American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

PROJECT TITLE

Central Vehicle Tracking System

Part -2 (Exercise-5 to Exercise-10 [Final-term])

A Software Engineering Project Submitted
By

Semester: Summer_21_22		**Section: H**	**Group Number: 04**	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
1.	MD. REDWAN AHMED	21-45311-2		
2.	HASIN AABRAR KHAN	21-45297-2		
3.	NABIHA TAHSIN	21-45685-3		
4.	JANNAT ARA TASNIM	21-45667-3		
5.	MUNTASIR MARUF	22-46620-1		

The project will be Evaluated for the following Course Outcomes

CO3: *Select* appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5 Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Evaluate the sustainability of the developed software in terms of both society and the environment (Impact identification)	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	
CO4: *Develop* project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
Develop the project plan, its components of the proposed software products	[5Marks]	
Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources	[5Marks]	
Identify all the potential risks in the specific project and prioritizing/categorizing those to overcome the risk factors.	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: MD. REDWAN AHMED
Student ID: 21-45311-2
Contribution in Percentage (20%):
Contribution in the Project:

- UI Design (Favorites, Message, Notification, Recent)
- System testing (User info, Navigation, Add vehicle, Emergency Call)
- Budget estimation
- Execution report

Signature of the Student

Student Name: HASIN AABRAR KHAN
Student ID: 21-45297-2
Contribution in Percentage (20%):
Contribution in the Project:

- UI Design (Sign Up, Login, Vehicles)
- System testing (Driver verification, Notification, helpline)
- WBS
- Timeline table 1

Signature of the Student

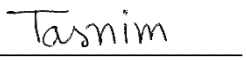
Student Name: NABIHA TAHSIN
Student ID: 21-45685-3
Contribution in Percentage (20%):
Contribution in the Project:

- UI Design (Drivers, Password & Security, Service & Feedback)
- System testing (Sign Up Session, Report Feedback, Add to Favorites, Vehicle Verification, Search for driver or vehicle)
- WBS
- Timeline table 2, Constructive Cost Model

Signature of the Student

Student Name: JANNAT ARA TASNIM
Student ID: 21-45667-3
Contribution in Percentage (20%):
Contribution in the Project:

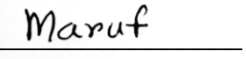
- UI Design (Account dashboard, My Account)
- System testing (Reset password, Accident Notification)
- Network diagram
- Risk Analysis and Management
- Activity Scheduling and Resource Allocation



Signature of the Student

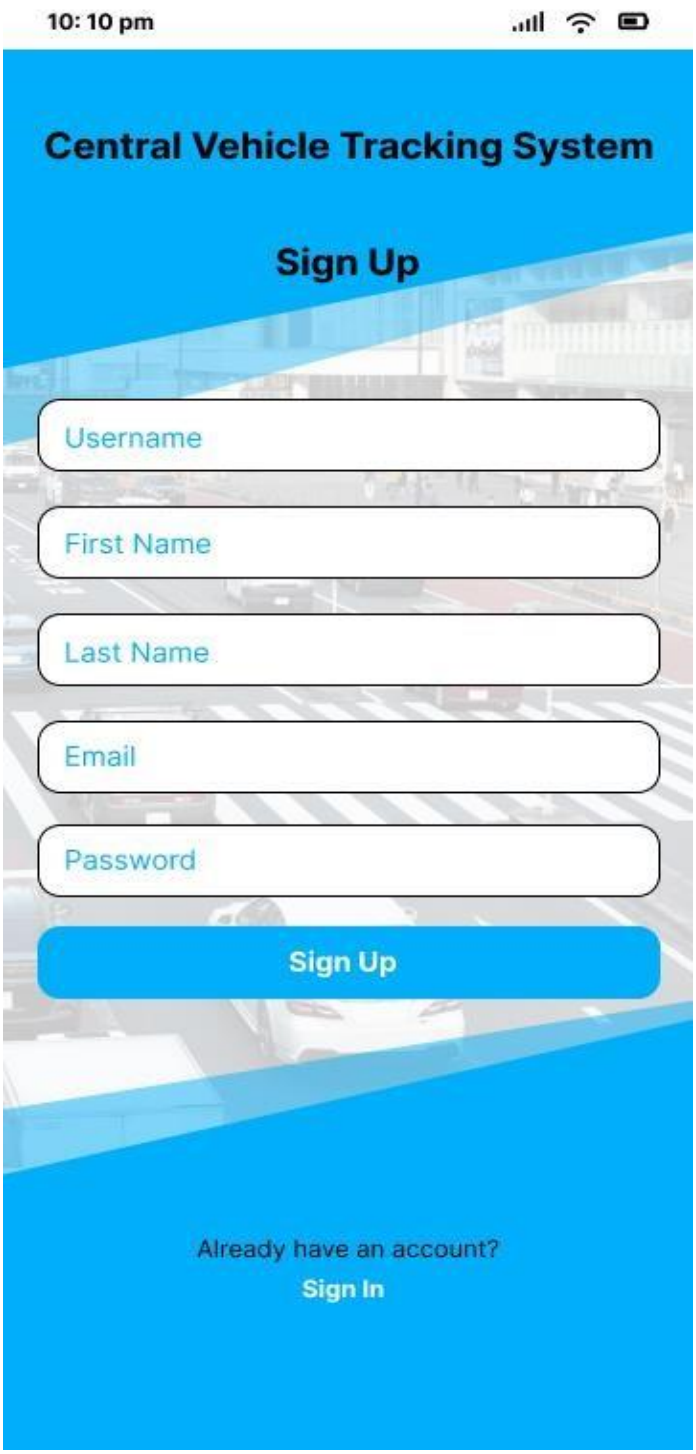
Student Name: MUNTASIR MARUF
Student ID: 22-46620-1
Contribution in Percentage (20%):
Contribution in the Project:

- UI Design (Documents, Map, Drivers, My Vehicles)
- System testing (Track vehicle, Contact Vehicle Owner, View Driver, Upload documents, Contact driver, Scan and view documents)
- Earn value analysis.
- Progress data of project execution



Signature of the Student

Sign Up Page:

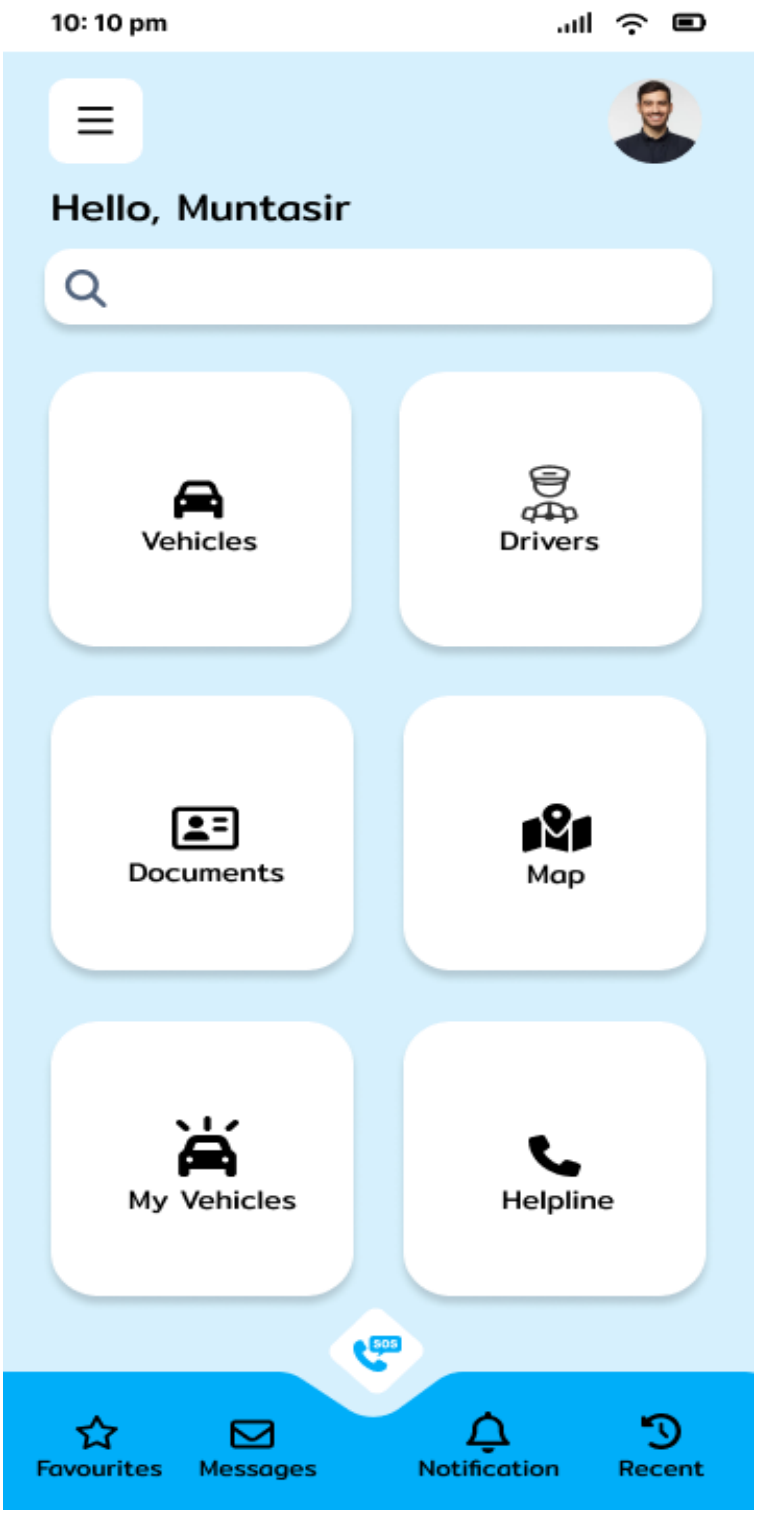


This page lets new users create an account of Central vehicle Tracking System. Providing Required details anyone can create an account on this platform.

Log In Page:

After creating an account, the user can login to the system using email / username and password.

Dashboard:


10: 10 pm
Hello, Muntasir
Vehicles
Drivers
Documents
Map
My Vehicles
Helpline
SOS
Favourites
Messages
Notification
Recent

Users can find all the features in this page. And can access them according to their status (User / Admin)

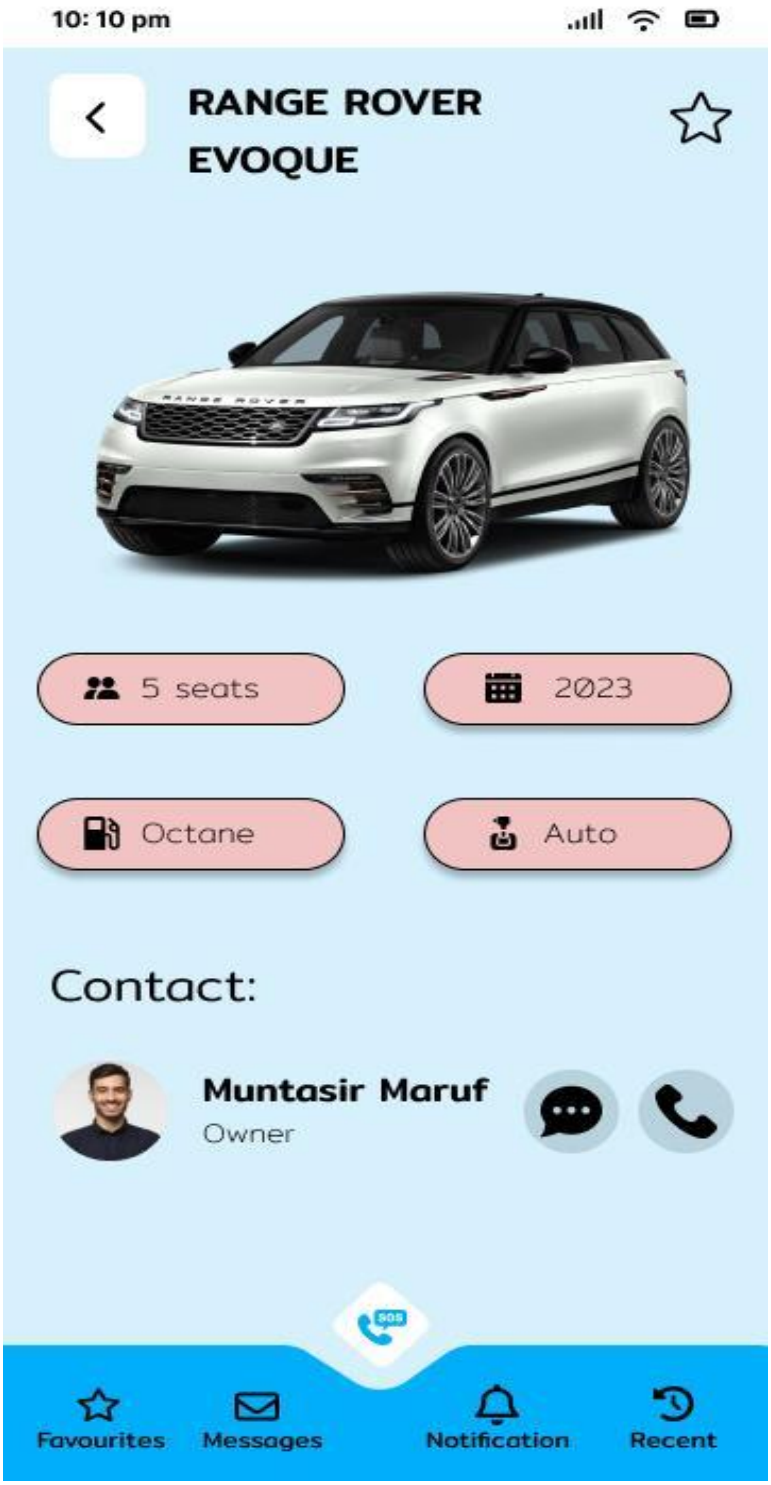
Vehicles:

In this page all the vehicles are divided into different categories.

Cars Page:

Inside of cars vehicle category. Where users can choose cars to hire according to their requirements.

Range Rover Evoque:

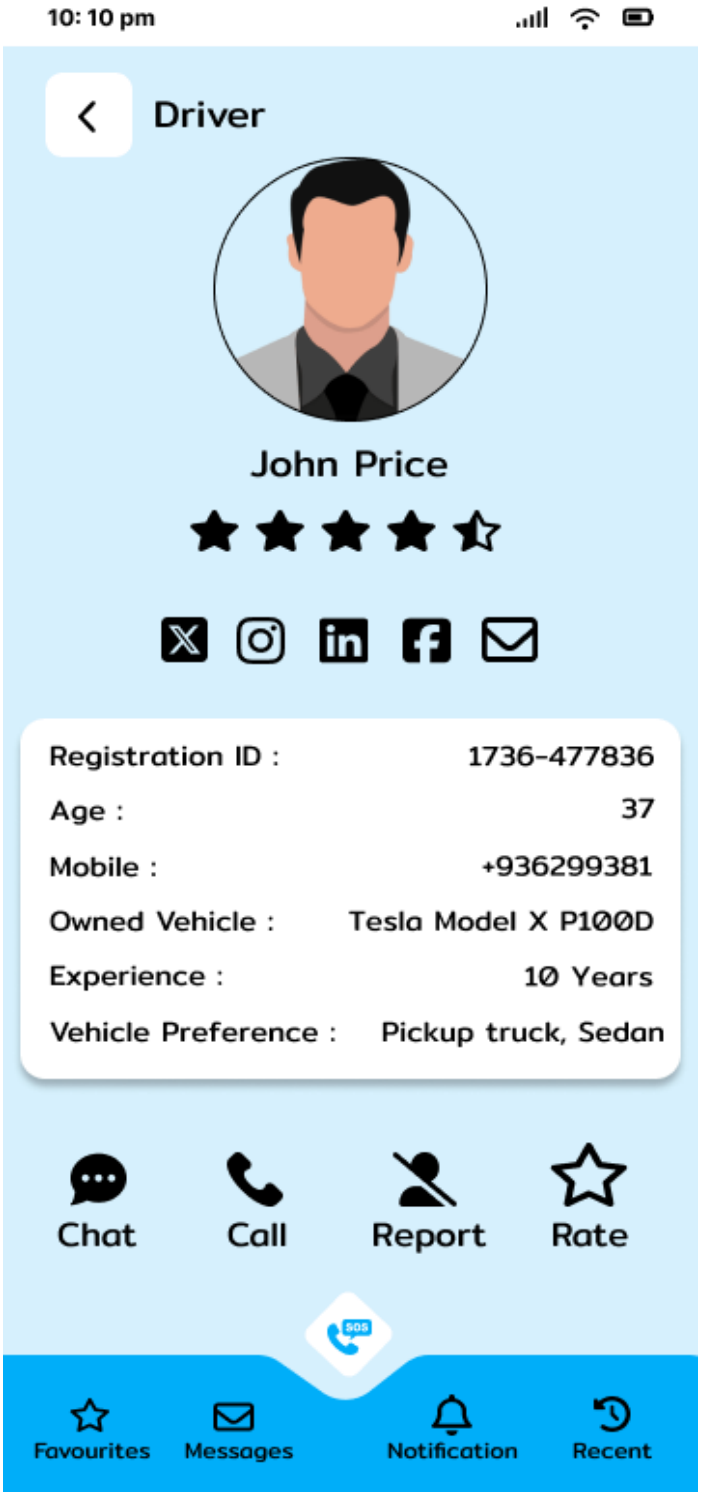


Users can see the selected car details and contact the driver to hire the vehicle.

Drivers Page:

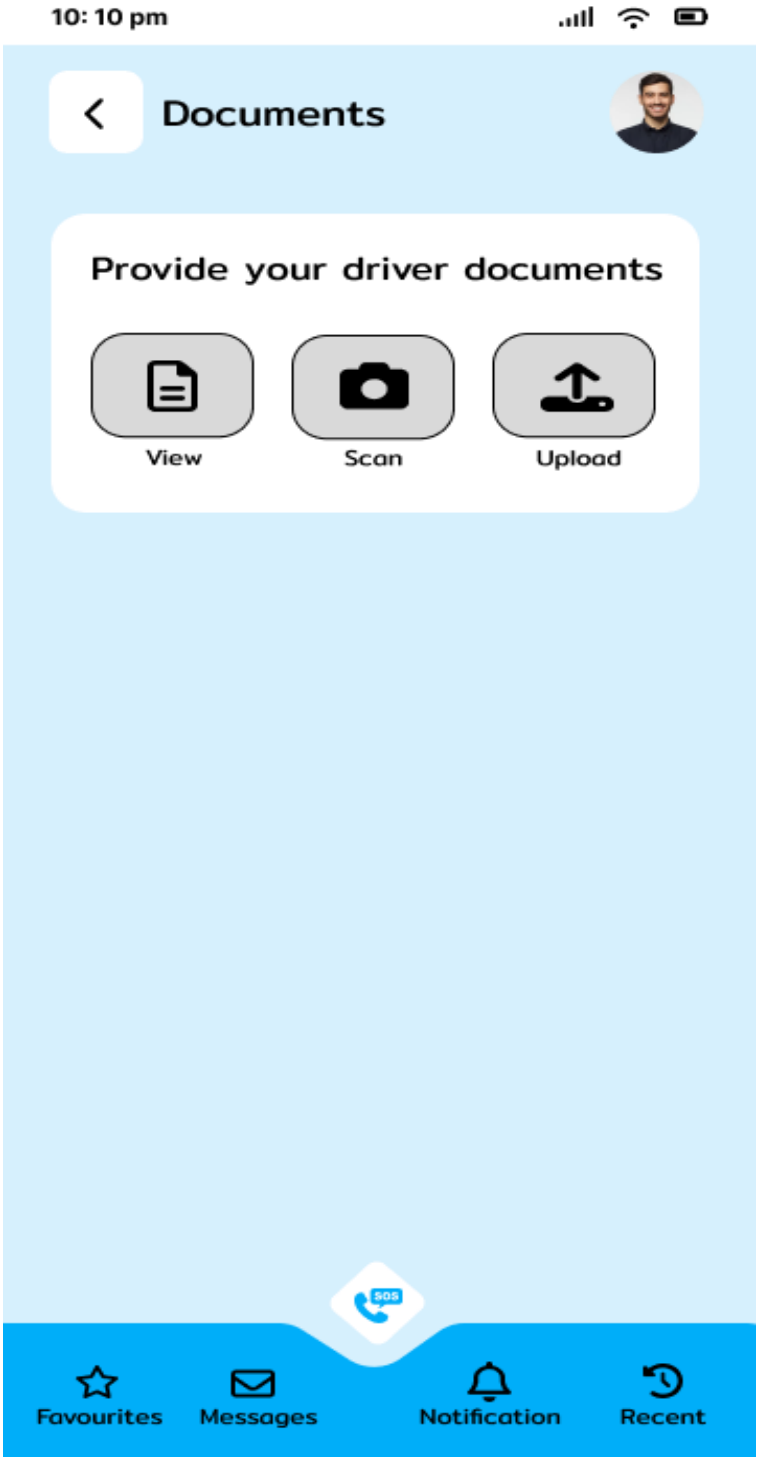
Users can see and select drivers to drive their vehicles or can also hire the drivers and their cars if needed. To become a driver, users must provide their driver documents to the system and if all the documents are verified, they automatically get registered as drivers in the system.

Driver 1:



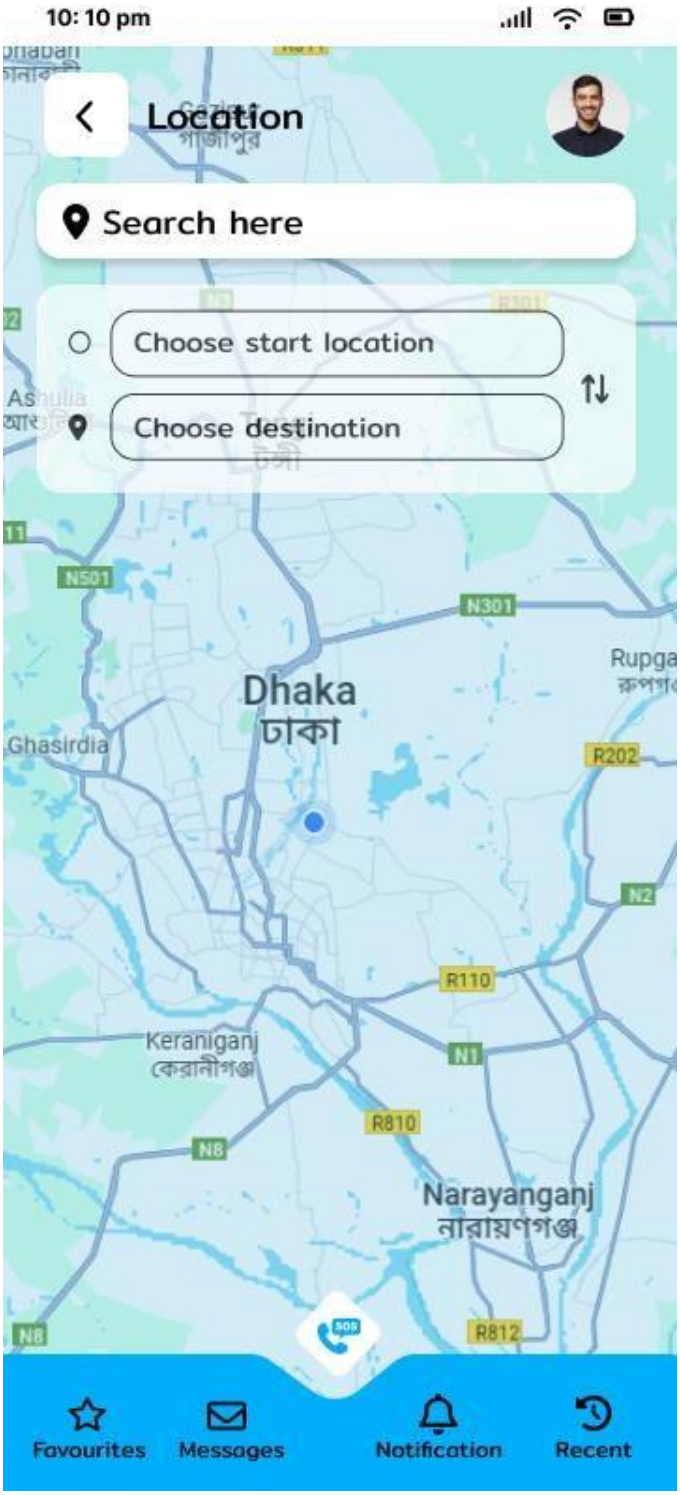
Users can see the driver's details and ratings and contact details to contact them to hire them or their vehicles. Users can also rate and report on the driver if necessary.

Documents:



In this page users can provide their driver documentation. After submitting them the documents get verified by the authority. And if all the documents are valid the user automatically gets registered as a driver.

Location:



Users can see their current location and the route from location to destination. It also shows the current road condition and suggests the best possible route. It notifies the user if any uncertainty occurs in the route.

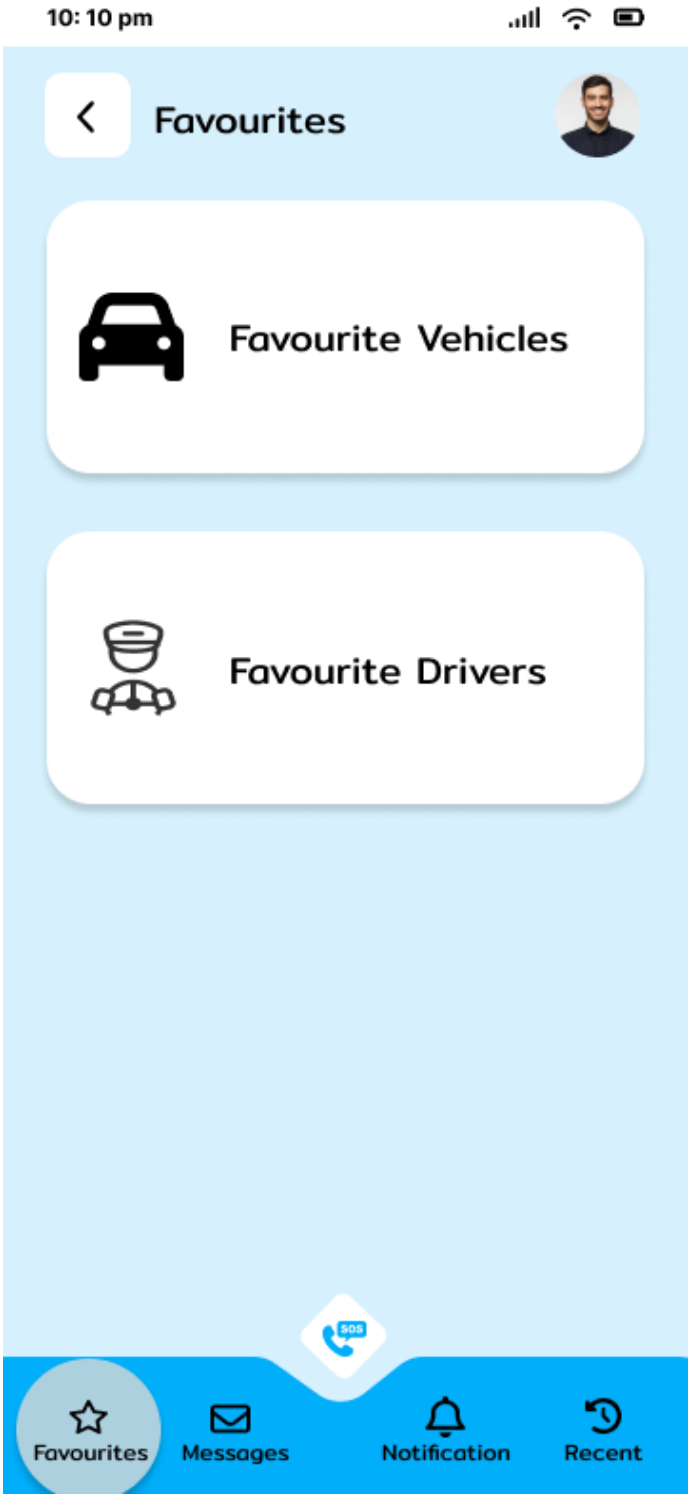
My Vehicles Page:

Vehicle owners can add and view their vehicles. They can also track the vehicle's location and contact the driver driving the vehicle. Owners get notified if anything suspicious happens to their vehicle, wrong drier driver driving the vehicle, the driver breaks any traffic rules, and the vehicle gets involved in any accident.

Helpline:

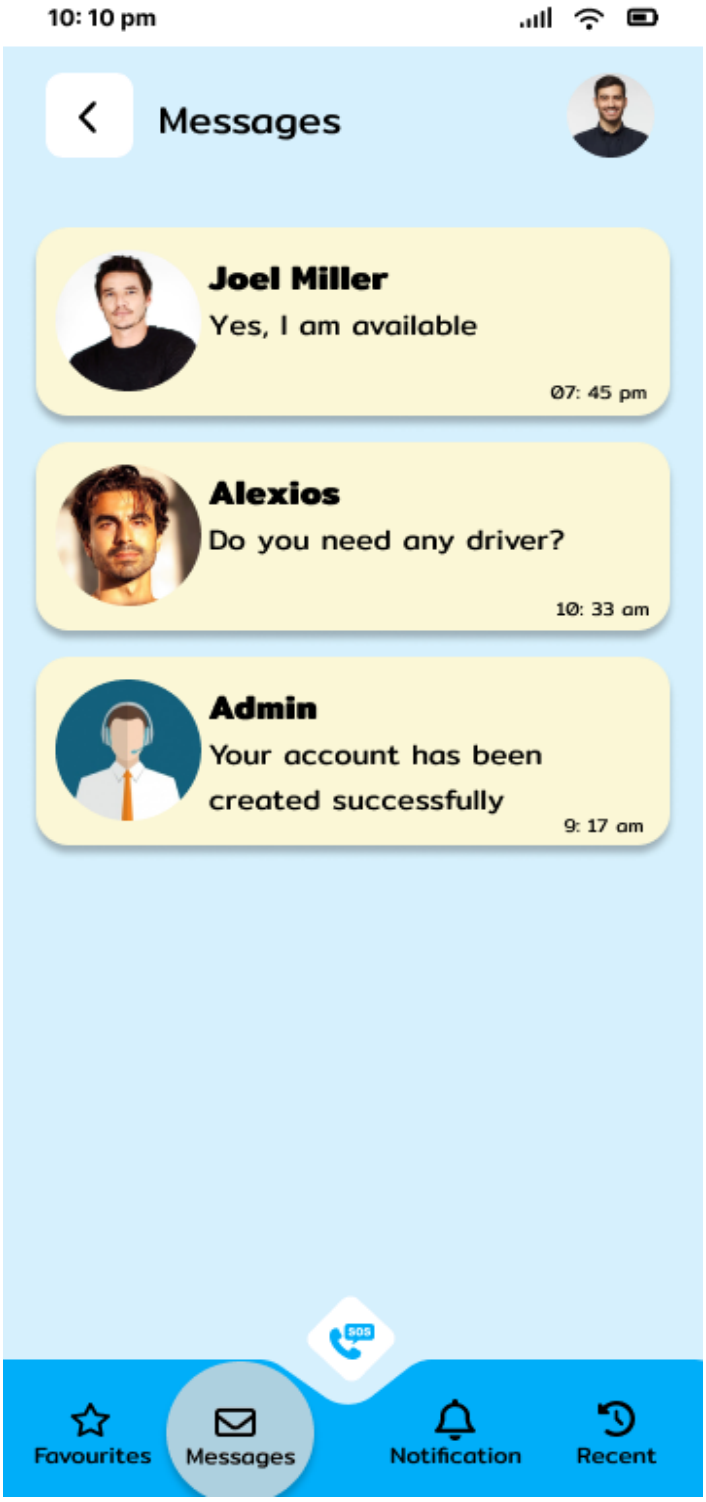
Users can contact the admins/ authorities if necessary.

Favorites:



Users can mark any driver and vehicles as their favorites for quick access and convenience.

Messages:



All users can interact with one another using this app messaging feature. They can chat and make calls to communicate.

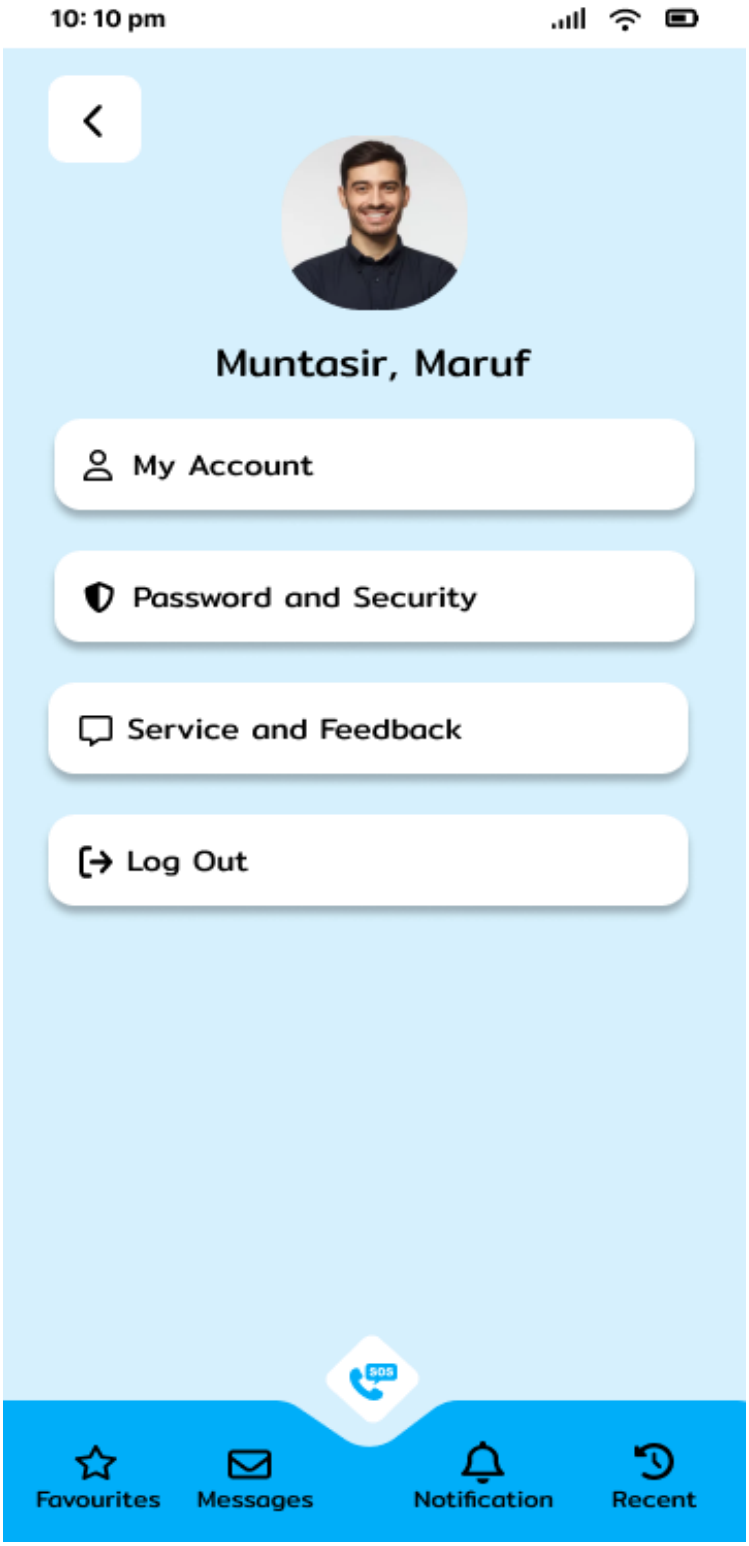
Notifications:

Users can find all the notifications here and can be aware of the situation instantly.

Recent Page:

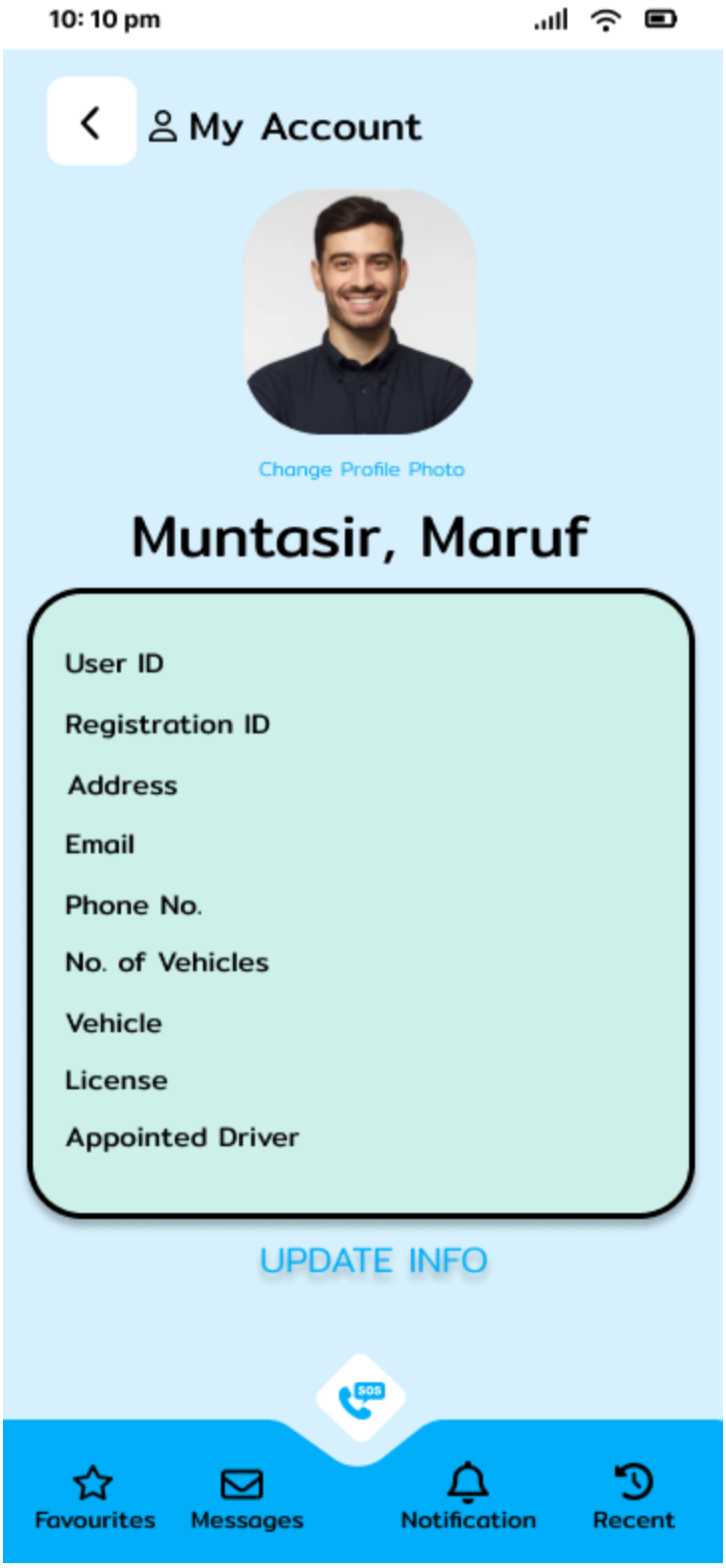
Users can find their recent activities on this page.

Accounts Page:



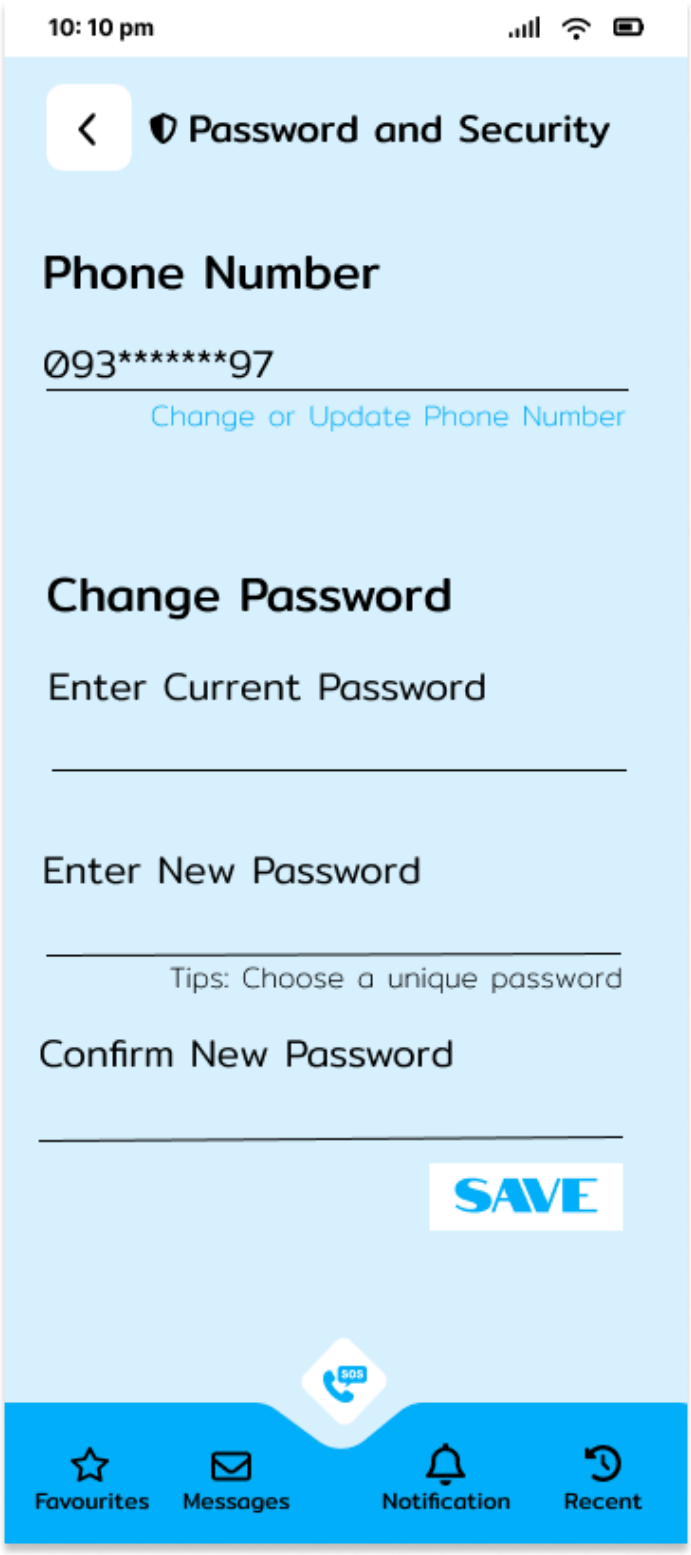
All accounts related options are provided on this page. And also, can log out from the system if necessary.

My Account:



Users can see and edit their account details if necessary.

Password and Security:



Users can change their account password if necessary.

Services and Feedback:

Users can provide feedback of the services provided in this system. It helps the administrators/ authorities to further improve the services of the system.

SYSTEM TEST:

Project Name: Central Vehicle Tracking System			Test Designed by: Nabiha Tahsin	
Test Case ID: CVTS_1			Test Designed date: 5.04.2024	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Sign Up Session			Test Execution date:	
Test Title: Test Sign Up process in The System				
Description: Test android application sign up page/ front page				
Precondition (If any): New user must have a valid e-mail				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the app 2. Set a username 3. Enter first name 4. Enter last name 5. Enter a valid e-mail 6. Set a unique and strong password	Username: Price, John First name: John Last name: Price Email: john.p@gmail.com Password: Jp@456	User should successfully sign up and then login	As expected of signing up	
Post Condition: User is validated with database and successfully login to account. The account session details are signed in the database.				

Project Name: Central Vehicle Tracking System			Test Designed by: Nabiha Tahsin	
Test Case ID: CVTS_1			Test Designed date: 28.03.2024	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Sign Up Session			Test Execution date:	
Test Title: Test Sign Up process in The System				
Description: Test android application sign up page/ front page				
Precondition (If any): New user must have a valid e-mail				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the app 2. Set a username 3. Enter first name 4. Enter last name 5. Enter a valid e-mail 6. Set a unique and strong password	Username: Price, John First name: John Last name: Price Email: john@gmail.com Password: JohnPrice	User cannot sign up and further cannot login	Unexpected failure to sign up	
Post Condition: User is not validated with database and so, cannot login to account. The account session details are not signed in the database.				

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Muntasir Maruf**	
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name:			Test Designed date: **28/03/2023.** Test Executed by: Test Execution date:	
Test Title: **Track Vehicle**				
Description: **Test Current vehicle location and driver driving the vehicle.** Precondition (If any): **Vehicle and driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. **2.** Enter inside "My Vehicles". **3.** Select one of your vehicles to track. **4.** Select "Track Vehicle" to view vehicle current location. **5.** Select "Driver Details" to view details of the driver.	1. Vehicle with verified owner and documents. 2. Real time GPS tracking. 3. Internet Connection	1. Current location of the vehicle. 2. Contact the driver driving the vehicle.	Valid	
Post Condition: If the vehicle location or driver is not recognized by the system, sends notification to the owner, and the owner can take necessary actions informing the authority.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name:		Test Designed date: **28/03/2023.** Test Executed by: Test Execution date:		
Test Title: **Track Vehicle**				
Description: **Test Current vehicle location and driver driving the vehicle.** Precondition (If any): **Vehicle and driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside "My Vehicles". 3. Select one of your vehicles to track. 4. Select "Track Vehicle" to view vehicle current location. 5. Select "Driver Details" to view details of the driver.	4. Vehicle with verified owner and documents. 5. Real time GPS tracking. 6. Internet Connection	6. Current location of the vehicle. 7. Contact the driver driving the vehicle.	Vehicle cannot be located. Driver is not responding to the calls and messages.	
Post Condition: The owner informs the admin about condition and the admin informs the legal authority to act upon tracking the missing vehicle and driver.				

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Hasin Aabrar Khan**
Test Case ID: **CVTS_3** Test Priority (Low, Medium, High): **High** Module Name: **Real Time Driver Verification**	Test Designed date: **21/03/24** Test Executed by: Test Execution date:
Test Title: **Real Time Driver Verification**	
Description: **Validate driver identity using sensors and issue a notification in case of an unauthorized driver.**	

Precondition (If any): **Drivers are required to upload a valid profile picture to the database.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Take a seat inside the vehicle. 2. Authenticate the driver using sensors. 3. Ensure that the driver's documents are examined for expiry dates. 4. Trigger a notification if the driver's identity does not match or if their documents have expired.	Driving license, vehicle papers, driver's document.	The system should provide a message indicating whether the driver's authentication is successful or not.	Valid documents	
Post Condition: **The driver is deemed invalid and sends a notification along with their location to the relevant authority, who will take appropriate action.**				

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Hasin Aabrar Khan**
Test Case ID: **CVTS_3** Test Priority (Low, Medium, High): **High** Module Name: **Real Time Driver Verification**	Test Designed date: **21/03/24** Test Executed by: Test Execution date:
Test Title: **Real Time Driver Verification**	
Description: **Validate driver identity using sensors and issue a notification in case of an unauthorized driver.** Precondition (If any): **Drivers are required to upload a valid profile picture to the database.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Take a seat inside the vehicle. 2. Authenticate the driver using sensors. 5. Ensure that the driver's documents are examined for expiry dates. 6. Trigger a notification if the driver's identity does not match or if their documents have expired.	Driving license, vehicle papers, driver's document.	The system should provide a message indicating whether the driver's authentication is successful or not.	Invalid documents	
Post Condition: **Hardware error and poor internet connection.**				

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Muntasir Maruf**
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name: Contact with vehicle owner	Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:
Test Title: **Contact vehicle owner**	
Description: **Test the contact with vehicle owner feature.** Precondition (If any): **Vehicle and driver must be verified.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Vehicles”. 3. Select a vehicle. 4. Call and send message to the owner.	1. Vehicle with verified owner and documents. 2. Internet Connection	1. Call or message sent to the owner. 2. Receive Reply of the owner.	Valid	
Post Condition: The owner receives the message or the call from the sender and replies accordingly.				

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Muntasir Maruf**
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name: Contact with vehicle owner	Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:
Test Title: **Contact vehicle owner**	
Description: **Test the contact with vehicle owner feature.** Precondition (If any): **Vehicle and driver must be verified.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Vehicles”. 3. Select a vehicle. 4. Call and send message to the owner.	1. Vehicle with verified owner and documents. 2. Internet Connection	1. Call or message sent to the owner. 2. Receive Reply of the owner.	Invalid	
Post Condition: The owner does not receive the message or the call from the sender.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name: Driver details		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **View driver details and contact the driver**				
Description: **Test the contact with driver.** Precondition (If any): **The driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside "Driver". 3. Select a Driver. 4. View driver details 5. Call or send message or visit social media pages of the Driver.	1. Driver with proper validation. 2. Internet Connection	1. Call or message sent to the owner. 2. Receive Reply of the owner. 3. Accessible social media links.	Valid	
Post Condition: The driver receives the message or the call from the sender. And the viewer can visit the social media pages of the driver through the provided links.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **High** Module Name: Driver details		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **View driver details and contact the driver**				
Description: **Test the contact with driver.** Precondition (If any): **The driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the application Login to the account. 2. Enter inside “Driver”. 3. Select a Driver. 4. View driver details 5. Call or send message or visit social media pages of the Driver.	1. Driver with proper validation. 2. Internet Connection	1. Call or message sent to the owner. 2. Receive Reply of the owner. 3. Accessible social media links.	Invalid	
Post Condition: The driver does not receive the message or the call from the sender. And the viewer cannot visit the social media pages of the driver through the provided links.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Low** Module Name: Driver documents verification		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **View Driver documents.**				
Description: **Test view details functionality.** Precondition (If any): **The driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Documents”. 3. View provided details of the account.	1. Driver with proper validation. 2. Internet Connection	1. View the driver documents provided earlier.	Valid	
Post Condition: The drivers can see the documents they provided and see is there anything missing or not.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Low** Module Name: Driver documents verification		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **View Driver documents.**				
Description: **Test view details functionality.** Precondition (If any): **The driver must be verified.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside "Documents". 3. View provided details of the account.	1. Driver with proper validation. 2. Internet Connection	View the driver documents provided earlier.	Invalid	
Post Condition: The drivers cannot see the documents they provided.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Medium** Module Name: Upload documents using camera		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **Scan the documents via camera to upload and verify.**				
Description: **Verify and upload the driver documents by scanning with the camera.** Precondition (If any): **The user needs to have the driver documents.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the application Login to the account. 2. Enter inside “Documents”. 3. Enter inside “Scan”. 4. Scan the documents using the camera.	1. Driver with proper documents. 2. Camera and internet Connection	Verify and upload the driver documents by scanning with the camera.	Valid	
Post Condition: The drivers can upload the documents by scanning them using the camera of their mobile phone.				

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Medium** Module Name: Upload documents using camera		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		
Test Title: **Scan the documents via camera to upload and verify.**				
Description: **Verify and upload the driver documents by scanning with the camera.** Precondition (If any): **The user needs to have the driver documents.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Documents”. 3. Enter inside “Scan”. 4. Scan the documents using the camera.	1. Driver with proper documents. 2. Camera and internet Connection	Verify and upload the driver documents by scanning with the camera.	Invalid	
Post Condition: The drivers cannot upload the documents by scanning them due to software or hardware errors.				
Project Name: **Central Vehicle Tracking System**		Test Designed by: **Muntasir Maruf**		
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Medium** Module Name: Upload documents from local storage		Test Designed date: 0**5/04/2023.** Test Executed by: Test Execution date:		

Test Title: **Upload the document files from the storage of the device.**				
Description: **Upload the document files to verify from the storage of the device.** Precondition (If any): **The user needs to have the driver documents.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Documents”. 3. Enter inside “Upload”. 4. Select the document files from the storage of the device.	1. Driver with proper documents. 2. Access to read and write data form the memory.	The driver document files are being successfully verified and uploaded from the device storage.	Valid	
Post Condition: The drivers can upload the documents by selecting the .pdf / .jpg / .png file from the device storage.				

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Muntasir Maruf**
Test Case ID: CVTS_2 Test Priority (Low, Medium, High): **Medium** Module Name: Upload documents from local storage	Test Designed date: **05/04/2023.** Test Executed by: Test Execution date:

Test Title: **Upload the document files from the storage of the device.**				
Description: **Upload the document files to verify from the storage of the device.** Precondition (If any): **The user needs to have the driver documents.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application Login to the account. 2. Enter inside “Documents”. 3. Enter inside “Upload”. 4. Select the document files from the storage of the device.	1. Driver with proper documents. 2. Access to read and write data form the memory.	The driver document files are being successfully verified and uploaded from the device storage.	Invalid	
Post Condition: The drivers cannot upload the documents by selecting the files from the device storage because of storage restrictions or hardware or software errors.				

Navigate Destination (Pass):

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Md. Redwan Ahmed**	
Test Case ID: **CVTS_420** Test Priority (Low, Medium, High): **High** Module Name: **Navigate Destination**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Navigate Destination**				
Description: **Guiding the driver along the simplest route to reach their destination.** Precondition (If any): **Google Maps is linked to database.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Go to location.** 7. **Choose the start location.** 8. **Choose destination.**	**Google Maps**	**The system should show the simplest and safest route to the destination.**	**Simplest route showed**	
Post Condition: **The estimated time of arrival will be displayed.**				

Navigate Destination (Fail):

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Md. Redwan Ahmed**
Test Case ID: **CVTS_421** Test Priority (Low, Medium, High): **High** Module Name: **Navigate Destination**	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Navigate Destination**	

Description: **Guiding the driver along the simplest route to reach their destination.** Precondition (If any): **Google Maps is linked to database.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Go to location.** **3. Choose the start location.** **4. Choose destination.**	**Google Maps**	**The system should show the simplest and safest route to the destination.**	**Failed to show the simplest route**	
Post Condition: The **driver will be notified to contact the helpline.**				

Add Vehicle (Pass):

Project Name: **Central Vehicle Tracking System**		Test Designed by: **Md. Redwan Ahmed**		
Test Case ID: **CVTS_422** Test Priority (Low, Medium, High): **High** Module Name: **Add Vehicle**		Test Designed date: **05/04/24** Test Executed by: Test Execution date:		
Test Title: **Add Vehicle**				
Description: **Users can add vehicles.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Log in to the system. **2. Go to My Vehicles.** **3. Tap on Add Vehicle Button.** **4. Fill in the form and confirm.**	**User Information, Vehicle Information**	**The system should show a successful message**	**Successful Message Showed**	
Post Condition: **User information will be securely stored in the system's database.**				

Add Vehicle (Fail):

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Md. Redwan Ahmed**	
Test Case ID: **CVTS_423** Test Priority (Low, Medium, High): **High** Module Name: **Add Vehicle**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Add Vehicle**				
Description: **Users can add vehicles.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Go to My Vehicles.** **3. Tap on the Add Vehicle Button.** **4. Fill in the form and confirm.**	**User Information, Vehicle Information**	**The system should show a successful message**	**No Successful Message Showed**	
Post Condition: **The driver will be notified to contact the helpline.**				

Update User Information (Pass):

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Md. Redwan Ahmed**	
Test Case ID: **CVTS_424** Test Priority (Low, Medium, High): **Medium** Module Name: **Update User Information**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Update User Information**				
Description: **Users can update their information.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Go to My Account.** **3. Tap on Update Info.** **4. Change something if needed.** **5. Select Confirm.**	**User Information**	**The system should show a successful message**	**Successful Message Showed**	
Post Condition: **User information will be securely stored in the system's database.**				

Update User Information (Fail):

<table>
<tr><td colspan="3">Project Name: Central Vehicle Tracking System</td><td colspan="2">Test Designed by: Md. Redwan Ahmed</td></tr>
<tr><td colspan="3" rowspan="3">Test Case ID: CVTS_425
Test Priority (Low, Medium, High): Medium
Module Name: Update User Information</td><td colspan="2">Test Designed date: 05/04/24</td></tr>
<tr><td colspan="2">Test Executed by:</td></tr>
<tr><td colspan="2">Test Execution date:</td></tr>
<tr><td colspan="5">Test Title: Update User Information</td></tr>
<tr><td colspan="5">Description: Users can update their information.

Precondition (If any): Users are required to have an account within the system.</td></tr>
<tr><td>Test Steps</td><td>Test Data</td><td>Expected Results</td><td>Actual Results</td><td>Status (Pass/Fail)</td></tr>
<tr><td>1. Log in to the system.

2. Go to My Account.

3. Tap on Update Info.

4. Change something if needed.

5. Select Confirm.</td><td>User Information</td><td>The system should show a successful message</td><td>No Successful Message Showed</td><td></td></tr>
<tr><td colspan="5">Post Condition: The driver will be notified to contact the helpline.</td></tr>
</table>

Emergency Call:

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Md. Redwan Ahmed**	
Test Case ID: **CVTS_426** Test Priority (Low, Medium, High): **High** Module Name: **Emergency Call**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Emergency Call**				
Description: **In case of emergency, user can contact emergency services** Precondition (If any): **Users are required to have an account within the system and emergency should occur.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap on SOS**	**User Information, Emergency Contact Information**	**Emergency call should be initiated**	**Emergency Call Initiated**	
Post Condition: **Admins will be notified of emergency services.**				

Emergency Call:

Project Name: **Central Vehicle Tracking System**	Test Designed by: **Md. Redwan Ahmed**
Test Case ID: **CVTS_427** Test Priority (Low, Medium, High): **High** Module Name: **Emergency Call**	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Emergency Call**	
Description: **In case of emergency, user can contact emergency services** Precondition (If any): **Users are required to have an account within the system and emergency should occur.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap on SOS**	**User Information, Emergency Contact Information**	**Emergency call should be initiated**	**Emergency Call not Initiated**	
Post Condition: **Admins will be notified of emergency services.**				

Helpline:

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Hasin Aabrar Khan**	
Test Case ID: **CVTS_10** Test Priority (Low, Medium, High): **Medium** Module Name: **Helpline**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Helpline Call**				
Description: **In case of any help need or inquiry, user can have the helpline facility.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap on Helpline call**	**User Information**	**Helpline should be connected**	**Helpline call connected**	
Post Condition: Admin panel will join user through helpline for services.				

Project Name: **Central Vehicle Tracking System**			Test Designed by: **Hasin Aabrar Khan**	
Test Case ID: **CVTS_10** Test Priority (Low, Medium, High): **Medium** Module Name: **Helpline**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Helpline Call**				
Description: **In case of any help need or inquiry, user can have the helpline facility.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap on Helpline call**	**User Information**	**Helpline should be connected**	**Helpline call not connected**	
Post Condition: Admin panel will not be able to join user through helpline for services.				

- **Congestion Notification:**

Project Name: **Central Vehicle Tracking System**			Test Designed by: Hasin Aabrar Khan	
Test Case ID: **CVTS_7** Test Priority (Low, Medium, High): **High** Module Name: **Congestion Notification**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Congestion Notification**				
Description: **Users will get notification when there's congestion to closer areas.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Check notification**	**User Information, Vehicle Information, Vehicle location**	**The system should give a notification about nearby congestion and show in maps**	**Incoming notification**	
Post Condition: **User may take actions in driving to particular places accordingly.**				

Project Name: **Central Vehicle Tracking System**	Test Designed by: Hasin Aabrar Khan
Test Case ID: **CVTS_9** Test Priority (Low, Medium, High): **High** Module Name: **Congestion Notification**	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Congestion Notification**	
Description: **Users will get notification when there's congestion to closer areas.** Precondition (If any): **Users are required to have an account within the system.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Check notification**	**User Information, Vehicle Information, Vehicle location**	**The system should give a notification about nearby congestion and show in maps**	**No incoming notification**	
Post Condition: **User might not take actions in driving to particular places accordingly.**				

- **Accident Notification:**

Project Name: **Central Vehicle Tracking System**			Test Designed by: Jannat Ara Tasnim	
Test Case ID: **CVTS_110** Test Priority (Low, Medium, High): **High** Module Name: **Accident Notification**			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Accident Notification**				
Description: **Both driver and owner will get notification when there's accident happening to themselves and nearby.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Automated notification**	**User Information, Vehicle Information, Vehicle location**	**The system should give a notification to the vehicle owner and driver about internal accidents and nearby accident updates.**	**Incoming notification**	
Post Condition: **User can call SOS or helpline.**				

Project Name: **Central Vehicle Tracking System**	Test Designed by: Jannat Ara Tasnim
Test Case ID: **CVTS_110** Test Priority (Low, Medium, High): **High** Module Name: **Accident Notification**	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Accident Notification**	
Description: **Both driver and owner will get notification when there's accident happening to themselves and nearby.** Precondition (If any): **Users are required to have an account within the system.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Automated notification**	**User Information, Vehicle Information, Vehicle location**	**The system should give a notification to the vehicle owner and driver about internal accidents and nearby accident updates.**	**No incoming notification**	
Post Condition: **User cannot call SOS or helpline.**				

- **Reset Password:**

Project Name: **Central Vehicle Tracking System**			Test Designed by: Jannat Ara Tasnim	
Test Case ID: **CVTS_215** Test Priority (Low, Medium, High): **Medium** Module Name: Reset Password			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: **Reset password**				
Description: **User may change password or reset it if forgotten or to update.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. If forgotten, then at the login page, click "forgot password". If not forgotten, then go to "My account" and then Update Info. **2. To reset password, enter to set new password.** **3. Re-enter new password and click save.**	**User Information**	**The system should allow to reset password for the user.**	**Password changed and updated**	
Post Condition: **User's new password will be updated and saved in the system database.**				

Project Name: **Central Vehicle Tracking System**		Test Designed by: Jannat Ara Tasnim
Test Case ID: **CVTS_215** Test Priority (Low, Medium, High): **Medium** Module Name: Reset Password		Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Reset password**		

Description: **User may change password or reset it if forgotten or to update.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. If forgotten, then at the login page, click "forgot password". If not forgotten, then go to "My account" and then Update Info. **2. To reset password, enter to set new password.** **3. Re-enter new password and click save.**	**User Information**	**The system should allow to reset password for the user.**	**Password cannot be changed and updated**	
Post Condition: **User's new password will not be updated and saved in the system database.**				

- **Search:**

Project Name: **Central Vehicle Tracking System**	Test Designed by: Nabiha Tahsin
Test Case ID: **CVTS_110** Test Priority (Low, Medium, High): **Low** Module Name: **Seach option**	Test Designed date: **05/04/24**
	Test Executed by:
	Test Execution date:
Test Title: **Seach for driver or vehicle**	
Description: **User can search for driver or vehicle or by location** Precondition (If any): **Users are required to have an account within the system.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap search engine box and write what user wants to see**	**Vehicle Information, location, Driver info**	**User can have searched results serially, can be vehicles, drivers or location for checking road condition**	**Expected searched results**	
Post Condition: **User can see desired results according to his search list.**				

Project Name: **Central Vehicle Tracking System**	Test Designed by: Nabiha Tahsin
Test Case ID: **CVTS_110** Test Priority (Low, Medium, High): **Low** Module Name: **Seach option**	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: **Seach for driver or vehicle**	
Description: **User can search for driver or vehicle or by location** Precondition (If any): **Users are required to have an account within the system.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the system. **2. Tap search engine box and write what user wants to see**	**Vehicle Information, location, Driver info**	**User can have searched results serially, can be vehicles, drivers or location for checking road condition**	**Cannot see any of searched results**	
Post Condition: **User cannot see desired results according to his search list.**				

- **Vehicle Verification:**

<table>
<tr><td colspan="3">Project Name: Central Vehicle Tracking System</td><td colspan="2">Test Designed by: Nabiha Tahsin</td></tr>
<tr><td colspan="3" rowspan="3">Test Case ID: CVTS_115
Test Priority (Low, Medium, High): High
Module Name: Vehicle Verification</td><td colspan="2">Test Designed date: 05/04/24</td></tr>
<tr><td colspan="2">Test Executed by:</td></tr>
<tr><td colspan="2">Test Execution date:</td></tr>
<tr><td colspan="5">Test Title: Vehicle Verification</td></tr>
<tr><td colspan="5">Description: User will request for vehicle verification

Precondition (If any): Users are required to have an account, vehicle and valid registration and papers.</td></tr>
<tr><td>Test Steps</td><td>Test Data</td><td>Expected Results</td><td>Actual Results</td><td>Status (Pass/Fail)</td></tr>
<tr><td>1. Login to the system.

2. Upload documents of vehicles and save.</td><td>User Information, vehicle information, driver information (if there’s any)</td><td>The system will verify and show a “successfully verified” message</td><td>Verified message incoming</td><td></td></tr>
<tr><td colspan="5">Post Condition: Vehicle will be verified with the database for enabling to be driven on road.</td></tr>
</table>

Project Name: **Central Vehicle Tracking System**			Test Designed by: Nabiha Tahsin	
Test Case ID: **CVTS_115** Test Priority (Low, Medium, High): **High** Module Name: Vehicle Verification			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: Vehicle Verification				
Description: **User will request for vehicle verification** Precondition (If any): **Users are required to have an account, vehicle and valid registration and papers.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login to the system. **2. Upload documents of vehicles and save.**	**User Information, vehicle information, driver information (if there's any)**	**The system will verify and show a "successfully verified" message**	**No verified message incoming**	
Post Condition: **Vehicle will not be verified with the database for enabling to be driven on road.**				

- Favorites:

Project Name: **Central Vehicle Tracking System**	Test Designed by: Nabiha Tahsin
Test Case ID: **CVTS_115** Test Priority (Low, Medium, High): **low** Module Name: Add to favorites	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: Add to favorites	
Description: **User can add specific drivers or vehicles on favorites.** Precondition (If any): **Users are required to have an account within the system.**	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login to the system. **2. Add specific drivers or vehicles on favorites.**	**User Information, vehicle information, driver information (if there's any)**	**Added to favorites**	**Added to favorites**	
Post Condition: User can later check for his favorites in the system.				

Project Name: **Central Vehicle Tracking System**	Test Designed by: Nabiha Tahsin
Test Case ID: **CVTS_115** Test Priority (Low, Medium, High): **low** Module Name: Add to favorites	Test Designed date: **05/04/24** Test Executed by: Test Execution date:
Test Title: Add to favorites	
Description: **User can add specific drivers or vehicles on favorites.** Precondition (If any): **Users are required to have an account within the system.**	

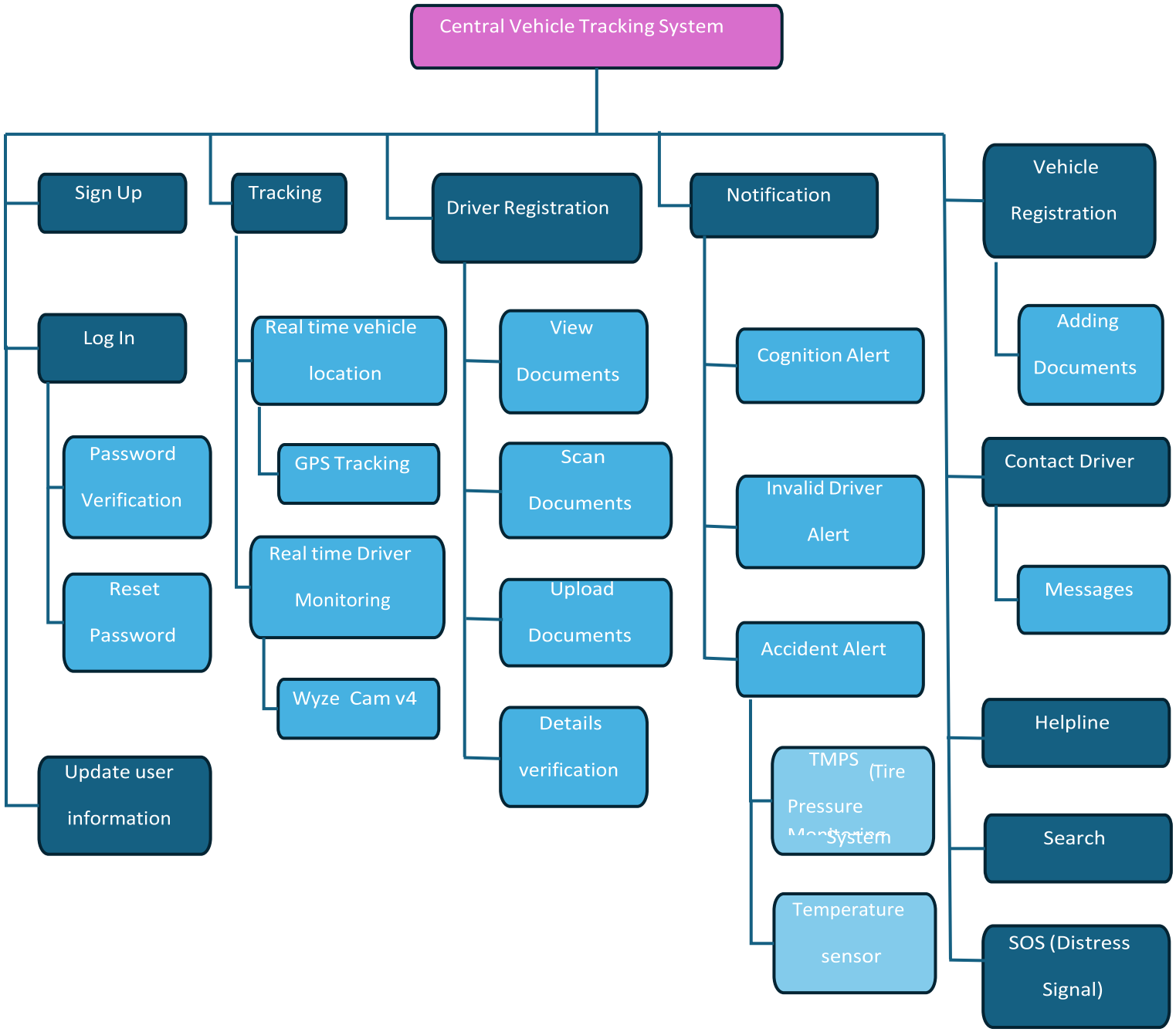
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login to the system. **2. Add specific drivers or vehicles on favorites.**	**User Information, vehicle information, driver information (if there's any)**	**Added to favorites**	**Not added to favorites**	
Post Condition: User cannot check for his favorites in the system.				

- **Feedback:**

Project Name: **Central Vehicle Tracking System**			Test Designed by: Nabiha Tahsin	
Test Case ID: **CVTS_119** Test Priority (Low, Medium, High): **low** Module Name: Report services and feedbacks			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: Report services and feedbacks				
Description: **User can report services and feedbacks.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login to the system. **2. Go to feedback** **3. Write your feedback and rate the app.**	**User Information**	**Successfully submitted feedbacks of the system**	**Successfully submitted feedback**	**Pass**
Post Condition: Admins may check feedbacks for update and improvement.				

Project Name: **Central Vehicle Tracking System**			Test Designed by: Nabiha Tahsin	
Test Case ID: **CVTS_118** Test Priority (Low, Medium, High): **low** Module Name: Report services and feedbacks			Test Designed date: **05/04/24** Test Executed by: Test Execution date:	
Test Title: Report services and feedbacks				
Description: **User can report services and feedbacks.** Precondition (If any): **Users are required to have an account within the system.**				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login to the system. **2. Go to feedback** **3. Write your feedback and rate the app.**	**User Information**	**Successfully submitted feedbacks of the system**	**Cannot be submitted feedback**	**Fail**
Post Condition: Admins cannot check feedback for update and improvement.				

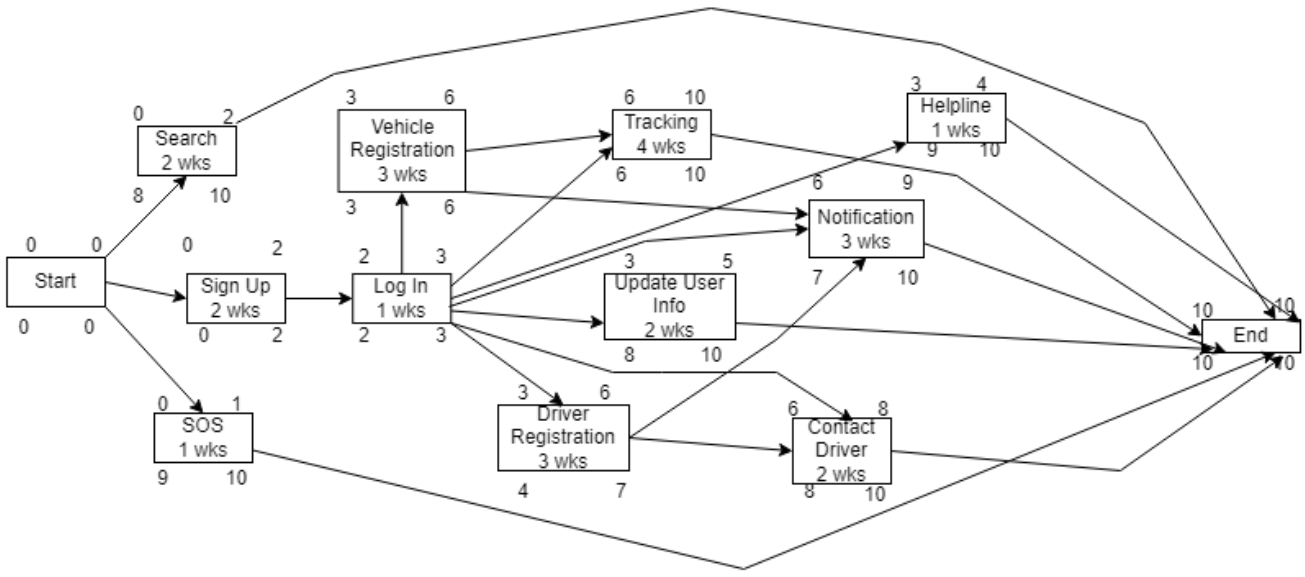
WBS & EFFORT ESTIMATION



Activity Scheduling and Resource Allocation:

Activity #	Description	Predecessor	Duration (Weeks)
1	Sign up	-	2
2	Login	1	1
3	Update user info	2	2
4	Driver Registration	2	3
5	Vehicle Registration	2	3
6	Tracking	2,5	4
7	Notification	2,4,5	3
8	Contact Driver	2,4	2
9	Helpline	2	1
10	Search	-	2
11	SOS	-	1

Network Diagram



Timeline Table-1

Tasks: Person	Weeks									
	1	2	3	4	5	6	7	8	9	10
A: Hasin Aabrar Khan										
B: Hasin Aabrar Khan										
C: Muntasir Maruf										
D: Muntasir Maruf										
E: Muntasir Maruf										
F: Nabiha Tahsin										
G: Nabiha Tahsin										
H: Redwan Ahmed										
I: Redwan Ahmed										
J: Jannat Ara Tasnim										
K: Jannat Ara Tasnim										

Activity Key:

A: Sign Up

B: Log In

C: Update user information

D: Driver Registration

E: Vehicle Registration

F: Tracking

G: Notification

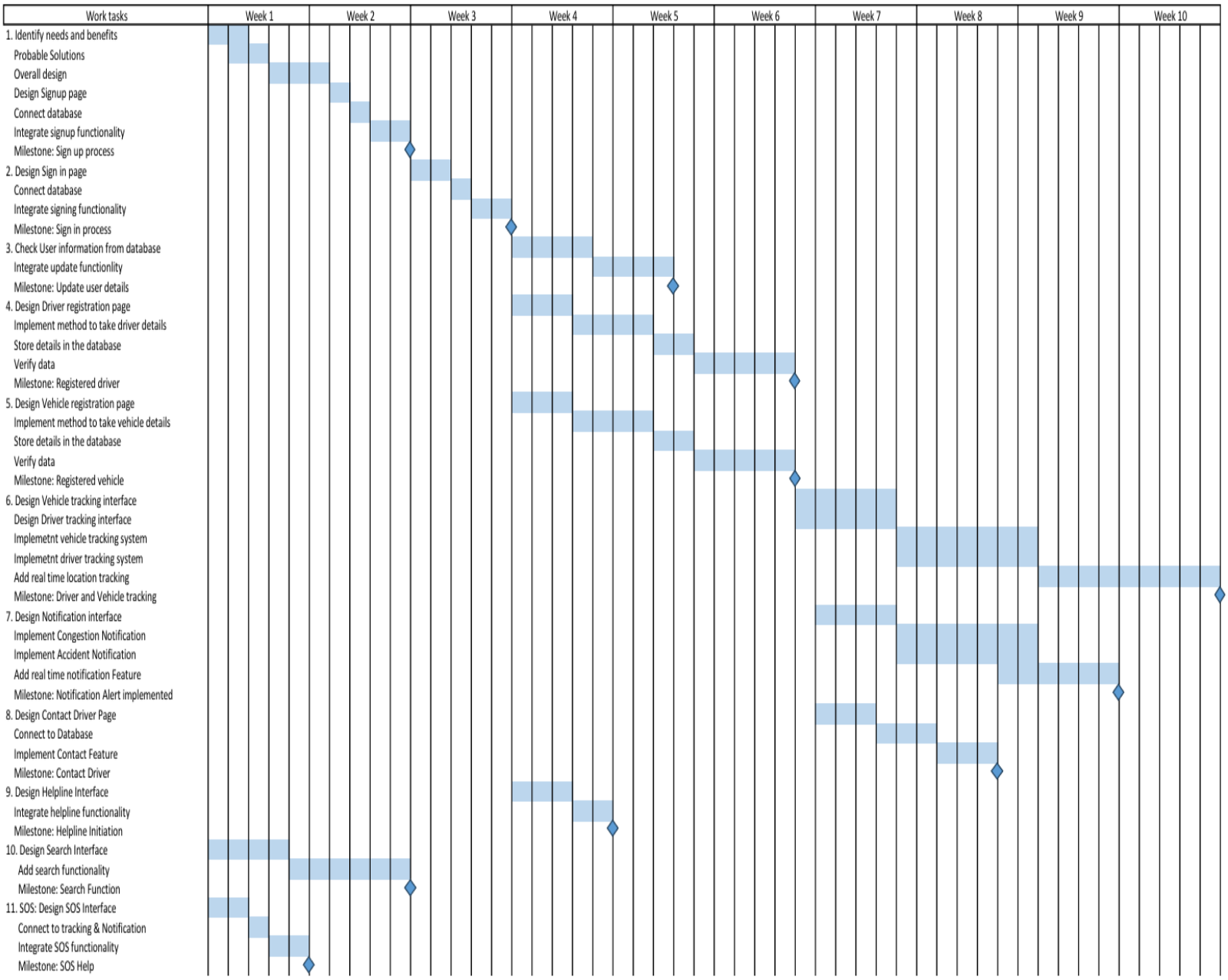
H: Contact Driver

I: Helpline

J: Search

K: SOS

Timeline Table-2



Risk Analysis & Management:

Risk	Category	Probability (%)	Impact	RMMM
Scope creep due to changing requirements	PR	40	2	Clearly define requirements, implement change control process, regular stakeholder communication.
Size estimate may be significantly low	PS	60	3	Break down into smaller components, contingency buffer in budget and schedule.
Inadequate system scalability	TE	50	2	Perform thorough performance testing during development. Implement scalability measures such as load balancing and cloud scalability features.
Technical skill shortage	TE	60	3	Provide training sessions for team members. Hire additional skilled personnel if necessary.
Insufficient testing coverage	TE	45	4	Develop comprehensive test plans and automate testing where possible. Conduct thorough regression testing.
Unclear project requirements	PR	55	3	Conduct detailed requirement gathering sessions. Use prototyping and mockups to clarify requirements.
Communication breakup	CU	25	4	Establish multiple communication channels and regular meetings with the client. Use collaboration tools for better coordination.
Budget overrun	BU	75	2	Monitor project expenses regularly. Implement cost-saving measures where possible. Negotiate with stakeholders for additional funding if necessary.
Large number of users than planned	PS	30	2	Re-evaluate scope, scalability testing, identify ways to handle additional users.
Data privacy breaches	ST	20	2	Implement robust encryption techniques. Conduct regular security audits.
Integration with existing systems	DE	40	1	Careful planning, testing with existing systems, ensure data compatibility.
Data accuracy issues	DE	70	1	Implement robust data validation and verification procedures.
System performance bottlenecks	DE	60	2	Performance testing, optimization, scalability planning.
Lack of skilled resources	ST	50	1	Training, resource planning, consider outsourcing specific. tasks.

Poor communication within the team	CU	30	3	Clear communication channels, regular meetings, project management tools.
End-users resist system	BU	50	3	Respond to their problems, providing complete guidance.
User interface complexity	CU	50	2	User-centered design, usability testing, clear a n d intuitive interface.
Delivery deadline will be tightened.	BU	40	4	Efficiency testing, scalability design, backup plans.
Data storage capacity limitations	PS	40	2	Scalable data storage solutions, data archiving strategies.
System hacked by unauthorized users	PR	30	1	Regular security audits, penetration testing, implement. strong authentication.
Staff inexperienced	ST	60	3	Providing initial training on development tools and technologies to all team members.

COCOMO (Construction Cost Model)

Here, Software Project type = Semi Detached

Coefficient $_{\text{<Effort Factor>}}$ = 3, SLOC = 10000, P = 1.12, T = 0.35

Effort = PM = Coefficient $_{\text{<Effort Factor>}}$* (SLOC/1000) ^P = 3 * (10000/1000) ^1.12 = 39.547 person months

Development Time = DM = 2.50 * (PM)^T = 2.50 * (39.547) ^0.35 = 9.056 months

Required Number of people = ST = PM/DM = 39.547/9.056 = 4.367 ~ 5 persons

Table: Central Vehicle Tracking System Total Duration 12 Weeks, $25000 Budget

Activity #	Description	Predecessor	Duration (Weeks)	Cost
1	**Sign Up**	**-**	**2**	**$3,000**
2	**Login**	**1**	**1**	**$1,500**
3	**Update User Info**	**2**	**2**	**$3,500**
4	**Driver Registration**	**2**	**3**	**$4,000**
5	**Vehicle Registration**	**2**	**3**	**$3,000**
6	**Tracking**	**2, 5**	**4**	**$4,500**
7	**Notification**	**2, 4, 5**	**3**	**$2,500**
8	**Contact Driver**	**2, 4**	**2**	**$1,000**
9	**Helpline**	**2**	**1**	**$500**
10	**Search**	**-**	**2**	**$1,000**
11	**SOS**	**-**	**1**	**$500**
			Total	**$25,000**

Table: Central Vehicle Tracking System Execution Report after 4 Weeks

Activity #	Description	Duration (Weeks)	Cost	Work Completed	Money Spent
1	Sign Up	2	$3,000	100%	$4,000
2	Login	1	$1,500	80%	$1,200
3	Update user info	2	$3,500	45%	$2,000
4	Driver registration	3	$4,000	30%	$1,500
5	Vehicle registration	3	$3,000	25%	$500
9	Helpline	1	$500	75%	$500
10	Search	2	$1,000	100%	$1,200
11	SOS	1	$500	100%	$500

Table: Earn Value Analysis of The Central Vehicle Tracking System

Central Vehicle Tracking System	Planed Value - PV (BCWS)	Earned Value - EV (BCWP)	Actual Cost - AC (ACWP)	Schedule Variance - (SV)	Cost Variance - (CV)	CPI	SPI
Sign Up	$3,000	$3,000	$4,000	$0	($1,000)	0.75	1
Login	$1,500	$1,200	$1,200	($300)	$0	1	0.8
Update User Info	$1,000	$1,575	$2,000	$575	($425)	0.7875	1.575
Driver Registration	$1,333.33	$1,200	$1,500	($133)	($300)	0.8	0.90000225
Vehicle Registration	$999.99	$750	$500	($250)	$250	1.5	0.7500075
Tracking	0	0	$0	$0	$0	0	0
Notification	0	0	$0	$0	$0	0	0
Contact Driver	0	0	$0	$0	$0	0	0
Helpline	$500	$375	$500	($125)	($125)	0.75	0.75
Search	$1,000	$1,000	$1,200	$0	($200)	0.8333333	1
SOS	$500	$500	$500	$0	$0	1	1
Total	$9,833	$9,600	$11,400	($233)	($1,800)	0.8421053	0.97627251

Progress Data of Project Execution

Tasks		Planned Effort		Actual Effort
1		14		12
2		14		13
3		21		21.5
4		7		6
5		7		7
6		14		12.5
7		14		13
8		7		6
9		14		15
10		28		30
11		7		5
12		21		-
13		14		-
14		14		-
	BCWS =	**196**	**ACWP =**	**141**
	BCWP =	**147**		

BAC = 480 person-day

BCWP = 147

BCWS = 196

ACWP = 141

SPI = $\frac{BCWP}{BCWS} = \frac{147}{196} = 0.75$

SV = $BCWP - BCWS = 147 - 196 = -49\ person - day$

CPI = $\frac{BCWP}{ACWP} = \frac{147}{141} = 1.04$

CV = $BCWP - ACWP = 147 - 141 = 6\ person - day$

%schedule for completion = $\frac{BCWS}{BAC} = \frac{196}{480} = 40.83\%$ [% $of\ work$ scheduled to be done at this time]

%complete= $\frac{BCWP}{BAC} = \frac{147}{480} = 30.625\%$ [% $of\ work$ completed this time]