SECD2523

(DATABASE)

SECTION 10

PROJECT PHASE 1: PROJECT PROPOSAL AND DATABASE REQUIREMENT

TITLE: GRAB STUDENT PREBET

GROUP QUATRON

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1.0 INTRODUCTION

The title that we have proposed for our project is the Grab Student Prebet System. Grab Student Prebet services are well known among UTM students. This system has been a trusted companion for students throughout their ride, especially the first year students and those who have no transportation. However, as time flies, we realise the need for innovation to improve the user experience, leading to higher student satisfaction.

This Grab Student Prebet system offers services such as booking a car for a ride, selecting a desired driver that specialises in women, choosing the price range, picking the number of seats, and promoting a job application as a driver for the students who are interested in providing this service.

This Grab Student Prebet System started in a Telegram group where the admin of the group shared the link to the group among the students. It allows the students to find a ride from one place to another in the group. Not all students have their own transportation, especially first year students who are prohibited from bringing their own transportation to the campus. Since the price of the ride in the external grabcar depends on the peak hour and the weather conditions, the price of the ride provided by Grab Student Prebet is fixed up to the driver's desire and is still affordable for students. However, this system is not fully computerised, resulting in the disorganisation of the data.

Thus, the focus of this project is to suggest some improvements to the system to improve the user experience, leading to student and driver satisfaction and easing the process of car booking.

2.0 BACKGROUND STUDY

The beginning of this Grab Student Prebet service is from a Telegram group as a platform for the student to find a ride or provide this service. It's done by direct message and conversation between the customer and the driver (stakeholder).

Firstly, the student needs to fill in the required information in the form, such as date, time, current location, destination, number of people, and contact number. Then, the student will post the filled in form into the Telegram group, and the willing driver will contact them through the contact number provided and arrange the rides to the destination. This group acts as a central hub for students to reach any willing drivers, facilitating the arrangement of rides from their current location to their destination.

As the Telegram group spread rapidly among the students, the demand for these Grab Student Prebet services increased correspondingly to the number of students requiring them as well as the number of drivers. Hence, the organisation of the system faced some difficulty in providing satisfaction to the user experience. This is due to the fact that when the customer posts the filled in form to book a ride in the group, they will be approached by many drivers that are available at their corresponding time, and if the customer has already chosen their driver, the other driver won't be notified. The same is true if the customer keeps receiving messages from the other driver offering the ride to the destination. This will result in dissatisfaction with the user experience for both the customer and the driver since the system is manually operated. As for the other case, the customer is unaware of the driver's whereabouts since the driver cannot keep updating through direct messages while driving.

Thus, this study acquired the need to solve the problem of the system and the organisation of data faced by the Grab Student Prebet service.

3.0 PROBLEM STATEMENT

The main problem when we use Telegram as a platform to do this service is that the driver needs to ask the customer (whether they have found their driver or not) manually by messaging them personally, which is also not convenient for the customers since some of the requests might be skipped.

4.0 PROPOSED SOLUTIONS

UTM PREBET needs an alternate solution in order to address their issues with handling customer request orders manually. To determine if it would be desirable and practical to confirm the orders, make payments, and record-keeping, a feasibility analysis was carried out. The Grab student PREBET system is the suggested solution, and the following criteria were used in the feasibility analysis:

1) Economic feasibility

   Economic feasibility evaluates the financial aspects of this project. It involves a thorough analysis of costs and benefits to determine the project's financial viability and potential return on investment. Our proposed system will be cost effective in the long run because UTM PREBET can save their operation costs by avoiding engaging external companies.

Estimated cost	
Hardware	RM 50000
Software	RM 8000
Consultant	RM 20000
Training	RM 20000
Supplies	RM 2400/year
Maintenance	RM 3000/year
IS support	RM 15000/year

Estimated benefits	
Inventory savings	RM 1800/week

Assumptions	
Discount rate	10%
Sensitivity factor (costs)	1.1
Sensitivity factor (benefits)	0.9
Annual change in production costs	7%
Annual change in production benefits	5%

Costs-benefits Analysis (CBA)

a) costs

Costs	Y0	Y1	Y2	Y3	Y4	Y5
Development costs						
-Hardware	55 000					
-software	8 800					
-consultant	22 000					
-training	22 000					
Total	107 800					

Production costs -Supplies -Network Personnel -Maintenance		 2 640 16 500 3 300	 2 825 17 655 3 531	 3 023 18 891 3 778	 3 235 20 213 4 042	 3 461 21 628 4 325
Annual Production costs (present value)		22 440 20 400	24 011 19 844	25 692 19 303	27 490 18 776	29 414 18 264
Accumulated costs		128 200	148 044	167 347	186 123	204 387

b) benefits

Benefits	Y0	Y1	Y2	Y3	Y4	Y5
Reduced inventory costs (present value)		84 240 76 582	88 452 73 101	92 875 69 778	97 519 66 607	102 395 63 579
Accumulated benefits (present value)		76 582	149 683	219 461	286 068	349 647
Gain or Loss		(51 618)	1 639	52 114	99 945	145 260
Profitability Index (gain or loss/development costs)	1.35					

The profitability index is 1.35. It shows that it is a good investment because the index is greater than one. This project is expected to create a positive return and is financially viable.

2) Operational feasibility

This analysis measures the new system for its easy integration into existing transportation processes, with special emphasis on optimising scheduling, route management and coordination. We will also make sure that the system will be practical and effective for the drivers and customers of PREBET especially for the confirmation orders, smooth payment, and record-keeping of ride reviews.

3) Technical feasibility

This analysis is conducted to determine the level of hardware and software needed to support this system. We will have to create an advanced yet user-friendly mobile application, a reliable backend system and effective communication interfaces to facilitate smooth user and driver interaction. Apart from the usability testing, the maintenance requirements issue was also tested in order to guarantee that this system would operate flawlessly with minimal downtime.

5.0 OBJECTIVES

Our main objective in presenting a customised e-hailing system for students such as Grab Student Prebet is to define the system's specifications and goals. In order to ensure that students have clear knowledge of the system's role in fulfilling their transport needs, it is necessary to define the precise services that the system will offer to them. Our goal is also to ensure that one system closely matches the distinct transportation requirements of the students by obtaining comprehensive information from stakeholders.

The development of an easy and simple user-friendly interface is our key objective in improving the user experience. In order to ensure usability and accessibility, this interface will be created to take into account the preferences and expectations of the students. It is essential to have effective ride booking and scheduling systems that include functions like route optimization and real-time tracking. One of the most important steps towards enabling cashless transactions and promoting financial security for drivers and students is the deployment of reliable and safe payment solutions.

As we are prioritising safety as our top priority, we will incorporate security measures including trip monitoring, driver certification and easy access to emergency services. In addition to functionality, the proposal calls for the creation of a loyalty program to reward students for their participation. Incentives like discounts, prizes or other incentives will be offered by this program to encourage user loyalty.

6.0 SCOPE OF THE PROJECT

The proposed e-hailing system for students, Grab Student Prebet is designed with a comprehensive scope that covers various aspects of its functionalities, user base, and integration points.

Functional scope

The system will include critical features such as ride booking and scheduling, allowing students to plan and obtain transportation more efficiently. Real-time tracking elements will be integrated to provide the most up-to-date information on the location and status of scheduled rides. A secure payment system will also enable cashless transactions, providing financial protection for both students and drivers. To improve student safety during rides, safety procedures such as driver verification, trip tracking, and connection with emergency services will be adopted.

User scope

The system's principal customers are university students looking for convenient and dependable transportation inside the campus and neighbouring areas. Drivers that satisfy set criteria and follow safety regulations will be included in the user base. Administrative functions for monitoring system performance, user statistics, and verifying compliance with university policies will be available to university administration stakeholders.

Integration scope

To correspond with academic calendars, student activities, and campus events, the system will link with university databases and scheduling systems. Cashless transactions between students and drivers will be made possible through seamless connection with secure payment systems.

7.0 PROJECT PLANNING

7.1 HUMAN RESOURCES

Project manager	: Nuraisya Salsabila
Data analyst	: Muhammad Alif Izuddin
Graphic and UX designer	: Nida Qistina
Programmer	: Muhamad Hafiz

7.2 WORK BREAKDOWN SYSTEM (WBS)

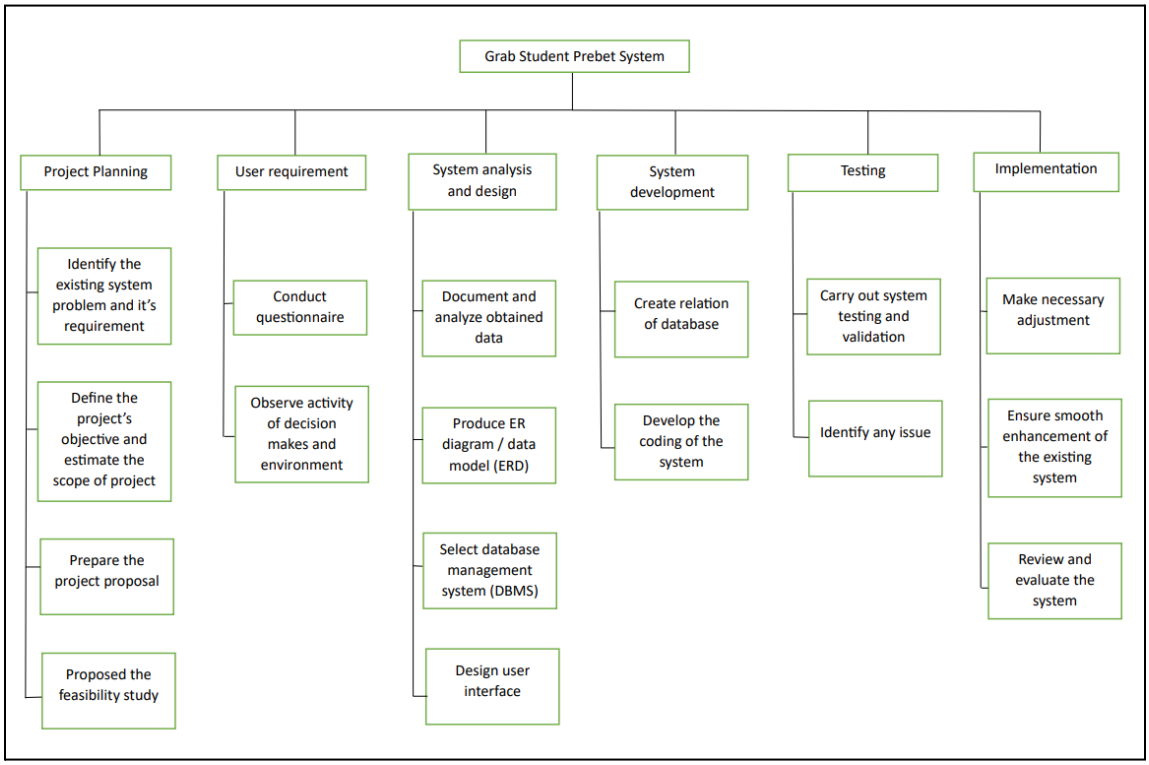
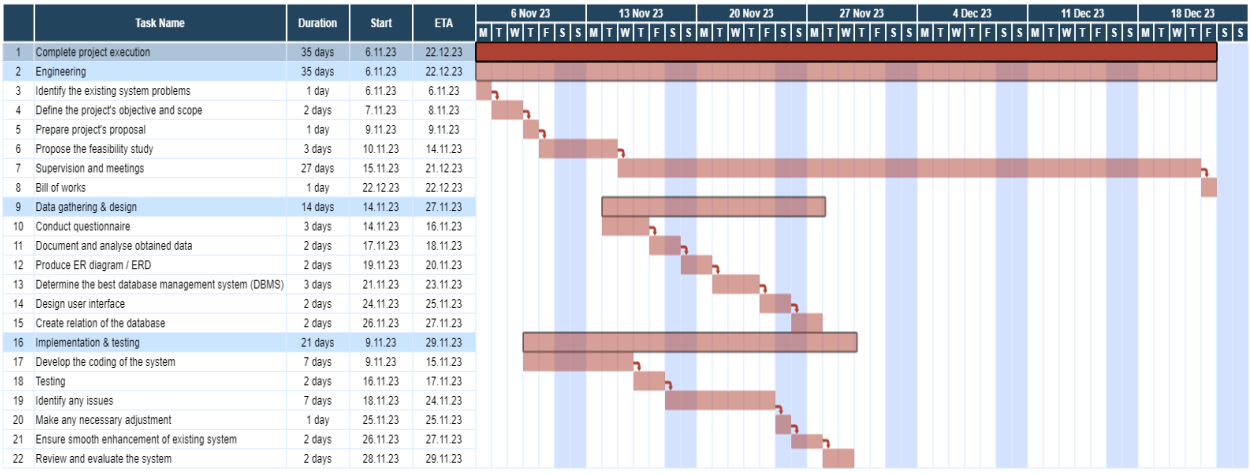


FIGURE 7.1

7.3 GANTT CHART

The system development process/tasks is represented in a gantt chart as shown in ***FIGURE 7.2***.



	Task Name	Duration	Start	ETA
1	Complete project execution	35 days	6.11.23	22.12.23
2	Engineering	35 days	6.11.23	22.12.23
3	Identify the existing system problems	1 day	6.11.23	6.11.23
4	Define the project's objective and scope	2 days	7.11.23	8.11.23
5	Prepare project's proposal	1 day	9.11.23	9.11.23
6	Propose the feasibility study	3 days	10.11.23	14.11.23
7	Supervision and meetings	27 days	15.11.23	21.12.23
8	Bill of works	1 day	22.12.23	22.12.23
9	Data gathering & design	14 days	14.11.23	27.11.23
10	Conduct questionnaire	3 days	14.11.23	16.11.23
11	Document and analyse obtained data	2 days	17.11.23	18.11.23
12	Produce ER diagram / ERD	2 days	19.11.23	20.11.23
13	Determine the best database management system (DBMS)	3 days	21.11.23	23.11.23
14	Design user interface	2 days	24.11.23	25.11.23
15	Create relation of the database	2 days	26.11.23	27.11.23
16	Implementation & testing	21 days	9.11.23	29.11.23
17	Develop the coding of the system	7 days	9.11.23	15.11.23
18	Testing	2 days	16.11.23	17.11.23
19	Identify any issues	7 days	18.11.23	24.11.23
20	Make any necessary adjustment	1 day	25.11.23	25.11.23
21	Ensure smooth enhancement of existing system	2 days	26.11.23	27.11.23
22	Review and evaluate the system	2 days	28.11.23	29.11.23

FIGURE 7.2

8.0 REQUIREMENT ANALYSIS

8.1 CURRENT BUSINESS PROCESS

Scenario

In the current system, if the customer wants to book a ride, they need to fill in the form that is prepared in the 'Student Prebet' group. In the form, customers need to fill in the information such as date, time, current location, destination, contact number, and number of people for the ride as per shown in *FIGURE 8.1*. After filling in the form, they will send it to the group.

Then, the available rider will read the form from the customer. If the details of time and location match their availability, they will personally message the customer and ask whether they found their driver or not as shown in the *FIGURE 8.2*. Then, the customer will ask the price and the driver will state their price rate for the ride. Lastly, customers will receive messages from a few drivers with different prices and they will choose which driver they want to accept.

When the customer accepts the ride, the driver will update their current location manually and the customer needs to update their form in the group to inform them that they have accepted a ride, the example is shown in *FIGURE 8.3* . After completing the ride, the payment will be decided from the customer and driver either pay by cash or using QR payment method.

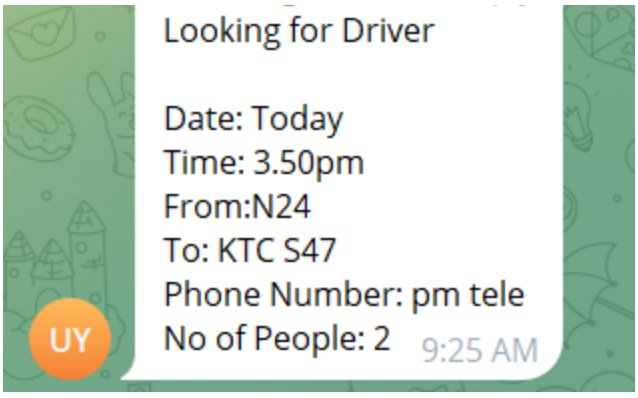


FIGURE 8.1

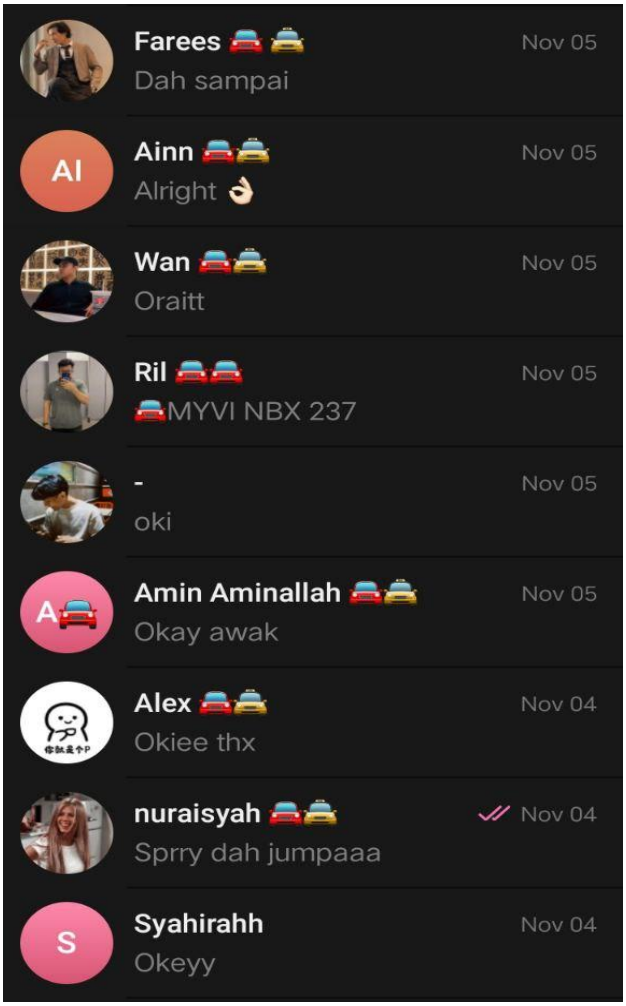


FIGURE 8.2

FIGURE 8.3

workflow

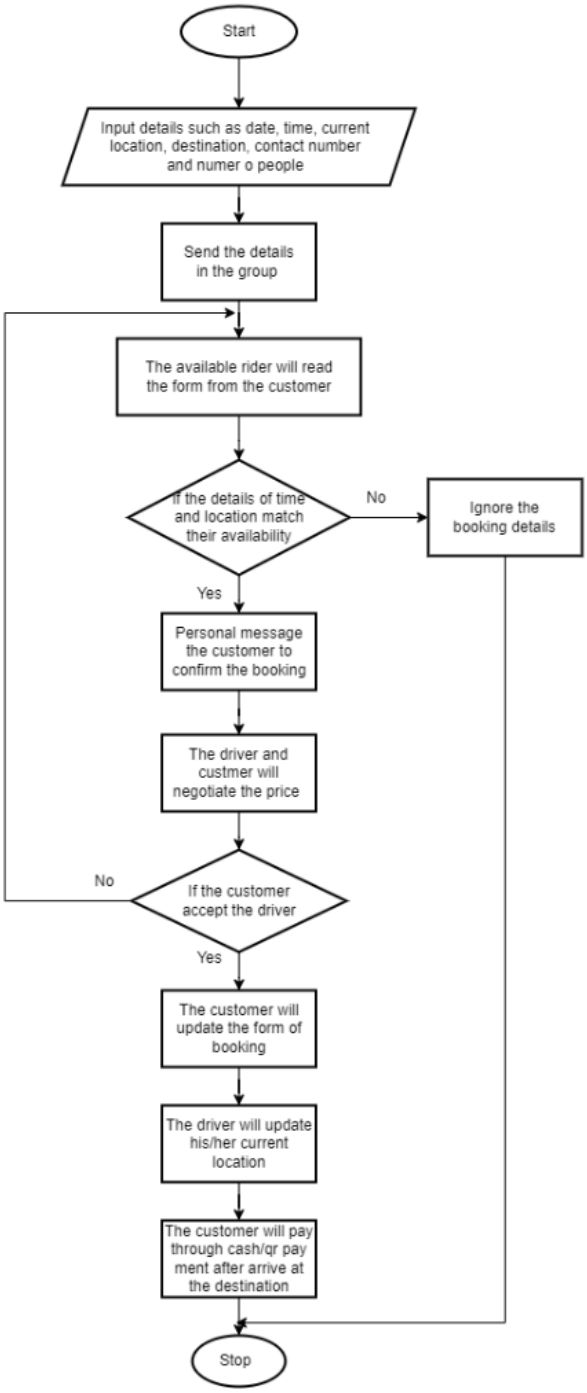


FIGURE 8.4

9.0 TRANSACTION REQUIREMENT

9.1 Module 1: Profile Management

Nuraisya Salsabila is the person in charge of this module.

9.1.1 Module description

In the profile management module of the 'Student Prebet' system, data entry includes extensive collection and storage of user data to create personalised profiles. Users enter information such as preferred payment methods, notification preferences, and vehicle type preferences, contributing to a personalised user experience.

Updates allow users to refine their profiles over time, where they can change contact details, settings, or add a new profile picture. The deletion functions, although limited, allow you to delete certain information from the profile.

Query features allow users to view their own profile information, which ensures that the information stored is accurate and up-to-date. Advanced queries delve into aggregate profile data to reveal user patterns and trends, such as popular payment methods or general vehicle preferences. These insights can inform decisions to improve the overall user experience, making the profile management module an essential part of providing a personalised and efficient email service. This module will also enable all users to retrieve information. This could include searching for users based on criteria such as email, name, or user type. Admin can verify the driver and ban the driver.

9.1.2 Data entry

- Enter the details of customers
- Enter the details of driver
- Enter the details of admins

- Enter the username and password of customer
- Enter the username and password of driver
- Enter the username and password of admins

9.1.3 Data update/delete

- Update/delete the details of customers
- Update/delete the details of driver
- Update/delete the details of admins
- Update/delete the number of drivers
- Update driver status (verified/ban)

9.1.4 Data queries

- List of customers' details
- List of drivers' details
- List of admins' details
- Identify matching username and password of customers
- Identify matching username and password of drivers
- Identify matching username and password of admins

9.2 Module 2: Vehicle and Inventory Management

Muhamad Hafiz is the person in charge of this module.

9.2.1 Module description

In this module, drivers can add their driving information, which is their licence information, and administrators can verify their license. Drivers also need to enter their vehicle information, such as car model, plate number, car colour, number of seats, and the image of the car, for customer reference.

Other than that, drivers can update or delete their vehicle and driving information. As an example, if their license has expired, they need to upload a new licence with a new expiration date. For vehicle information, drivers can update the information, such as the change of vehicle colour. Drivers can also update or delete their vehicle details; they can delete the current car information and enter their new vehicle details if they change their vehicle.

Drivers can also set their availability time preference, and they can update their availability frequently based on their available time. In this module, the system will list down the available drivers based on the time selected by the customer. It will also show the drivers that match the customers'order, such as number of seats and the current location of the customer.

9.2.2 Data entry

- Enter driving informations
- Enter vehicle detail of driver
- Enter the driver's availability status

9.2.3 Data update/delete

- Drivers can update/delete their vehicle detail
- Drivers can update their availability

9.2.4 Data queries

- List drivers based on the details of the vehicle
- Retrive the available drivers

9.3 Module 3: Payment management

Nida Qistina is the person in charge of this module.

9.3.1 Module description

This module involves customer and driver users in the system. It creates a synchronised platform where drivers can understand and react to customers' selections. For the customer view, they are able to easily browse through different ride categories, which allows them to choose their preferred price range. This user-friendly function ensures that customers can match their choices with specific budgetary considerations. Furthermore, they also have the flexibility to choose their preferred payment method.

Simultaneously, the drivers' interface is designed to provide a thorough summary of the choices made by the customers, presenting the chosen ride category, associated price range, and selected payment method. This can help the drivers get a real-time understanding, which provides them with relevant information regarding the customers' ride preferences and facilitates an efficient communication channel between both parties.

9.3.2 Data entry

- Enter the details of price range based on traffic hours
- Enter details of price range based on ride categories
- Enter the details of payment method

9.3.3 Data update/delete

- Update/ Delete price range based on traffic hours
- Update/ Delete price range based on ride categories
- Update payment method

9.3.4 Data queries

- List of price range based on traffic hours
- List of price range based on ride categories
- List of payment method
- Identify the price range selected
- Identify the payment method selected

9.4 Module 4: Ride management

Muhammad Alif Izuddin is the person in charge of this module.

9.4.1 Module Description

This module involves customers and admins. Customers can book a ride to their demanding destination directly through the search panel. Other than that, they can also book a ride through the search/filter where they can select which services they want based on the category, such as female/male driver, number of seats, time, date, destination, current location, and price range. The customer can also cancel the booking if they want to.

As for the admins, they should be able to manage the order. For instance, they can assign the order to the available driver, they can update booking status for the customer, and they can notify the customer through email or notification.

9.4.2 Data entry

- Enter the booking details
- Enter the demand selected category
- Enter the status order

9.4.3 Data update/delete

- update/delete book ride
- update/delete the selected demand category
- Update the status of the order
- Update order to rider

9.4.4 Data queries

- List the booking details
- List the category of service available
- Display the status order
- Identify available drivers to assign the ride.

9.5 Module 5: User review and rating

Muhammad Alif Izuddin is the person in charge of this module.

9.5.1 Module description

Users can provide ratings and write reviews based on their interactions with drivers, the quality of vehicles, or any other relevant aspects. The data entered will typically include the user's comments, the rating given (e.g., on a scale of 1-5) and information to identify the specific ride or driver.

Update operations allow users to modify their reviews or ratings, allowing for additional feedback or adjustments after further consideration. Delete operations may enable the removal of a review, particularly in cases where it violates community guidelines or if a user wishes to retract their feedback entirely.

Query operations involve users or admins to display or retrieve information about the users' rating. The review and rating module acts as a very important tool for users to share their experiences and for the system to continuously enhance the quality of its services based on the user's feedback

9.5.2 Data entry

- Enter drivers review
- Enter the driver rating

9.5.3 Data update/delete

- Update/delete drivers' review
- Update/delete drivers'ratings.

9.5.4 Data queries

- List of customer review and ratings
- Display review and rating of drivers

10.0 BENEFIT AND SUMMARY OF PROPOSED SYSTEM

Benefits:

1. Enhanced User Experience

   The system will provide an automated matching system that can simplify the process for both customers and drivers. Customers no longer need to manually shift through multiple messages from different drivers, and drivers can focus on responding to the customer requests.

   Other than that, the system notification features will ensure that once a match is made, both the customer and rider will be informed. This eliminates the possibility of missed connections and enhances the overall experience for both parties.

2. Operational Efficiency

   Once a customer makes an order, they will receive an order confirmation. This function will save time for both the customer and driver. Other than that, it will reduce misunderstandings in the ride arrangements.

   With a systematic approach to payments integrated into the system, the financial transaction aspect becomes more efficient. This contributes to a seamless end-to-end experience for users.

3. Cost Savings

   By avoiding the involvement of external property management companies, the system is expected to result in significant cost savings for resident associations. This will make it economically feasible in the long run.

4. Real-time Communication

   The inclusion of a real-time location sharing feature ensures that customers are informed of the driver's location, contributing to a safer and more reliable transportation service.

Overall Summary:

The problems that the UTM PREBET service on the Telegram platform was having can be fully resolved by using the Grab Student PREBET system. The system attempts to provide an effective, economical, and user-friendly environment for both drivers and riders through automation, real-time communication features, and careful consideration of operational, technical, and economic factors.

In addition to dealing with the manual processing of customer requests, the system offers advantages like an improved user experience, increased operational effectiveness, and possible cost savings. To optimise the beneficial effects on the UTM PREBET service, it is critical to follow a clearly defined project plan, keep an eye on the adoption process, and guarantee ongoing improvement based on user feedback as the suggested solution is put into practice.

REFERENCE

Connolly, T. M., & Begg, C. E. (2014). *Database Systems: A Practical Approach to Design, Implementation, and Management* (Sixth ed.). Pearson.