1.0 Introduction

Navigating the multifaceted world of university life, transportation remains a top concern for students as it can impact their daily lives and overall campus experience. In order to meet this demand, "Student Grab" (a professional transportation service for the student community in Universiti Teknologi Malaysia (UTM)) has emerged which provides a more affordable and convenient travel option. Moreover, Student Grab is run by students within our school community. Some students who fit the requirements become drivers for this service, helping other students get around the campus. It's not just about rides; it's also a way for students to make some extra money in university. However, the innovative service currently operates without a formal database system, raising concerns about its efficiency and security measures.

At UTM, the Student Grab service has quickly become the go-to transportation solution, providing students with a cost-effective way to commute around the university or head out to the mall for shopping. Its affordability, combined with its focus on meeting the specific needs of the student population, makes it a popular choice for the college crowd. Despite its popularity, the lack of a structured database system in Student Grab presents certain challenges and vulnerabilities. The lack of formal systematic systems to manage orders, track trips and ensure safety measures can lead to operational inefficiencies and compromise the safety and reliability of the service. Although they also have open questionnaire links for students to report the attitudes or behaviours of some drivers, they still cannot ensure safety risks.

This proposal sets out to deeply understand how Student Grab functions as a transportation option for college students. It will examine the effects and weaknesses resulting from the lack of a strong database system. By closely investigating the challenges and potential risks linked to the current operational model, the project aims to suggest practical solutions. Additionally, it aims to enhance Student Grab's efficiency, security, and the overall experience for its users. As part of this effort, our plan involves introducing 'UniRide' as a new application. 'UniRide' is intended to revamp Student Grab's operations by enabling more efficient data collection and implementing a more appealing online database system. Ultimately, this initiative seeks to facilitate the growth and ongoing enhancement of the Student Grab service.

2.0 Background Study

The current operating structure of students' e-hailing service exposes a considerable lack of official websites or dedicated apps for both passengers and drivers, resulting in a more informal and inefficient process. Instead, the students' Telegram group serves as the main method of arranging a grab ride. Students who require grab services post their requests in this group, indicating their preferred time and location. Drivers who are accessible and willing to satisfy these requests respond appropriately to the communications.

One of the system's significant downsides is that students must put their grab orders far in advance because there is no way to ensure the availability of a driver at a given moment. Users may experience uncertainty and inconvenience because of the lack of real-time information. Drivers, on the other hand, must often check the Telegram group to reply to any open ride requests due to the competitiveness of taking orders. This ongoing alertness to acquire trips adds to the drivers' workload, resulting in a competitive attitude within the group.

Payments are also done by online payment and cash. While this is a universal method of accepting payment, without a tracking system for gathering the data, the driver must manually check the record of the payment every time the consumer pays for the trip to ensure that the payment has been made. If the customer pays with cash, they must manually record the data and carry a small amount of cash with them to guarantee that they have enough change for the consumer.

Aside from operational difficulties, the existing style of operation for the students' e-hailing service creates serious safety issues for both passengers and drivers. There is no central authority accountable for addressing issues or assuring the safety and welfare of the participants if the Telegram group is not overseen by an administrator. In the event of a disagreement, misconduct, or other safety-related occurrence, users and drivers can only utilize a Google form to report their concerns. Unfortunately, this procedure lacks transparency, and persons making reports are frequently unsure whether any steps have been taken to address the issues. Because of the absence of accountability and transparency, both passengers and drivers may feel insecure and unprotected. Passengers and drivers in the Telegram group have no direct recourse to resolve safety issues due to this safety gap. As a result, they've taken an informal approach to raising awareness about any possible risks and difficulties inside the community using the same Telegram group.

4.0 Proposed Solution

UniRide is an exclusive online ride-hailing service database system tailored for UTM college students, providing an efficient means of transportation. While apps like "Grab," "Airasia," and "Maxim" are available, accessing rides from our remote campus often results in overpriced trips or unavailability of drivers. As a result, most students rely on school-provided transportation such as school buses which have set schedules and limited pickup and drop-off points. To address these challenges, UniRide has been developed to replace the current inefficient workflow of "Student Grab" and address the issues faced by stakeholders (driver and students of “Student Grab”).

The application is exclusively for UTM students. To register, users must provide valid information to confirm their student status in UniRide to verify the student status of customers to prevent unauthorized users from taking advantage of lower prices of UniRide. Besides that, the students that want to become a driver of UniRide are required to submit various documents, including their driver's license, car insurance, identity card, and student ID to ensure their ability to become a driver. UniRide's database system will record all orders and customer details, ensuring no order goes unnoticed and the users can also access driver information, including their photo, name, student ID, and contact details, ensuring their safety while using the service of UniRide.

Furthermore, the system will enable tracking of daily orders, facilitating the organization of driver schedules. The database system can also monitor driver performance, offering an anonymous feedback or reporting feature for students to report unethical behaviour by drivers enabling customers to rate drivers and leave comments for improving the quality ride experiences. Additionally, UniRide employs a global positioning system (GPS) for the safety of both passengers and drivers as real-time tracking allows quick responses in case of issues, ensuring safety throughout the trip. Besides that, an online payment system is offered, allowing customers to choose between online or cash payments when using the UniRide, ensuring transparency and successful transactions. These features can help to improve the efficiency and quality of the current system.

8.0 Requirement Analysis

The UniRide project aims to develop a comprehensive database system specifically designed for UTM students, streamlining transportation within and around the campus. Stakeholders include system administrators, potential drivers, students, and app developers contributing to the UniRide application. The primary goal of this project is to gather and investigate system requirements for the optimal development of UniRide.

Gathering Requirements:

To obtain client input, we've utilized interactive methods, such as online surveys using Google Forms and conducting virtual interviews with system stakeholders. Insights collected from these engagements with passengers and drivers have yielded critical requirements and expectations for the new application, UniRide.

Functional Requirements:

- The UniRide app should enable students to effortlessly book rides to and from specified locations, displaying transparent price details within the interface.
- It must maintain a record of daily orders for efficient management and tracking.
- Display comprehensive information about drivers, including their name, photo, estimated time of arrival, and vehicle details.
- Provide options for both single and shared rides to accommodate various user preferences.
- Incorporate navigation features within the app, enhancing user experience.
- Offer various payment methods for user convenience.
- Implement a feedback system allowing users to leave comments, contributing to service improvement.

Non-Functional Requirements:

- Ensure an intuitive and user-friendly interface, enhancing ease of navigation for students.
- Uphold the app's security through stringent student authentication and driver verification protocols.
- Maintain a 24/7 support system for both users and drivers, ensuring immediate assistance.
- Protect user information to maintain confidentiality and privacy.
- Aim for an average time of around 10 minutes for passengers to secure a ride, optimizing the service's efficiency.

Additional Considerations for UniRide:

- **Driver Recruitment Process**: Implement a thorough process for driver recruitment, ensuring their credibility and adherence to the required documentation.
- **Safety Measures**: Incorporate safety features within the app, such as SOS alerts or real-time emergency assistance for passengers and drivers.
- **System Scalability**: Design the system for scalability, allowing it to accommodate increasing numbers of users and drivers.
- **Data Analytics**: Implement data analytics for monitoring service usage, driving patterns, and user behaviour, aiding in service improvements and future enhancements.

This comprehensive requirement analysis provides a foundational understanding of the functionalities and non-functional attributes vital for the successful development and operation of the UniRide ride-hailing system at UTM.

Data Requirements for UniRide:

Passenger:

Stored data for passengers includes name, Matric card picture or UTM SMART screenshot, telephone number, and a unique Passenger ID assigned to each passenger.

Driver:

Information about drivers comprises full name, study status, driver's identity card, license details, car insurance particulars, car details (color and plate number), phone number, full name, and address. Each driver possesses a unique Driver ID within the system.

Order:

When a passenger places an order, stored data includes order number, price, date, time, pick-up and drop-off locations, estimated time of arrival, phone number, number of passengers, and payment status. Each order is assigned a unique order number for efficient management.

Payment:

Payment data consists of Passenger ID, payment number, payment amount, pick-up and drop-off locations, and payment status. Each payment is assigned a unique payment number, facilitating the tracking of payment statuses.

Feedback:

Feedback information includes feedback number, user type (driver or passenger), date, feedback details, and feedback status. Each feedback is identified by a unique feedback number, allowing for individual feedback tracking.

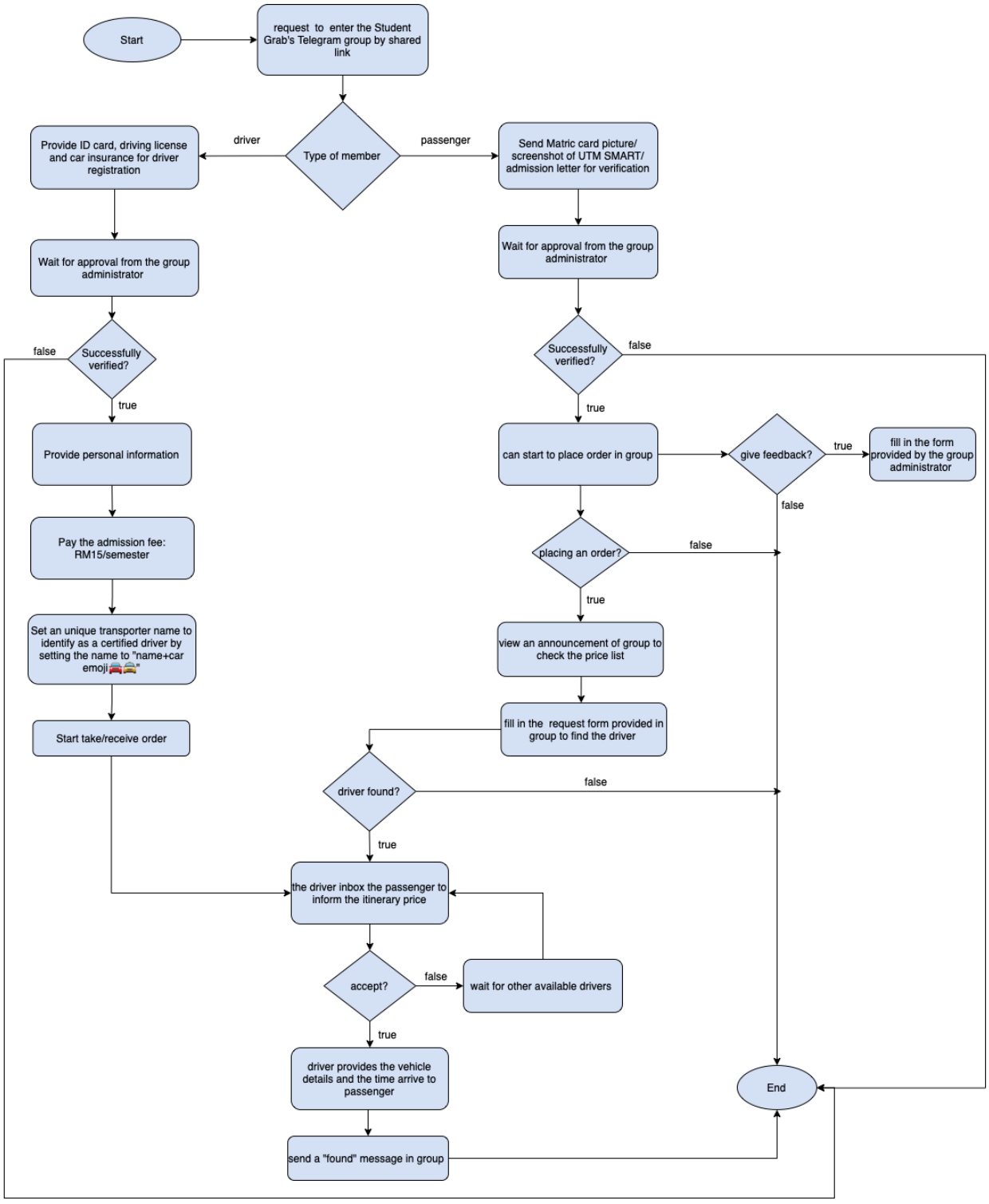
8.1 Current Business Process

The Student Grab system presently utilizes Telegram as its primary platform for facilitating car bookings for students. This service is shared across various chat groups to attract student users. Students can join the Telegram group by requesting access from the group administrator. Besides that, aspiring drivers interested in joining the service can request registration through the group administrator. Upon verification, students are allowed to place orders within the group by adhering to the guidelines outlined in the group's announcement section. Once a driver accepts an order, they will privately message the passenger with order details, such as pricing, car colour, and plate number.

The group administrator enforces multiple rules to ensure effective management:

1. Any delay by a driver/passenger will result in temporary removal (FREEZE) from the group (minimum 10 minutes).
2. Passengers are responsible for toll fares, although drivers must notify customers before using toll roads.
3. Any deviation from agreed pricing will lead to the driver being banned from the group.

Although these rules aim to enhance the passenger's ride experience, storing all data within the Telegram chat history poses some challenges. Information visibility to all group members sometimes results in mismanagement or mischievous behaviour. Additionally, lack of a structured database may lead to inefficiencies in managing orders and tracking the performance of drivers. Besides that, enforcement of rules might sometimes lead to miscommunications or disagreements between passengers and drivers.


Start
request to enter the Student Grab's Telegram group by shared link
Type of member
driver
passenger
Provide ID card, driving license and car insurance for driver registration
Send Matric card picture/ screenshot of UTM SMART/ admission letter for verification
Wait for approval from the group administrator
Wait for approval from the group administrator
Successfully verified?
false
true
Successfully verified?
false
true
Provide personal information
can start to place order in group
give feedback?
true
fill in the form provided by the group administrator
false
Pay the admission fee: RM15/semester
placing an order?
false
true
Set an unique transporter name to identify as a certified driver by setting the name to "name+car emoji🚗🚘"
view an announcement of group to check the price list
Start take/receive order
fill in the request form provided in group to find the driver
driver found?
false
true
the driver inbox the passenger to inform the itinerary price
accept?
false
wait for other available drivers
true
driver provides the vehicle details and the time arrive to passenger
End
send a "found" message in group

10.0 Benefit and Summary of Proposed System

The introduction of UniRide, a dedicated transportation system tailored for Universiti Teknologi Malaysia (UTM) students, promises a multitude of benefits, significantly enhancing the student transportation experience within the campus:

1. Enhanced Data Privacy and Security:

   The UniRide platform, unlike the current Telegram-based system, will ensure increased data privacy by implementing a dedicated app or system exclusively for UTM students. This change will prevent potential data exposure to all group members and offer a secure and controlled data environment.

2. Efficient Order Management and Tracking:

   The implementation of a structured database system within UniRide will facilitate efficient order management, enabling better organization of ride requests, driver assignments, and order tracking. This system will streamline the process, reducing mismanagement and enhancing overall efficiency.

3. Improved Safety and Structured Transportation Experience:

   The structured database will not only manage orders but also track driver performance and ensure passenger safety. This feature will be pivotal in maintaining a secure and structured transportation experience for students, guaranteeing reliability and safety in their commutes.

4. Enhanced Communication and Guidelines

   UniRide aims to enhance communication channels and guidelines between drivers and passengers, ensuring a seamless and secure transportation experience. Clear communication and adherence to established guidelines will contribute to a smoother ride experience, reducing misunderstandings and conflicts.

5. Optimize Time

   By utilizing the GPS system, the system's efficient routing and scheduling algorithms can minimize passenger waiting times and optimize the entire transportation process, thereby saving students' time.