homepage after logging in.
2. The user selects “File Complaints”.
3. The user specifies the type of the complaint.
4. The user enters any additional details.
5. End use case.

Alternate flows:

None.

| | |
|----------------------------------|--|
| Use Case Number | 19 |
| Use Case Name | Re-order Request |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. Existing request is unhandled or rejected. |
| Successful Post Condition | <ul style="list-style-type: none"> 1. Request has been re-ordered. 2. Request has been assigned to serviceman. |
| Actors | User |
| Priority | High |

| | |
|--------------------------|--------|
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user is viewing the request progress.
2. The user find that the request is handled or rejected.
3. The user choose to re-order the request.
4. End use case.

Alternate flows:

None.

| | |
|-------------------------|------------------|
| Use Case Number | 20 |
| Use Case Name | Select Category |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |

| | |
|----------------------------------|---|
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. The user is in the process of making request. |
| Successful Post Condition | <ol style="list-style-type: none"> 1. The category of the request has been selected. |
| Actors | User |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user is making the request.
2. The user selects the category of the request.
3. End use case.

Alternate flows:

None.

| | |
|------------------------|----|
| Use Case Number | 21 |
|------------------------|----|

| | |
|----------------------------------|---|
| Use Case Name | Select Frequent Problems |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. User is logged in to the system 3. The user is in the process of making request. |
| Successful Post Condition | <ul style="list-style-type: none"> 2. One of the frequent problems has been selected. |
| Actors | User |
| Priority | Low |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

4. The use case begins when the user is making the request.
5. The user selects one of the frequent problems.
6. End use case.

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 22 |
| Use Case Name | Attach media |
| Author/Source | Salem Bamukhier |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. User is logged in to the system3. The user is in the process of making request. |
| Successful Post Condition | <ol style="list-style-type: none">1. The media is attached to the request. |
| Actors | User |
| Priority | Medium |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None. |

Main Flow

1. The use case begins when the user is making the request.
2. The user selects the category of the request.
3. The user selects one of the frequent problems request.
4. The user selects attach media.
5. The user attaches the media
6. End use case.

Alternate flows:

None.

| | |
|----------------------------------|---|
| Use Case Number | 23 |
| Use Case Name | View Incoming Requests |
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. User Logged in to the system |
| Successful Post Condition | <ol style="list-style-type: none">1. Viewed Incoming Requests2. Can view the details of a requests |

| | |
|--------------------------|---------------|
| Actors | Administrator |
| Priority | High |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the admin enters the homepage after logging in.
2. The admin selects “View incoming requests”.
3. The admin can view incoming submitted requests.
4. End use case.

Alternative flow:

None

| | |
|------------------------|-------------------|
| Use Case Number | 24 |
| Use Case Name | View Contact Info |

| | |
|----------------------------------|--|
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. The actor logged in to the system 3. Viewed Incoming Requests |
| Successful Post Condition | View Contact Info |
| Actors | Administrator |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the user view incoming submitted requests.
2. The user selects a request.
3. The user selects “View user’ contact info”.
4. The user can view user’ contact info.
5. End use case.

Alternative flow:

None

| | |
|----------------------------------|--|
| Use Case Number | 25 |
| Use Case Name | View Complaint |
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. The actor logged in to the system |
| Successful Post Condition | <ol style="list-style-type: none">1. Complaint viewed |
| Actors | Administrator |
| Priority | High |
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the administrator enters the homepage after logging in.
2. The administrator selects “View complaint”.
3. The administrator view the complaint.
4. End use case.

Alternative flow:

None

| | |
|----------------------------------|--|
| Use Case Number | 26 |
| Use Case Name | View Ratings |
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ol style="list-style-type: none">1. Connection to the internet2. The actor logged in to the system3. Existing finished requests |
| Successful Post Condition | <ol style="list-style-type: none">1. Servicemen's ratings are viewed |
| Actors | Administrator |
| Priority | High |

| | |
|--------------------------|------|
| Difficulty | Low |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the administrator enters the homepage after logging in.
2. The administrator selects “Servicemen list”.
3. The administrator selects the name of the Serviceman.
4. The administrator can view Serviceman’ ratings.
5. End use case.

Alternative flow:

None

| | |
|-------------------------|------------------|
| Use Case Number | 27 |
| Use Case Name | Assign Requests |
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |

| | |
|----------------------------------|--|
| Precondition(s) | <ol style="list-style-type: none"> 1. Connection to the internet 2. The actor logged in to the system 3. Viewed Incoming Requests |
| Successful Post Condition | <ol style="list-style-type: none"> 1. Assigned a Request |
| Actors | Administrator |
| Priority | High |
| Difficulty | Medium |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the administrator views incoming submitted requests.
2. The administrator selects a request.
3. The administrator selects “Assign Request”.
4. The request is assigned to the Servicemen.
5. End use case.

Alternative flow:

None

| | |
|----------------------------------|--|
| Use Case Number | 28 |
| Use Case Name | Display Sorted |
| Author/Source | Haitham Al-Saeed |
| Date of Creation | October 26, 2019 |
| Precondition(s) | <ul style="list-style-type: none"> 1. Connection to the internet 2. The actor logged in to the system 3. Viewed Incoming Requests |
| Successful Post Condition | <ul style="list-style-type: none"> 1. Viewed Incoming Requests - sorted |
| Actors | Administrator |
| Priority | High |
| Difficulty | High |
| Version | 1.0 |
| Related Use Cases | None |

Main Flow

1. The use case begins when the administrator views incoming submitted requests.
2. The administrator selects “Sort by”.

3. The administrator selects a sorting type (priority, time precedence, category).
4. The administrator can view the incoming requests sorted.
5. End use case.

Alternative flow:

None

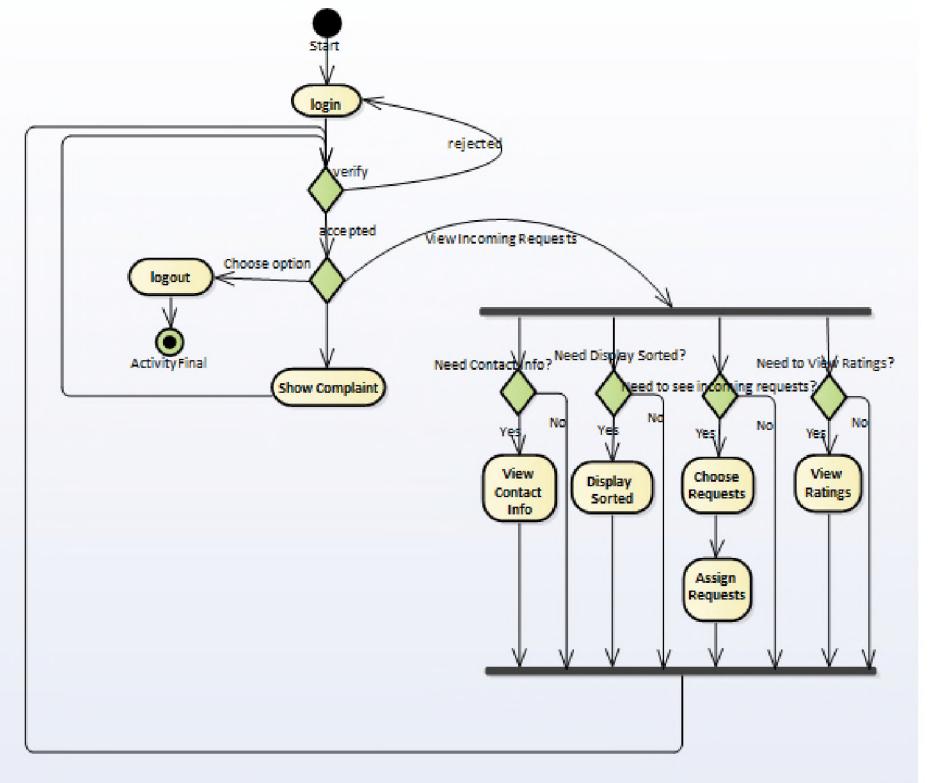
c. Non-Functional Requirements

1. The system shall be user-friendly for different sets of users, icons should have customizable size.
2. The system shall be platform-independent, it should be available on multiple operating systems.
3. The system should be flexible so that most of the aspects can be configured.
4. The system shall be implemented using an object-oriented paradigm to ensure maintainability of the system for addition of features in future iterations.
5. The system's architecture shall avoid coupling to enhance the performance speed of the system.
6. The system shall be reliable so that the user can trust the system to match their expectations when executing operations.
7. The system shall be available at most times and scheduling for maintenance should be during low-traffic periods.
8. The system shall recover from errors and crashes seamlessly.
9. The system shall be secure to use by protecting users' personal information.
10. The system shall be visible so that users can reach important functionalities easily.
11. The system shall provide a set of shapes and colors that is clear for users with vision issues.
12. The system's interface shall provide a text equivalent for every non-textual element.
13. The system shall be interoperable so that the KFUPM login system can be used for it.
14. The system's data shall have a high level of integrity to ensure the system's stability over a long period of time.
15. The system shall be manageable to ensure maintenance department support.

d. Activity Diagrams

We created 3 high-level activity, one for each actor, diagrams in order to display the whole process of the program. The activity diagram for the user would be submitted as EAP file since it is so big that no sufficient method is available to import it as a picture.

1. User:
[Check the submitted EAP file]
2. Administrator:



3. Serviceman:

