



# King Fahd University of Petroleum and Minerals

*Software Engineering Department (SWE)*

*SWE312 – User Interface Design*

*Semester 201*

*Due: October 17, 2020*

*Group Project*

***Phase 1***

*Group # 5*

***Team Members:***

***Contribution:***

*1- Nazeer Al-Filfil*

*20%*

*2- Jawad AlYousef*

*20%*

*3- Rayan Al Shahrani*

*20%*

*4- Ryan AlBilihi*

*20%*

*5- Mosab AlQarni*

*20%*

## Problem Statement

Develop an intuitive user interface for "**Pothole Tracking and Repair System (PHTRS)**" within modern standards, and support for minority groups.

### 1- User Analysis

#### Actors:

- Member of the Public
- General Manager
- Repair Crew
- Public Works Department Staff
- System

(The System is not included in the User Analysis)

User Characteristics	Member of the Public	General Manager	Repair Crew	Public Works Department Staff
Age	17 - 80	30 - 60	18 - 50	20 - 60
Sex	Male - Female	Male - Female	Male	Male - Female
Physical Limitations	Color blindness / Autism	-	Internet connection	-
Educational Background	Elementary school and higher	Bachelor	High school	Diploma
Computer / IT Skills	Low	High	Medium	High
Pain Points / User Requirements	Unclear user interface	Slow system	Unclear job instructions	Missing or invalid contact informations
Goals	Report potholes / Make damage claims	Assign repair jobs / Check reports	View assigned work	Verify damage claims / Send cheque to Member of the Public
Usage Frequency	Several times a day	Daily	Daily	Daily
Expected Geography	Inside the country	Indoor Offices	Pothole location	Indoor Offices

## 2- Task Analysis

### Tasks:

1. Sign up (Member of the Public)
2. Log in (All Actors Except System)
3. Report pothole's severity and location (Member of the Public)
4. Register reported potholes in "PHTRS" (System)
5. Assign repair jobs (General Manager)
6. View Available repair crew (General Manager)
7. View Assigned jobs (Repair Crew)
8. Update pothole status (Repair Crew)
9. Submit damage claim (Member of the Public)
10. Create damage file (System)
11. Verify claim (Public Works Department Staff / or Staff for short)
12. Send cheque (Staff)
13. Generate report (System)
14. Send report (System)
15. Sort reports (General Manager)

### Task 1: Sign up

Main Characteristic Questions	Answers
How frequently is the task carried out?	Once per user
What kinds of skills or knowledge are needed?	Basic computer knowledge
Is the task time critical?	No
What is the reason for the task?	Make account in PHTRS
What are the expected problems?	Missing crucial information required to sign up

### Task 2: Log in

Main Characteristic Questions	Answers
How frequently is the task carried out?	Weekly
What kinds of skills or knowledge are needed?	Basic computer knowledge
Is the task time critical?	No
What is the reason for the task?	To access the PHTRS
What are the expected problems?	Invalid username or password

### Task 3: Report pothole's severity and location

Main Characteristic Questions	Answers
How frequently is the task carried out?	Monthly
What kinds of skills or knowledge are needed?	Basic computer knowledge
Is the task time critical?	No
What is the reason for the task?	Report problem to the Public Works Department
What are the expected problems?	Missing location

**Task 4: Register reported potholes in PHTRS**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Several times a day
What kinds of skills or knowledge are needed?	Not applicable
Is the task time critical?	Yes
What is the reason for the task?	Update system database
What are the expected problems?	System down

**Task 5: Assign repair jobs**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Knowing the unassigned reports and the available Repair Crew
Is the task time critical?	Yes
What is the reason for the task?	Assigning Repair Crew to respective tasks
What are the expected problems?	No available Repair Crew

**Task 6: View available repair crew**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	None
Is the task time critical?	No
What is the reason for the task?	View the schedule of the Repair Crew
What are the expected problems?	None

**Task 7: View assigned jobs**

<b>Main Characteristic Questions</b>	<b>Answers</b>
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Basic computer knowledge
Is the task time critical?	Yes
What is the reason for the task?	View assigned task for each individual Repair Crew Member
What are the expected problems?	Bad Internet Connection

**Task 8: Update pothole status**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Know the status of the assigned pothole
Is the task time critical?	No
What is the reason for the task?	Update the status of an assigned pothole
What are the expected problems?	Bad internet connection

**Task 9: Submit damage claim**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Monthly
What kinds of skills or knowledge are needed?	Basic computer knowledge
Is the task time critical?	No
What is the reason for the task?	Request reparation for damage caused by potholes
What are the expected problems?	False claims

**Task 10: Create damage file**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Several times a day
What kinds of skills or knowledge are needed?	Not Applicable
Is the task time critical?	Yes
What is the reason for the task?	Generate a damage file and send it to Staff
What are the expected problems?	System down

**Task 11: Verify claim**

<b>Main Characteristic Questions</b>	<b>Answers</b>
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Sufficient information and a confirmation about the claim
Is the task time critical?	Yes
What is the reason for the task?	Determine if the claim owner is eligible to compensation
What are the expected problems?	Invalid contacts



**Task 12: Send cheque**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Weekly
What kinds of skills or knowledge are needed?	Confirmation for a claim and the claimer's contacts
Is the task time critical?	Yes
What is the reason for the task?	Compensate claim owners
What are the expected problems?	Invalid bank account

**Task 13: Generate report**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Not applicable
Is the task time critical?	No
What is the reason for the task?	Generate daily and monthly reports
What are the expected problems?	System down

**Task 14: Send report**

Main Characteristic Questions	Answers
How frequently is the task carried out?	Daily
What kinds of skills or knowledge are needed?	Not applicable
Is the task time critical?	Yes
What is the reason for the task?	Send generated to appropriate party and on time
What are the expected problems?	System down

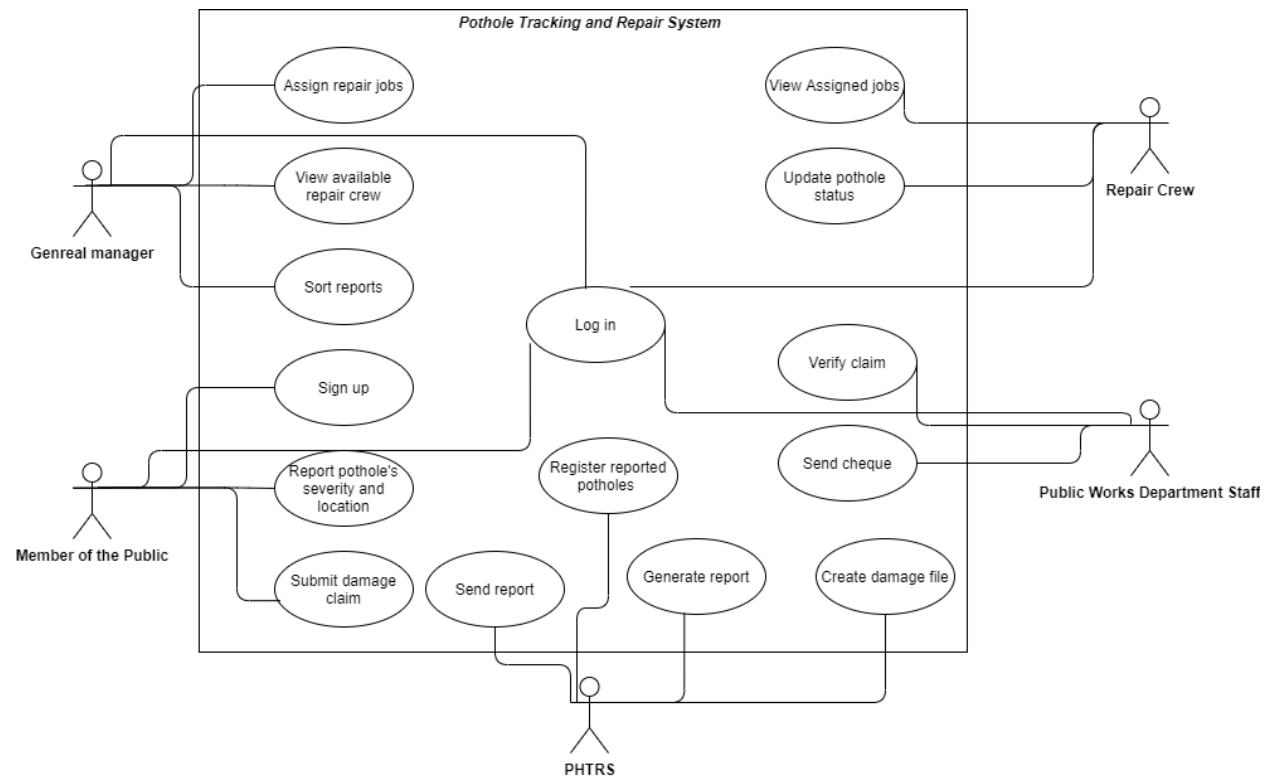
**Task 15: Sort reports**

Main Characteristic Questions	Answers
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How frequently is the task carried out?	Weekly
What kinds of skills or knowledge are needed?	None
Is the task time critical?	Yes
What is the reason for the task?	Sort all reports based on the criteria's entered by the manager
What are the expected problems?	Too many reports causing the system to freeze

### 3- Use Case

#### Use Case Diagram



## Use Case Document

Use Case Number		Use case #1	
Use Case Name		Sign up	
Author/Source		Ryan Albilihi	
Date of Creation		10/16/2020	
Precondition(s)		None	
Successful Post Condition		Create new account in database	
Actors		Member of the Public	
Priority		High	
Related use Cases		None	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User chooses sign-up on the website	SR1	Display sign up page
UA2	User input required information, username, password, email, and phone number	SR2	System Check if there is any conflict in entered information
UA3	User confirmation	SR3	Create account in database
Alternative 1:Title			
User Action		System Response	
A1.UA1		A1.SR1	
A1.UA2	Re-enter the password	A1.SR2	weak password, use at least one capital letter ,small letter and digits. The length should be at least 8 digits
Alternative 2: Title			
User Action		System Response	
A2.UA1		A2.SR1	
A2.UA2	Re-enter the username	A2.SR2	The account already exist,

			sign in, forgot username
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Use Case Number		Use case #2	
Use Case Name		Log in	
Author/Source		Ryan Albilihi	
Date of Creation		17/10/2020	
Precondition(s)		The user should have an account	
Successful Post Condition		Log in into the website	
Actors		Member of the Public, Repair Crew, Public Works Department Staff, General Manager	
Priority		High	
Related use Cases		Use case #1	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User chooses login on the website	SR1	Display log in page
UA2	User write his username and password	SR2	System Check of the validation of the information
UA3	User confirmation	SR3	log in into the website successfully
Alternative 1:Title			
User Action		System Response	
A1.UA1		A1.SR1	
A1.UA2	re-enter the password	A1.SR2	Wrong password, check your password, forgot password
Alternative 2: Title			
User Action		System Response	
A2.UA1		A2.SR1	

<b>A2.UA2</b>	re-enter the username	<b>A2.SR2</b>	Wrong username, check your username, forgot username
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Use Case Number		Use case #3	
Use Case Name		Register reported potholes in "PHTRS"	
Author/Source		Nazeer Al-Filfil	
Date of Creation		17/10/2020	
Precondition(s)		Logged in	
Successful Post Condition		Make a successful report	
Actors		Member of the Public	
Priority		Medium	
Related use Cases		None	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User chooses to report a pothole	SR1	System displays the report form for the user to fill
UA2	User provide all required informations	SR2	System verify information
UA3	User submit the report	SR3	System register the report



Use Case Number		Use case #4	
Use Case Name		Register reported potholes	
Author/Source		Rayan Alshahrani	
Date of Creation		10/17/2020	
Precondition(s)		Create a report of potholes	
Successful Post Condition		Save reported potholes into the system (PHTRS)	
Actors		PHTRS	
Priority		High	
Related use Cases		Use Case #3	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User enter required information of damage report	SR1	Save the information
UA2	User submit the report	SR2	Register the report and send the information to damage file

Use Case Number		Use Case #5	
Use Case Name		Assign repair jobs	
Author/Source		Jawad Alyousef	
Date of Creation		17/10/2020	
Precondition(s)		Log in successfully ( done US #2), there is at least one available report pothole	
Successful Post Condition		assign the chosen report pothole to the chosen repair crew successfully	
Actors		General manager	
Priority		High	
Related use Cases		US #2	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The user clicks show report pothole	SR1	Display the page of the list report pothole
UA2	The system view the list of available repair crew	SR2	Display a list of repair crew
UA3	The user clicks matching icon	SR3	Display the page that contains lists of available repair crew and available reports pothole
UA4	The user can match the specific report pothole with specific repair crew	SR4	Join the two chosen with each other
UA5	The user clicks the confirm button	SR5	Make the change successfully, update information change, send message to repair crew

Use Case Number		Use case #6	
Use Case Name		View available repair crew	
Author/Source		Jawad Alyousef	
Date of Creation		17/10/2020	
Precondition(s)		Log in successfully (done use case#2 ), there are repair crew already	
Successful Post Condition		View list of available repair crew	
Actors		General manager	
Priority		High	
Related use Cases		UC #2, US #5	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The user clicks show report pothole	SR1	Display the page of list report pothole
UA2	The user click show available repair crew	SR2	Check all crew repair, the Display the page of all available repair crew
UA3	The system views the list of available repair crew	SR3	Display the list of available crew successfully
Alternative 1:Title			
User Action		System Response	
A1.UA1	The user can click the notification of done repair crew	A1.SR1	send the notification of all repair crew that are done work
A1.UA2	The system view the list of available repair crew	A1.SR2	Display the list of available repair crew

Use Case Number		Use Case #7	
Use Case Name		View assigned jobs	
Author/Source		Jawad Alyousef	
Date of Creation		17/10/2020	
Precondition(s)		There is at least one report pothole	
Successful Post Condition		View assigned jobs successfully	
Actors		Repair crew	
Priority		High	
Related use Cases		US#2	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The user clicks show report pothole details	SR1	display the list of all report pothole with the most important information that includes the responsible repair crew
UA2	The system views all report pothole with responsible repair crew to each of them, and makes yours above of them separately	SR2	Display the list of all report pothole with responsible repair crew to each of them
Alternative I: Title			
A1.UA1	The user can click the notification of new job		A1.SR1
	The system views all report pothole with responsible repair crew to each of them, and makes yours above of them separately		A1.SR2

Use Case Number		Use case#8	
Use Case Name		Update pothole status	
Author/Source		MOSAB ALQARNI	
Date of Creation		10/17/20	
Precondition(s)		The general manager assigns the repair jobs	
Successful Post Condition		The pothole status is sent to the general manager as a report	
Actors		Repair crew	
Priority		High	
Related use Cases		Assign repair jobs	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The general manager assign the repair jobs the repair crew	SR1	The system sends the assign repair jobs to the repair crew
UA2	The repair crew view assigned jobs	SR2	The system shows the status of the pothole
UA3	The repair crew update pothole status	SR3	The system sends the report of updated pothole status to the general manager

Use Case Number		Use Case #9	
Use Case Name		Submit damage claim	
Author/Source		Nazeer Al-Filfil	
Date of Creation		10/17/2020	
Precondition(s)		Logged in	
Successful Post Condition		Send a damage claim to the Public Works Department	
Actors		Member of the Public	
Priority		Medium	
Related use Cases		Use Case #11	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User chooses to make damage claim	SR1	System Displays the claim form for the user to fill
UA2	User fill the required informations	SR2	System verify information
UA3	User submit the claim	SR3	System sends the claim

Use Case Number		Use case #10	
Use Case Name		Create damage file	
Author/Source		Rayan alshahrani	
Date of Creation		10/17/2020	
Precondition(s)		Reports registered in the system	
Successful Post Condition		Hold information about reported damage	
Actors		PHTRS	
Priority		High	
Related use Cases		Use case #4	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	User submits damage report	SR1	Save the information into a separate file (damage file)

Use Case Number		Use case #11	
Use Case Name		Verify claim	
Author/Source		MOSAB ALQARNI	
Date of Creation		10/17/20	
Precondition(s)		The member of the public submits the claim	
Successful Post Condition		The Public works department staff executes the damage claims	
Actors		Public works department staff	
Priority		High	
Related use Cases		Submit damage claim	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The member of the public submits claims	SR1	The system sends the claim to the public works department staff
UA2	The public works department staff verifies the claim of the reported damage	SR2	The system shows to the member the status of the claim
UA3	The works department staff executes the damage claim	SR3	The system sends to the member the status of the claim



Use Case Number		Use case #12	
Use Case Name		Send cheque	
Author/Source		MOSAB ALQARNI	
Date of Creation		10/17/20	
Precondition(s)		The public works department staff executes the damage claim.	
Successful Post Condition		The member receives a notification that public works department staff sends the cheque.	
Actors		Public works department staff	
Priority		High	
Related use Cases		UC #11	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	The public works department staff executes the damage claim	SR1	The system sends to the member the approved claim of the claim
UA2	The works department staff sends a cheque to the member	SR2	The system sends a notification to the member
UA3	The member receives a notification of sending the cheque	SR3	

Use Case Number		Use case #13	
Use Case Name		Generate reports	
Author/Source		Rayan alshahrani	
Date of Creation		10/17/2020	
Precondition(s)		Update the status of the potholes repair	
Successful Post Condition		Generate 2 reports: daily and monthly to check the progress of the repairs	
Actors		PHTRS	
Priority		High	
Related use Cases		UC#8	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	General Manager requests the reports	SR1	Prepare the reports and Send it to General manager
UA2	General manager requests monthly report	SR2	

Use Case Number		Use Case #14	
Use Case Name		Send report	
Author/Source		Nazeer Al-Filfil	
Date of Creation		10/17/2020	
Precondition(s)		Report generated by the system	
Successful Post Condition		Send report to the intended parties	
Actors		System	
Priority		High	
Related use Cases		Use Case #13	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	System generate report	SR1	System send the report to the intended parties

Use Case Number		Use case #15	
Use Case Name		Sort reports	
Author/Source		Ryan Albilihi	
Date of Creation		17/10/2020	
Precondition(s)		The files of the reports should be excited	
Successful Post Condition		sort the report based on fields	
Actors		General Manager	
Priority		Medium	
Related use Cases		UC #13	
Flow of Events			
Main Flow			
User Action		System Response	
UA1	Select files need to sort	SR1	Display the files
UA2	Press on sort button	SR2	Sort the files
Alternative 1:Title			
User Action		System Response	
A1.UA1	re-select the files	A1.SR1	Wrong files, these files cannot be sorted, please try again