

Faculty of Information Technology

Computer Science Department

Ride Sharing App

Graduation Project (1) Report

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Middle East University

Declaration

We hereby acknowledge that the work presented in this document report and the ideas based upon are the group members own unless stated otherwise and properly cited in text and referenced at the end of the document.

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Abstract

*This project proposes a flexible platform to help improve students' mobility through ridesharing applications. Since ridesharing is a familiar adopted but complex taxonomy. The topic provides a solution to an existing common requirement: commuting from and to Middle East University via shared rides. Some areas lack frequent public transportation, which means that the time interval between transport is very high or varies. It results in long waiting hours, long traveling time, and higher cost. Ride-sharing may be one of the most useful solutions when there are no other means of transportation to a specific location but generally, it is not the only option.*

# Chapter 1: Introduction

## Description of the Challenge/Problem/Opportunity

MEU (Middle East University) is located in the Outskirt of Amman City in an area that lacks transportation services, While MEU offers transportation to Students and staff through its own buses, it still not enough to accommodate for the large number of students and staff , the distribution of regions and the schedules of the students. Many students are forced to one of two predicaments:

1. Take the university bus and stay in the university campus for long hours waiting for their lectures, in addition to walk or use another transportation method just to reach the university bus route.
2. Take other transportation methods such as, Taxi, and other Mobile Ride Applications. Which can be absurdly expensive but be on time for their lectures and potentially leave by the end of their lectures.

## Description of the Solution

Provide an alternative transportation method that overcomes (1) Dispersedness of students’ locations in different regions of Amman city and neighboring cities and towns, (2) The diversity of students’ schedules and (3) Economically viable alternative than either public or ride hailing transportation methods such as Buses and Taxis. The team will develop a mobile application that allows MEU students to offer and request rides from their peers who own private vehicles to and from university campus, thus providing an easier and affordable transportation method. This application will promote individual and group responsibility to climate change with very little consideration and awareness towards this grave issue. By offering such a method of transportation in our project, the team will contribute to society by reducing carbon emissions in addition to raise awareness and social responsibility among fellow students which will encourage them to take real actions to contribute to the solution of such issues.

## Technology and tools to be used

1. Android Studio.
2. Flutter.
3. SQL Database.
4. Google Maps API.

# Chapter 2: Project Plan



## Project Objectives

1. Raising awareness of the importance of environmentally friendly transportation medium hence reducing carbon footprint by sharing rides.
2. Elevate social responsibility among students by sharing their personally owned vehicles to share rides to and from university campus with their peers.
3. The application will be a non-profit application in order to increase Social solidarity among student community.

## Software Process Model

Figure

Planning

Design

Requirements and Analysis

Implementation

Testing

Deployment

## Project Schedule

Table

Description automatically generated

Figure

## Project Schedule Chart(s) (Bar/Gantt Chart)

Timeline

Description automatically generated

Figure

# Chapter 3: Requirements and Analysis



## Functional Requirements

1. The user shall sign up to the application using MEU Email and Password.
2. The user shall create his/her personal profile:
   1. The user shall fill in his/her name.
   2. The user shall fill in his/her address.
   3. The user shall fill in his/her mobile phone number.
3. The user shall offer a ride:
   1. The user shall retrieve pre saved car details, car rules and ride time and/or days.
   2. The user shall fill in his/her car details.
   3. The user shall fill his/her car rules.
   4. The user shall specify the ride time and/or days.
   5. The user shall specify the vacant spots in his/her car.
   6. The user shall specify whether it’s to or from MEU or both directions.
   7. The user shall specify pick-up location to/from MEU campus.
   8. The system shall specify the ride destination as MEU campus.
   9. The user shall save car details, car rules and ride time and/or days.
4. The user shall request a ride:
   1. The system shall direct the user to a search filter page.
   2. The user shall choose the preferred car rules and driver gender.
   3. The user shall specify whether the ride is to or from MEU or in both directions.
   4. The system shall set the pick-up location to MEU campus.
   5. The user shall specify the ride destination out of MEU.
   6. The user shall search for a nearby driver or ride offers.
   7. The user shall post a request for ride offers.
5. The system shall send personal details to both parties.

## Non-Functional Requirements

1. The system shall be reliable and secure.
2. The system shall run on android and IOS Operating Systems.
3. The system shall be available for use 24 hours a day, 365 days a year.
4. The system shall support 1,000 simultaneous users.
5. The system shall support 100 requests in three seconds or less.
6. The system shall have a maximum response time of 3 seconds per request.
7. The system shall be user friendly, easy to use, inviting and lively.
8. The system with the data protection and privacy laws and legislations of the country.
9. The system shall be accessible to people with disabilities namely speech and sight disabilities.

# Chapter 4: Architecture and Design



## Use Case Diagram

Diagram

Description automatically generated

Figure

## Use Cases Descriptions/Flow of Events

|  |  |
| --- | --- |
| **Use Case name:** | Login |
| **Use Case ID:** | 1 |
| **Description:** | This use case describes how the actor logs into the System. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Create Account use case must be performed first. |
| **Main flow of events:** | 1. The system requests that the actor enters his/her E-mail and password. 2. The actor enters his/her E-mail and password and presses ‘login’ option. 3. The system validates the entered E-mail and password and logs the actor into the system (A1). |
| **Alternative Flow of events:** | A1:   * The system displays an error message that the entered E-mail and/or password is invalid. * The system requests that the actor re-enters his/her E-mail and password. |
| **Post-condition:** | Offer Ride, Request Ride, Post Ride Offer, Post Ride Request and Accept Post use cases will be available. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Create Account |
| **Use Case ID:** | 2 |
| **Description:** | This use case describes how an actor creates a new user account. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | Registration system. |
| **Pre-condition:** | None. |
| **Main flow of events:** | 1. The actor clicks on (Create New Account) option from the home page. 2. The system prompts the actor to enter his/her university E-mail and password. 3. The system validates the entered E-mail and password via the registration system and then redirects the actor to the login page (A1). |
| **Alternative Flow of events:** | A1:   * The system displays an error message that the E-mail and/or password is invalid. * The system requests that the actor re-enters his/her E-mail and password. |
| **Post-condition:** | Login use case will be available. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Offer Ride |
| **Use Case ID:** | 3 |
| **Description:** | This use case describes how an actor offers a ride to or from MEU campus. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None |
| **Pre-condition:** | Login use case has been performed. |
| **Main flow of events:** | 1. The actor selects offer a ride option from the home page. 2. The system displays car data and rules page. 3. The actor fills in car data and rules and selects submit option. 4. The actor selects whether the ride is to or from MEU Campus. If the actor chooses to MEU campus, then Sub-Flow (To MEU) is performed. Otherwise, Sub-Flow (From MEU) is performed. 5. The system matches offer with requestors (A1, A2). 6. The system sends contact details for both parties. |
| **Sub-flows** | Sub-Flow: To MEU   1. The actor chooses the pick-up location. 2. The system sets the destination to MEU.   Sub-Flow: From MEU   1. The system sets the pick-up location to MEU 2. The actor chooses the destination location |
| **Alternative Flow of events** | A1: In case the system could not find a match, an apology message is displayed, then the system redirects the actor to the home page.  A2: In case the actor selects “cancel the operation/request”, the system displays a confirmation screen, if the actor selects confirm, the request is canceled. |
| **Post-condition** | None |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Request Ride |
| **Use Case ID:** | 4 |
| **Description:** | This use case describes how an actor requests a ride to or from MEU campus. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Login use case has been performed. |
| **Main flow of events:** | 1. The actor selects request a ride option from the home page. 2. The system displays car rules and driver gender filter page. 3. The actor fills in the preferred car rules and driver gender and then selects submit option. 4. The actor selects whether the ride is to or from MEU Campus. If the actor chooses to MEU campus, then Sub-Flow (To MEU) is performed. Otherwise, Sub-Flow (From MEU) is performed. 5. The system matches request with offerors (A1, A2). 6. The system sends contact details for both parties. |
| **Sub-Flows:** | Sub-Flow: To MEU   1. The actor chooses the pick-up location. 2. The system sets the destination to MEU.   Sub-Flow: From MEU   1. The system sets the pick-up location to MEU 2. The actor chooses the destination location |
| **Alternative Flow of events:** | A1: In case the system could not find a match, an apology message is displayed, then the system redirects the actor to the home page.  A2: In case the actor selects “cancel the operation/request”, the system displays a confirmation screen, if the actor selects confirm, the request is canceled. |
| **Post-condition:** | None. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Post Ride Offer on Board |
| **Use Case ID:** | 5 |
| **Description:** | This use case describes how an actor posts a ride offer on the Board. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Login use case has been performed. |
| **Main flow of events:** | 1. The actor chooses the post a ride offer option from the home page. 2. The system displays car data, rules and trip time page. 3. The actor fills car data, rules and trip time in and then selects submit option. 4. The actor selects whether the ride is to or from MEU Campus. If the actor chooses to MEU campus, then Sub-Flow (To MEU) is performed. Otherwise, Sub-Flow (From MEU) is performed 5. The actor selects the submit option (A1). 6. The system posts the ride offer to the Board. |
| **Sub-Flows:** | Sub-Flow: To MEU   1. The actor chooses the pick-up location. 2. The system sets the destination to MEU.   Sub-Flow: From MEU   1. The system sets the pick-up location to MEU 2. The actor chooses the destination location |
| **Alternative Flow of events:** | A1:  In case the actor selects “cancel the operation/request,” the system displays a confirmation screen, if the actor selects confirm, the request is canceled |
| **Post-condition:** | Delete Post use case will be available. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Post Ride Request to Board |
| **Use Case ID:** | 6 |
| **Description:** | This use case describes how an actor posts a ride request on the Board. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Login use case has been performed. |
| **Main flow of events:** | 1. The actor chooses the post a ride request option from the home page. 2. The system displays car rules, driver gender and trip time page. 3. The actor fills in the preferred car rules, driver gender and trip time and then selects submit option. 4. The actor selects whether the ride is to or from MEU Campus. If the actor chooses to MEU campus, then Sub-Flow (To MEU) is performed. Otherwise, Sub-Flow (From MEU) is performed. 5. The actor selects the submit option (A1). 6. The system posts the ride request to the Board. |
| **Sub-Flows:** | Sub-Flow: To MEU   1. The actor chooses the pick-up location. 2. The system sets the destination to MEU.   Sub-Flow: From MEU   1. The system sets the pick-up location to MEU 2. The actor chooses the destination location |
| **Alternative Flow of events:** | A1:  In case the actor selects “cancel the operation/request,” the system displays a confirmation screen, if the actor selects confirm, the request is canceled |
| **Post-condition:** | Delete Post use case will be available. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Delete Post from the Board |
| **Use Case ID:** | 7 |
| **Description:** | This use case describes how an actor deletes a post from the Board. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Post Ride Offer on Board / Post Ride Request to Board use case has been performed. |
| **Main flow of events:** | 1. The actor selects the Board page. 2. The system redirects the actor to the Board page. 3. The actor chooses the post that he wants to delete. 4. The actor clicks on the options icon on the post. 5. The system displays the list of options regarding the post. 6. The actor chooses the “delete post” option. 7. The system displays a confirmation screen. 8. The actor selects confirm option (A1). 9. The system removes the post from the Board. |
| **Alternative Flow of events:** | A1:  The actor selects “cancel the operation/request,” the system displays a confirmation screen, if the actor selects confirm, the request is canceled |
| **Post-condition:** | None. |

Table

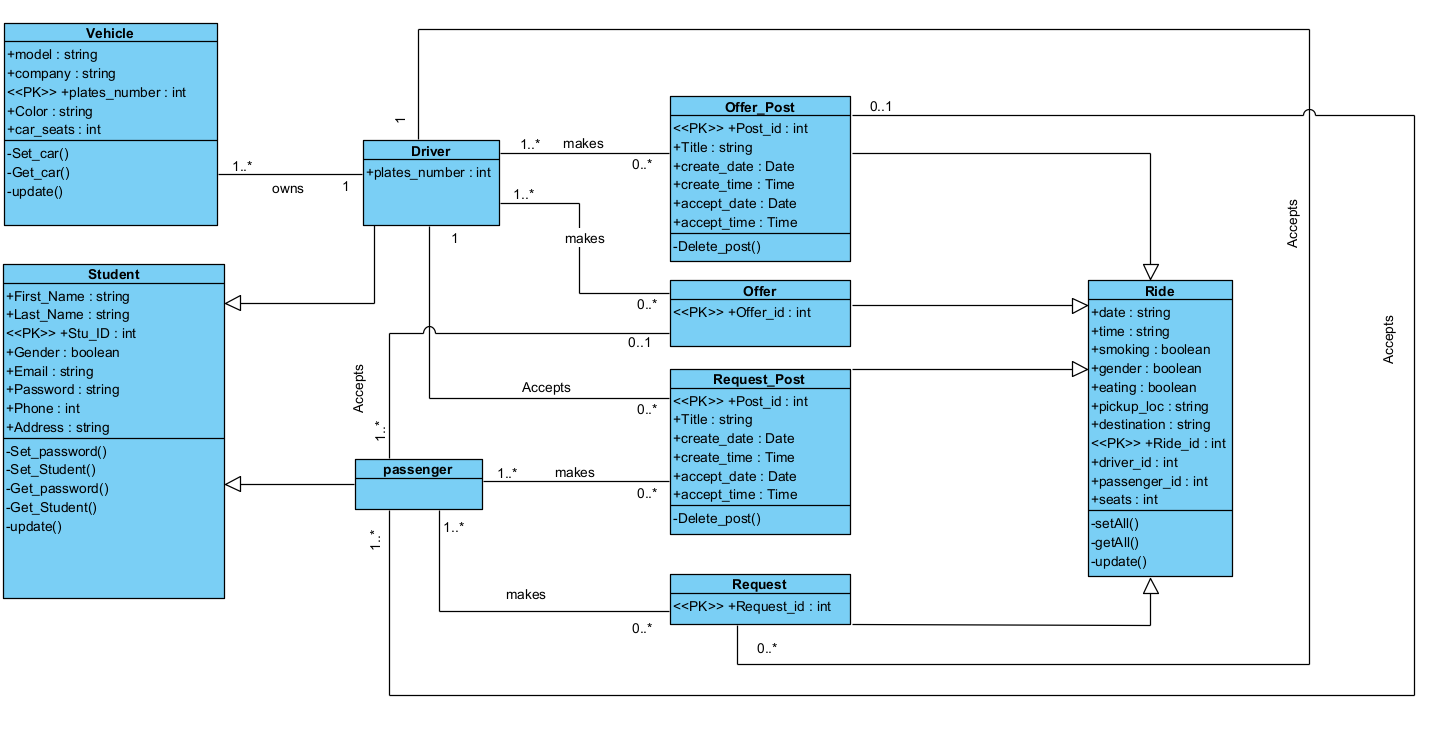
|  |  |
| --- | --- |
| **Use Case name:** | Delete Post from the Board Automatically |
| **Use Case ID:** | 8 |
| **Description:** | This use case describes how the system automatically deletes a post from the Board. |
| **Primary Actor:** | SQL Database. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Post Ride Request to Board / Post Ride Offer on Board use case has been performed. |
| **Main flow of events:** | 1. The system checks if the trip time on the post has been reached (A1). 2. The system removes the post from the Ride Board. |
| **Alternative Flow of events:** | A1:   1. The trip time on the post has not been reached. 2. The system does nothing. |
| **Post-condition:** | None. |

Table

|  |  |
| --- | --- |
| **Use Case name:** | Accept Post from the Board |
| **Use Case ID:** | 9 |
| **Description:** | This use case describes how the actor accepts a post from the Board. |
| **Primary Actor:** | Student. |
| **Secondary Actor:** | None. |
| **Pre-condition:** | Post Ride Request to Board / Post Ride Offer on Board use case has been performed. |
| **Main flow of events:** | 1. The actor selects the Board page. 2. The system redirects the actor to the Board page. 3. The actor chooses the post that he wants to accept. 4. The actor clicks on the accept option on the post. 5. The system checks if the actor is eligible to accept the post (A1). 6. The system sends contact details for both parties. if the post is a request, then Sub-Flow (request) is performed, Otherwise Sub-Flow (offer) is performed. |
| **Sub-Flow** | Sub-Flow: Request   1. The system deletes the request post.   Sub-Flow: Offer   1. The system updates the offer post for car capacity. |
| **Alternative Flow of events:** | A1:   1. The system finds that the actor is not eligible to accept the post. 2. The system displays a message that the actor cannot accept the post. 3. The system goes back to the Board. |
| **Post-condition:** | None. |

Table

## Class Diagram



Figure

# Chapter 5: Conclusion & Future Work



## Conclusion

In conclusion our goal is to assist all students in having the best experience possible by making it easier for them to Commute to and from Middle East University at a time that is in harmony with their own schedules, as well as increasing their sense of responsibility for the environment and social solidarity. Hence, we present our work from the course of our journey to make university life for all students easier and serve as a springboard for them to concentrate on other important things.

## Future work

Future work will include :

1. Writing the code for the project
2. Testing the code.
3. Deploying the project.