



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SECD2523

(DATABASE)

SECTION 10

PROJECT PHASE 2: DATABASE CONCEPTUAL DESIGN (ERD)

TITLE: GRAB STUDENT PREBET

GROUP NAME : 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 DATA FLOW DIAGRAM

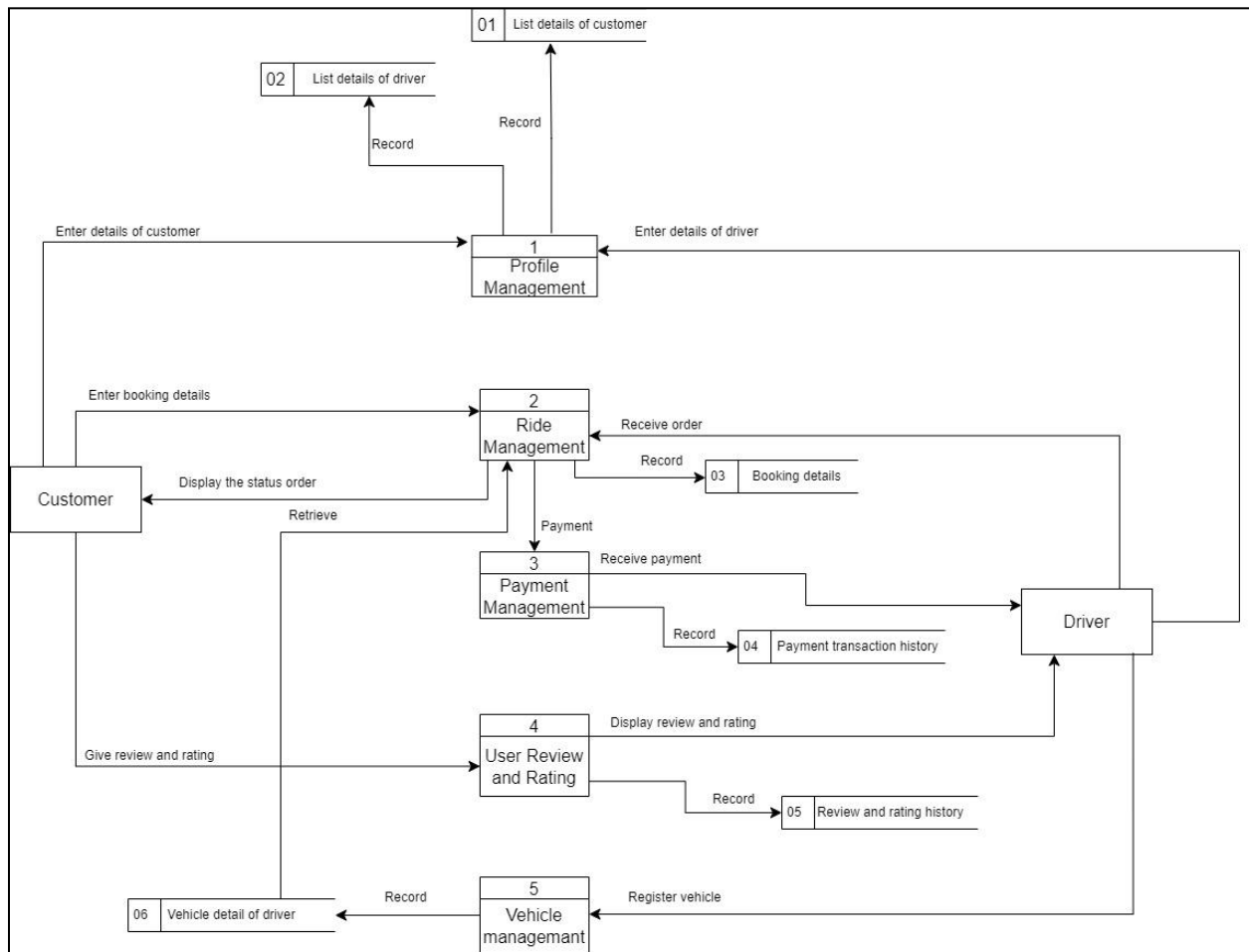


FIGURE 2.1 : Diagram 0 of Grab Student Prebet

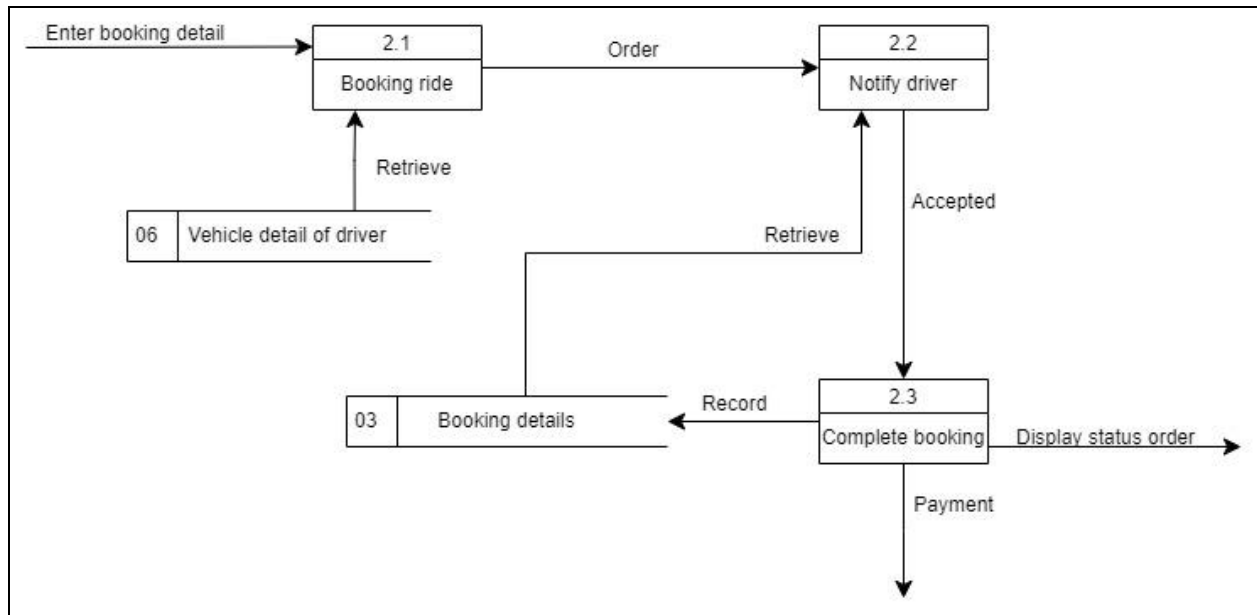


FIGURE 2.2 : The Child Diagram of Ride Management

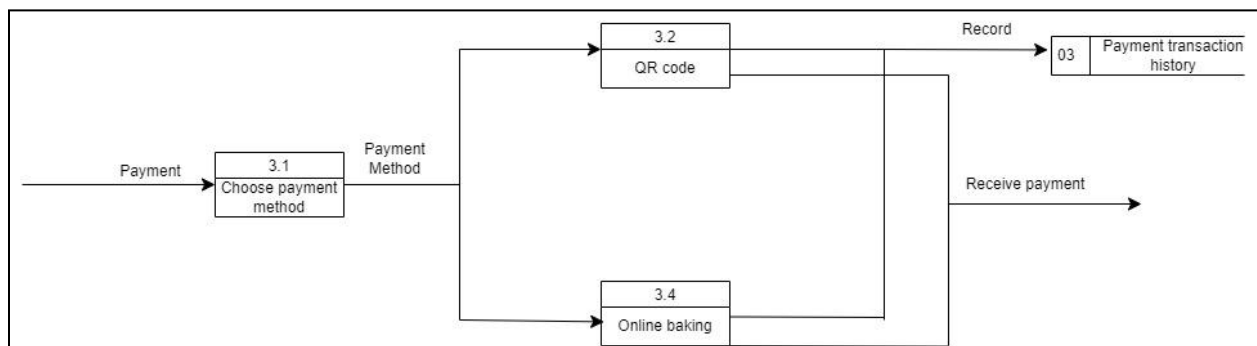


FIGURE 2.3 : The Child Diagram of Payment Management

3.0 DATA TRANSACTION REQUIREMENT

3.1 PROPOSED BUSINESS RULES

Registration & authentication

- All users must register with valid personal information, including a verified phone number to use the system.
- User authentication is mandatory before accessing any of the services in the system.

Booking processes

- Users must provide accurate and up-to-date information when booking a ride, including pickup location and destination.
- Booking information and driver details should be provided to the user in real-time.
- Users and drivers should adhere to the cancellation policy, with applicable charges for cancellations made after a certain timeframe.

Payment, invoicing, & fare

- All payments for the services must be processed through the system. Supporting multiple payment methods.
- Invoices should be generated automatically and made available to users after completing an order.
- Fare calculation must be transparent and based on a predetermined pricing model, including factors such as distance, time, and demand.

Driver standards

- Drivers must undergo a thorough background check and provide valid documentation, including driver's license and vehicle registration.
- Drivers are required to maintain a clean and well-maintained vehicle in compliance with local regulations.

Feedback & ratings

- Users and drivers should provide honest and constructive feedback after ride order has completed to maintain service quality
- Consistently low ratings or multiple negative feedbacks may result in account reviews or suspensions.

3.2 PROPOSED DATA & TRANSACTIONAL

Entity	Data	Data Entry	Data Update	Data Deletion	Data Queries
Vehicle	<ul style="list-style-type: none"> ● PlateNo ● CarModel ● Color ● CarSeater ● UserID 	Registered vehicle information can be entered by the drivers	Vehicle information is updated in the system	Vehicle information can be deleted from the system by the driver	Vehicle information can be queried by searching
Order	<ul style="list-style-type: none"> ● RideID ● Location ● Destination ● VehicleType ● Time ● OrderStatus 	Customers can create orders with the attributes.	Order information is updated by RideID	Order can be deleted from the system based on RideID	Order information can be queried by using the RideID.
User	<ul style="list-style-type: none"> ● UserID ● Name ● PhoneNo ● Address ● Gender 	Details entered by the users	User's information is updated in the system	Users will be able to delete their information from the system	User's information can be queried by using the UserID
User_Order (make payment)	<ul style="list-style-type: none"> ● Invoice ● Method 	Payment method and invoice will be issued to customers when orders are initiated.	-	-	-
User_Order (Give feedback)	<ul style="list-style-type: none"> ● Rating ● Comment 	Users will be able to give feedback/ratings when orders are completed.	-	-	-

4.0 DATABASE CONCEPTUAL DESIGN

4.1 CONCEPTUAL ERD

An entity-relationship diagram (ERD) is a visual representation of the relationships between entities and structures found in database systems. It shows relationships (the connections between entities), attributes (the attributes of entities), and entities (real-world objects or concepts). ERD is a fundamental tool in database design that offers a guide for a database's logical structure. It facilitates a common understanding of the relationships and needs for data, which helps stakeholders communicate with one another.

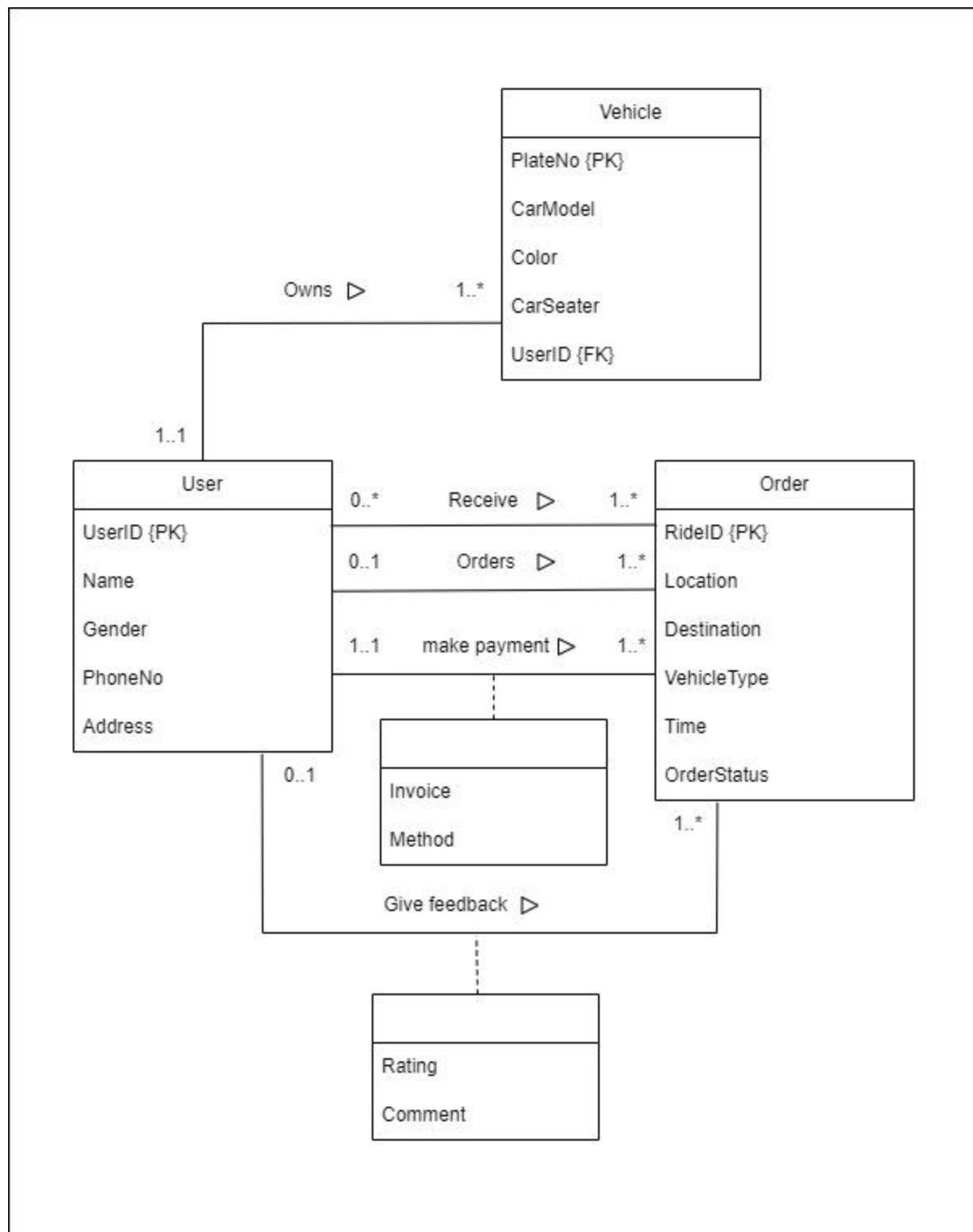


FIGURE 4.1 : The Conceptual ERD of the system

4.2 ENHANCED ERD (EERD)

Enhanced Entity-Relationship Diagram (EERD) is an extension of ERD, introducing advanced modeling concepts to handle more complex relationships and constraints. Features like subclasses, superclasses, generalisation, and specialisation are part of the EERD. It supports situations in which entities can be divided into subclasses, offering a more accurate and comprehensive depiction of the data model. Building on ERD, EERD provides database designers with an extensive toolkit for handling complex data structures.

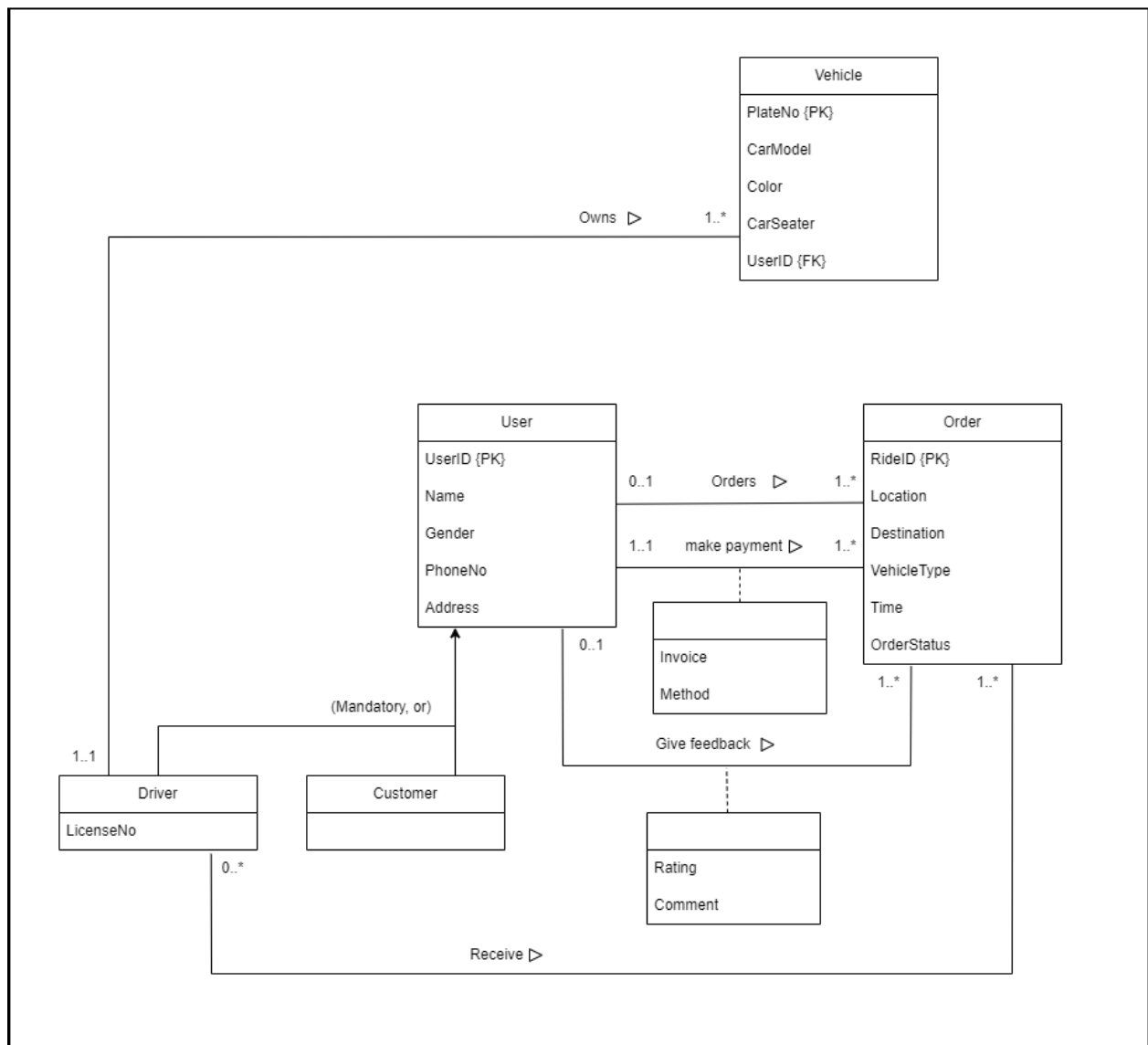


FIGURE 4.2 : The Enhanced ERD of the system

5.0 DATA DICTIONARY

Data dictionary that documents the entities

Entity name	Description	Aliases	Occurrence
User	General term describing all user	Customer Driver	Each user has a role where it can be identified from their ID
Vehicle	General term describing all the drivers' vehicle	Car	Each car owns by a driver
Order	General term describing all customers' order	Book ride	Each order can be made by a customer and can be received by many drivers

Data dictionary showing the description of relationship

Entity name	Multiplicity	Relationship	Entity name	Multiplicity
User	1..1	Owns	Vehicle	1..*
	0..*	Receive	Order	1..*
	0..1	Orders		1..*
	1..1	make payment		1..*
	1..1	Give feedback		1..1

Data dictionary showing the description of attributes

Entity name	Attributes	Description	Data type & length	Nulls	Multi-valued
User	UserID	Uniquely identifies user	VARCHAR2 (9)	No	No
	Name	Name of user	VARCHAR2 (100)	No	No
	Gender	Gender of user	CHAR (1)	No	No
	PhoneNo	Telephone Number of user	NUMBER (11)	No	No
	Address	Address of user	VARCHAR2 (250)	No	No

Order	RideID	Uniquely identifies order	VARCHAR2 (6)	No	No
	Location	Location of user	VARCHAR2 (100)	No	No
	Destination	Destination of customer	VARCHAR2 (100)	No	No
	VehicleType	Vehicle type of driver	NUMBER (1)	No	No
	Time	Time of order	DATE	No	No
	OrderStatus	Status of customer's order	VARCHAR2 (10)	No	No
Vehicle	PlateNo	Plate number of vehicle	VARCHAR2 (8)	No	No
	CarModel	Car model of vehicle	VARCHAR2 (20)	No	No
	Color	Color of vehicle	VARCHAR2 (15)	No	No
	CarSeater	Number of car seat of vehicle	NUMBER (1)	No	No
	UserID	Uniquely identifies driver	VARCHAR2 (9)	No	No
User_Order (make payment)	Invoice	Invoice of payment	VARCHAR2 (100)	No	No
	Method	Method of payment	VARCHAR2 (20)	No	No
User_Order (Give feedback)	Rating	Rating of ride feedback	NUMBER(5)	Yes	No
	Comment	Comment of ride feedback	VARCHAR2 (50)	Yes	No

6.0 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.