Chapter 1

INTRODUCTION

Background of the Study

Mobility is an essential need for an individual therefore the demand for transport service especially for private car increased in this modern society (Hamzam , 2017). Transportation is one of the important needs of people and it has a big impact on people's lives as well in the society. Everyday a lot of people use different modes of transportation to go to their work, school, run errands or other events in their lives until returning to their homes.

In a world where society has become modern and technology is rapidly advancing, a lot of people preferred to use their smartphones in every little detail in their lives, as well as their daily commute. Due to the increase in the number of people using technology, there are also many innovations and developments related to it, one of the mobile innovations is the Ride-hailing app. A ride-hailing platform is an app-based, two-sided platform that matches riders with vehicles via information technology (Rhee et al., 2022).

The Ride-Hailing app is more preferred and provides many benefits by other commuters but still it is inevitable that there will be technical issues that will disturb their trips. Initially, the GPS tracker is not very accurate in providing the location. Weak GPS signals are typically the result of a GPS antenna's inability to produce a strong signal, which is why accuracy issues occur so frequently (GPS-server, 2023). Furthermore, the Driver app issues. Drivers may have trouble

accepting or finishing rides due to technical issues with the driver app, which may result in delays or cancellations (Lyu et al., 2021). Due to the Driver app issues, there will be misunderstanding both customers and drivers it will not be updated real-time because of this, the passenger will not be able to see the info if there is a passenger or if the driver has dropped off its customer and if it can accept another customer. Aside from the technological issues of ride-hailing apps, it also has another issue which is increasing traffic congestion, emissions, and total vehicle miles traveled (Britannica, 2021). Because it's easy to sign up and register their vehicle to market and earn money, many private vehicles are converted into passenger vehicles that increase traffic and emissions in the country.

There are some causes why this problem occurs. Initially, GPS Tracker is not very accurate in providing location is because accuracy and precision are affected by the environment, device status, and satellite position. Less precise location data are typically associated with dense metropolitan environments. Buildings, trees, or any other tall obstructions can interfere with satellite signals as they attempt to convey them to a user. Similarly, GPS receivers find it difficult to determine their exact location when there are not enough satellites (Rodgerson, 2021). Finally, in having Driver app issues it causes of by having connectivity issues. Connectivity problems may occur when going by towering buildings, thick walls, trees, or simply because the surroundings can reduce signal strength.

Due to the problems mentioned, the Proponents proposed to develop a ride-hailing/ride-sharing application to address or alleviate the technical issues experienced by other apps as well as the increasing traffic congestion in the country. Features such as the use of new technology

which is the Geolocator API for GPS Tracker will help to make the location of the users of the proposed application more accurate. Proponents have also provided a chat system in case there are connectivity issues with the driving app so they can still communicate both driver and passenger. In order to reduce the increase in traffic congestion, one of the features of the proposed application is that they can ride together for free, or they can share a ride with their friends or relatives that is connected in their Facebook account and take the same route to their destinations.

Objectives of the Study

The general objective of the study is to develop an application that has integration of different technologies. The main goal of the application is to have a faster transportation, and avoid time consuming. The Pasabay App Easy Pick-up can be used to give rides only for their acquittances like relatives, parents, and friends in a same direction.

Specifically, the study aims to:

1. Design the proposed application Pasabay App Easy Pick-Up with the integration of different technologies similar to other ride-hailing/ride-sharing apps such as Grab, Angkas and Joyride.

2. Create the system using the following application program:

   - Android Studio IDE is used it to design, build, run, and test software, in this case, apps for the Android platform.

   - Gitlab is used from planning to production, GitLab brings teams together to shorten cycle times, reduce costs, strengthen security, and increase developer productivity.

- Firebase is app development platform that helps build apps.

- Figma is used for collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows.

3. Test and improve the system based on:

- Functionality, which is the set of attributes that bear on the existence of a set of functions and their specified properties

- The collection of characteristics known as functionality is what determines whether a group of functions exist and have the specified properties.

- Reliability is a group of characteristics that affects a program's capacity to continue performing at a given level under given circumstances for a given amount of time.

- Efficiency is a group of characteristics that influence how well the software performs and how many resources it consumes when certain conditions are met.

4. Evaluate the performance of the Pasabay App Easy Pick-Up using the Angkas evaluation criteria for prototype with the following criteria functionality, workability, durability, and satiability

Scopes and Limitations

Scopes

- The application has a notification feature that will notify when there is a ride request.

- The application has an emergency button that will automatically send a message once you click it.

- The application can be run in 3gb ram and above.

- The application has a registration button that the passenger will fill out before reserving a ride.

- The application contains a conversation button that the driver and passenger will utilize before reserving a ride

- The application has a GPS tracker so that the passengers will track their location.

- The application can view the number of passengers that are available to reserve a spot in a vehicle.

- The application has a login button that the driver and passenger can login before using the application.

Limitation

- The application is compatible or working only in mobile phone.

- The application does not used any payment method.

- The application is not functioning when it has no internet or data connection.

- The application cannot be access if there is no user account.

- The application is applicable in 4g to 5g internet capacity.

- The application is not applicable in IOS.

- The application is for vertical layout only.

- The application is available only for android 9 and above.

- The users can only send emoji and text in chat.

Significance of the Study

Studying and developing this application,"Pasabay App", will benefit specific users such as the commuters and. the future researchers.

Commuters

This study could also help passengers in terms of decreasing period of waiting, and giving them assurance that their safety is secured since the driver is known by them. Another benefit is that they might get a free ride from the driver because of they are same direction.

Future Researchers

This study will give help to the future researchers that want to develop a useful app aligned with this application, which give solution and convenience to the people on the road. They can use this as their reference in the Ride-Hailing app.

Chapter 2

CONCEPTUAL FRAMEWORK

Review of Related Literature and Studies

Data Technology

According to Higgins et al. (2012), data technology has changed the way we handle, analyze, and use information. As the volume of data generated daily grows, data technology has become an indispensable tool for businesses, organizations, and individuals attempting to make sense of this vast amount of information. The rise of big data is one of the most significant developments in data technology. This refers to the massive amounts of data generated every day by individuals, businesses, and devices. Traditional methods cannot effectively analyze such data, necessitating the use of advanced tools and technologies such as data mining techniques, machine learning algorithms, and data visualization tools.

Wireless Technology

According to Jim Kemerling (2018) Transmitting information wirelessly was a scientific curiosity for the last half of the nineteenth century. In fact, Wireless is commonly thought of as radio or RF (radio frequency) communications. There are other technologies that allow wireless links. For example, your remote control for your TV or stereo is a form of wireless using infrared radiation to transmit channel or volume information. Signaling and audio communication using electromagnetic radiation was first use as a wireless telegraph.

Electromagnetic radiation is the formal term that was introduced by heinrich hertz. But Wireless entered the vocabulary at the beginning of the 20th century.
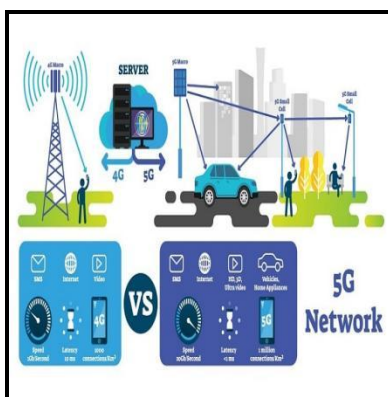
4G & 5G Network

Figure 1. 4G VS 5G Network

Source: https://tinyurl.com/yfkx9hu4

According to Arghanshu Bose (2022) The fifth generation of cellular networks, or 5G, adds additional capacity (space), which gives more area for all the devices to receive faster data rates 5G is up to 100 times faster than previous generations of cellular networks. The 5G network is designed to connect not only smartphones but various other types of devices as well. On the other hand, 4G is the fourth generation of cellular networks this network offered significantly faster data rates, lower latency, and more efficient use of the radio frequency spectrum. 4G is the most widely used cellular technology (Weber, 2021). With this, both 4G and 5G will be able to provide connections for each of devices with a range of performance on the system that will access the application through mobile devices.

GPS

Figure 2. The GPS

Source: https://tinyurl.com/j4bz5ehp
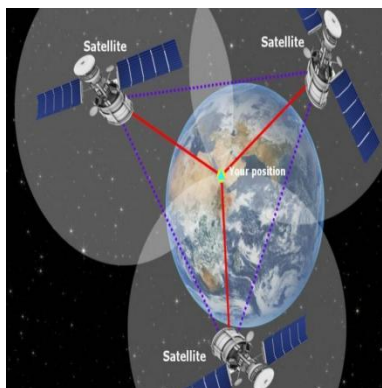
According to Senthikumar et al. (2019), The Global Positioning System, or GPS, is a network that connects via satellite and is used by the Global Positioning System. A GPS can calculate its geological position by receiving information from satellites. To aid navigation, the GPS device collects data from the device's current location, which is generated using an artificial map. The majority of GPS modules are now found in vehicles such as automobiles, bicycles, buses, and lorries. Smartphones and other mobile devices can use Assisted GPS Technology (A-GPS), which serves as a navigational aid. Because of its limited network coverage, the GPS must remain in a network coverage area at all times in order for the GPS module to continue to operate and communicate the system's coordinates or position.

Real Time Vehicle Tracking System and Energy Reduction

According to the paper of Salman (2017), The "Real Time Vehicle Tracking System and Energy Reduction" project's goal is to create a transportation company that assists with fleet management. The Smart Vehicle System (SVS), or system, was comprised of the tracking device, the cloud, and the Android application. The Tracking Unit was installed inside a vehicle and detects the temperature, speed, and location of the vehicle before transmitting the data to the cloud via the GSM network. A cloud is made up of three parts: a web panel for managing and viewing data, a web server for processing data, and a database for storing it all. A web panel is used to display and manage data, which is then processed by a web server and stored in a database. The Android app may be used to view the vehicle's current temperature, location, and get notifications. There are several system constraints that notify the administrator and driver of particular events. Site limitations and high vehicle temperatures are the two main constraints. If any of these limitations are violated, notifications are delivered to the administrator through email and to the Android application. Since the SVS is a portable device, batteries power it. As a result, a power reduction algorithm is suggested and being studied. The study's findings suggest that data processing is required before results are uploaded to the cloud in order to conserve electricity and database space.

Wide use of Geolocation in Tracking System in Different Field

According to Muangprathub et al. (2021) who examined a large number of existing studies in the broader literature and concluded that a health or activity monitoring system is the most promising method for assisting the elderly in their daily activities. Because of the aging population, the demand for health services has increased to the point where the current

monitoring system can no longer provide the care that the elderly require. By combining a variety of technologies with machine learning, a new elderly tracking system that incorporates aspects of activity monitoring, geolocation, and personal information in both an indoor and outdoor setting is being developed. It also includes data and outcomes from local agencies' involvement in the system's conception and development.

According to previous research by Lara et al. (2013), one of the most important jobs in pervasive computing is delivering precise and timely data about people's actions and behavior. It is possible to depict a wide range of applications, such as medical, security, entertainment, and military scenarios. Human activity recognition (HAR) has been a hot topic for over a decade, but there are still significant issues that, if resolved, will fundamentally change how users interact with mobile devices. This technology can monitor and warn the elderly in real time. Furthermore, the system may map out the senior's information, and the elderly can send an emergency help request using a messaging device.

Lisovski et al. (2012) used one method in which recent advances in ultra-light devices (less than 2g) have expanded the range of target species and increased the number of geolocator investigations. Geolocation by light allows for the tracking of animal movements and is based on data-logging measurements of light intensity over time.

Types of Global Position System (GPS)

A-GPS

According to Fred Zahradnik (2021) Assisted GPS, commonly known as A-GPS or AGPS, improves the performance of ordinary GPS on mobile devices connected to a cellular network by using data from nearby cell towers. When GPS signals are insufficient or unavailable, assisted GPS (A-GPS) employs proximity to cellphone towers to determine positions. In addition, A-GPS, or assisted GPS, has been developed to effectively improve capabilities, enable GPS to operate more effectively and easily in almost any location.

D-GPS

According to Poornima Rawat (2021) The DGPS (Differential Global Positioning System) is the name of the upgrade made to the GPS system in order to fix these errors and inaccuracies in the GPS signals. This helps identify in providing more accurate positioning data by reducing signal degradation. Differential GPS (DGPS) uses a network of fixed, ground-based reference stations to find the location relative to a fixed point of reference. Differential GPS (DGPS) determines the location in connection to a fixed point of reference by using a network of permanent, ground-based reference stations. Moreover, Pasabay app easy pick engaged to this device with this DGPS device provide accurate data within a minute it also has a wide accuracy that provides real-time data to the system it helps enhance or improve the GPS system that shows an object's exact position.

Mapping and Non-Mapping GPS

According to BasuMallick (2022) a GPS unit with built-in maps is known as a mapping GPS. Additionally, maps can be downloaded and added to the GPS navigation system. This kind of GPS unit is frequently used in mobile and other handheld devices. Non-mapping GPS is a category of GPS device that lacks maps. Without displaying any roads or landmarks, it demonstrates your current location and the path to another area. It employs trails that resemble breadcrumbs to indicate your progress and direction.

Mobile Application

Figure 3. Mobile Applications

Source: hhttps://tinyurl.com/4jjkw7jv

According to Janssen (2020) a mobile application, also known as an app, is a type of a application software designed to run on a mobile device such as a smartphone or tablet computer. Mobile applications frequently provide users with services that are similar to those available on PCs. Apps are small, standalone software units with limited functionality. Furthermore, the

pasabay app easy pickup will also develop as an application software that will applicable to android and IOS.

Book Ride Motorcycle Service/Ride-Hailing Taxi

Figure 4. Book Ride Motorcycle Service Angkas

Source:https://tinyurl.com/3y4c4vkc

According to Transport Policy Volume 81, September 2019 Duy Quy Nguyen-Phuoc, Ha Anh Nguyen, Chris De Gruyter, Diep Ngoc Su, Vinh Hoang Nguyen. In many developing nations, motorcycle taxis are a vital part of the transportation infrastructure, especially in places without access to regular public transportation. Since motorcycle taxi services were introduced by online ride-hailing businesses, this mode of transportation has grown in popularity. The dangers of traffic crashes among users of motorbike taxi apps are however little understood. So, the purpose of this study was to look at the frequency and risk variables for traffic crashes among users of motorcycle taxi apps. In order to learn more about riders' socio-demographics, work schedules, travel habits, and crash involvement, a field study and an online survey were

conducted. Three cities in Vietnam yielded a total of 602 valid survey responses from riders, comprising 571 men and 31 women. The proportion of traffic accidents overall reported among app-based motorcycle taxi riders over a one-year period was 30%. Binary logistic regression modelling showed that traffic crashes were associated with non-students, low education levels, high daily travel distances, regular smoking, and using a mobile phone while driving. Despite regulation of online ride-hailing motorcycle taxi services in Vietnam, the reported prevalence of crashes among riders is considered to be relatively high. Targeted interventions to reduce the risk of being involved in a crash should be considered, such as increasing road safety education for non-student riders and imposing a daily travel distance limit for riders. Ride-sourcing services are now a crucial component of giving customers door-to-door connectivity because to the rapid expansion of wireless technology and internet services. These services enable a continuous improvement in the transportation industry and urban mobility by establishing a real-time connection between users and drivers. By performing separate research for ride-hailing and ride-sharing services, the current study examines the factors influencing the service quality offered by ride-sourcing services in Delhi-National Capital Region (NCR). By conducting in-person questionnaire-based surveys with a total of 1260 samples (630 for each), user perception was gathered. For 80% of the samples, service quality models for ride-hailing and ride-sharing services were created using structural equation modeling (SEM) (504 for each). Both models' validity was checked using the remaining samples.

The most important aspect influencing the service quality of ride-hailing services was found to be "Reliability," whereas the most important factor for ride-sharing services was found to be "Security." The results of the external validation test showed that the mean error for ride-

sharing and hailing services, respectively, was 7.5% and 6.9%, indicating the model's efficacy. The results of this study will be helpful for transportation planners and Transport Network Companies (TNCs) to establish guidelines for enhancing the service quality offered by these services, which will enhance urban mobility, ridership, and last mile connectivity.

Figure 5. Book Ride Motorcycle Service Grab

Source:https://tinyurl.com/3ks2vz2t

According to Atheria Kurniawati(2021) Customers and businesses alike have given the successful creation of the sharing economy a lot of attention. Many people believe that this new business model will be disruptive, particularly for the travel and tourism sector. Since it first appeared, all hotels—from tiny to large and well-known—have suffered losses. The unexpected growth of on-demand ride hailing services like Grab also poses a challenge to many established taxi businesses that were thought to have been in operation and successful for years prior to the clear appearance of Grab. The reason for this sharing economy business model's apparent success was revealed to be is the effective connection of customers and providers through technology especially when technological advancement and internet penetration are crawling at

lightning speed. Additionally, many stated that the sharing economy was more inexpensive, convenient and environmentally friendly. These three have the perfect combination to quickly prosper in the market. Even if it's fascinating, this study will investigate the three key aspects of the sharing economy—the economic, social, and environmental issues. Determine whether they have an impact on customer happiness or whether the rise in the sharing economy is only a sign of consumers' interest in a brand's innovation. Due to its widespread use in Kuala Lumpur, Malaysia, Grab will be used in this case study to observe the effect of the sharing economy model on customer satisfaction. Today's leading mega app in Southeast Asia, Grab unifies services including ride-hailing, food delivery, payments, packages, groceries, and more. With the intention of using technology as a part of empowering its communities and bringing a better quality of life to the people, it has over 166 million mobile downloads in 8 countries and 339 cities. The company originally debuted in 2012. In 2013, Grab Taxi and other services were able to operate in the Philippines and other Southeast Asian nations. Following the launch of Grab Car and Grab Bike in 2014, further services continued until today (Grab, 2019) (Grab, 2019). In comparison to other ride-hailing services, grab services are utilized most frequently in Malaysia, Indonesia, Singapore, the Philippines, Thailand, and Vietnam, according to a worldwide market research firm, TNS (Grab, 2015). With over 640 million people and 12 megacities spread around the region, Grab has a very high exposure to the market opportunity (Grab, 2019). Hence, Grab was able to achieve its current level of success and popularity in this manner.

Figure 6. Book Ride Motorcycle Service Joy Ride

*Source:*https://tinyurl.com/3bbmc34h

According to Joyride SVP for Corporate Affairs Noli Eala, this is a positive development because commuters now have another option for getting to their destination in a car that is secure, comfortable, and economical. In addition to providing a motorbike taxi service, Joyride also provides express deliveries, shopping as a service, and tricycle ride hailing, as well as business delivery services, an online market, and Covid-19 home testing. As a platform for motorcycle taxi hailing, Joyride made its formal debut in December 2019. In Metro Manila, Rizal, Bulacan, Cavite, Laguna, Baguio, and Metro Cebu, it now employs roughly 20,000 driver-partners.

Flutter

Figure 7. Futter Logo

Source: https://tinyurl.com/huc8er7j
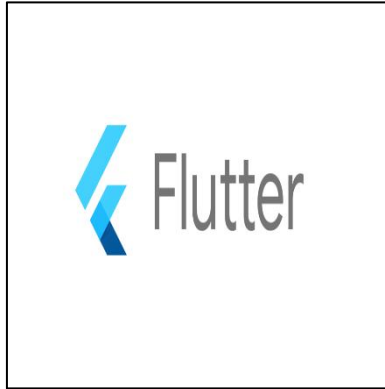
Tashildar et al. (2020) defined that Flutter is an open-source SDK for creating mobile applications that are more dependable and high-performing. Software for mobile platforms like iOS and Android. Just-in-time compilation, which executes computer code that includes compilation during program execution at run time rather than before execution, is a key component of the Flutter framework. In the application, it is used to provide the needs of User Interface or UI for the application.

Android Studio
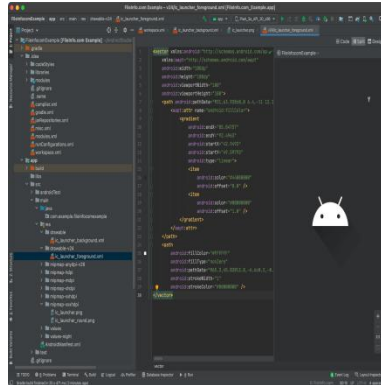
Figure 8. Android Studio Snippet

Source:https://tinyurl.com/4u2nfu38

(Mario Tatis 2021) stated that the official platform for creating Android apps is called Android Studio. Developers can create apps for all different kinds of Android devices using the capabilities provided by this development environment. The Android Studio is packed with features that show current CPU, network, and memory data for the app. The Android Studio is packed with features that show current CPU, network, and memory data for the app. This enables Android developers to conduct a variety of tasks, including analyzing incoming and outgoing network data and locating performance bottlenecks. Furthermore, Pasabay App easy pick up has an instant evaluation of the workflow in the system it also ensures the system flexibility for making constant program updates while it is still running.

Gitlab

Figure 9. Gitlab Snippet

Source: https://tinyurl.com/3z4nfvy7

According to (Karen Kelly 2022) GitLab is a web-based Git primary source that offers free open and private frameworks, issue tracking, and network sites. It is a comprehensive develops platform that enables professionals to handle all aspects of a project, from project planning to source code management to monitoring and security. With this, the application will be easily track of every workflow like making projects to track issues, plan work

and analyzing the system performance to secure the application.

Google Maps API

Figure 10. Google Map API Snippet

Source:https://tinyurl.com/2p95657c

Tamil (2022) defined that the Google Maps API are a collection that enable communication with its services. For the Web, iOS, and Android, it will enable us to create location-based apps that range from being really basic to quite advanced. Juviller (2022) Google Maps API can customize interactive maps in website, using maps to assist users in creating routes if the user run a travel website. Likewise, the application blended with this platform if the system run in location display in anyways in multiple users like commuters, drivers.

Facebook Graph API
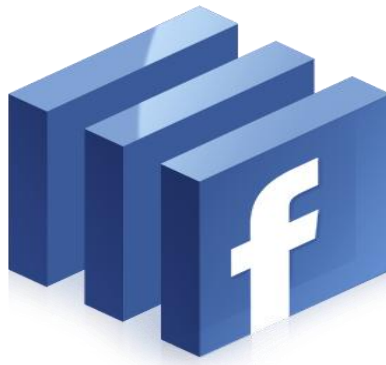
Figure 11. Facebook Graph API Logo

Source:https://tinyurl.com/mwwrpzpd

Based on (Anna Fitzgerald 2022) HTTP-based PI allows developers to extract data and functionality is called Facebook graph API.API allows applications to focusing on the programmatically, post in pages and groups, and manage ads, among other things. Facebook API is a collection of alternatives used to get data into and out of the platform. It gives developers and app users access to the network's functionality, such as user information, photos and videos, messages, and so on. With this, the application can create account by register or signing the users Facebook Accounts and to fetch another commuter that is related to the user.

Firebase

Figure 12. Firebase Logo

Source:https://tinyurl.com/mwwrpzpd

According to Khawas & Shah (2018), Firebase is known as a web application platform. It supports the development of high-quality apps. It uses the JavaScript Object Notation (JSON) standard to store the data and doesn't require a query to add, delete, or update data. The system's backend functions as a database for storing data. The Firebase serves as a database that has no SQL for the application.

Dart


```
main() async {
  print('Compute π using the Monte Carlo method.');
  var output = querySelector("#output");
  await for (var estimate in computePi().take(500)) {
    print('π ≅ $estimate');
    output.text = estimate.toStringAsFixed(5);
    await window.animationFrame;
  }
}

/// Generates a stream of increasingly accurate estimates of π.
Stream<double> computePi({int batch: 100000}) async* {
  var total = 0;
  var count = 0;
  while (true) {
    var points = generateRandom().take(batch);
    var inside = points.where((p) => p.isInsideUnitCircle);
    total += batch;
    count += inside.length;
    var ratio = count / total;
```

Figure 13. Dart Code Snippet

Source: https://tinyurl.com/2p9wm6fp

A general-purpose programming language available for free is called Dart. It only has object-oriented syntax and is entirely written in C. On any platform, Dart is a client-optimized language for creating quick apps. Dart is a widely used programming language for single-page apps (Swathiga et al., 2021). Dart is a programming language that will be used to develop the application which is the Pasabay App Easy Pick-Up.

Google Place API
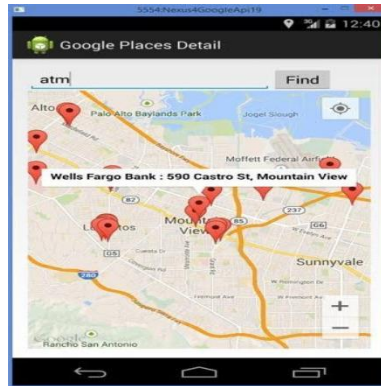
Figure 14. Google Place API Snippet

Source: https://tinyurl.com/2p8rmyhu

Sutedja & Edy (2021) stated that Google Place API can give greater detail. Information acquired can be used to identify restaurants, rate locations, find addresses, read reviews, and many other capabilities that are constantly being added. The Google Place API is a service that provides details on where to send HTTP requests. In this API, a "place" is defined as a business, a region, or a tourist attraction. This Google Place API will help to give more detailed information in the map for the application.

Mobile Phones

Figure 15. Mobile Phones

Source: https://tinyurl.com/bdd8npkw.

According to Janssen (2022), a mobile phone is a wireless handheld device that allows users to make and receive phone calls. As of now phones can accommodate web browsers, games, cameras, video players, and navigation systems, whereas the first generation could only make and receive calls. The commuters is always reliable to phones, likewise this mobile device is one of a way to use the Pasabay app easy pickup for the multiple users specially when it comes to IOS and android users.

Android
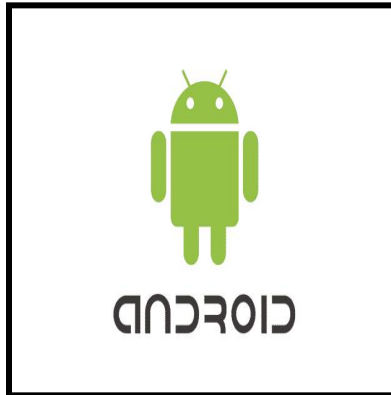
Figure 16. Android Logo

Source:https://tinyurl.com/yn8mnzdp

According to Marziah Karch (2021) Google created the well-known Linux-based mobile phone operating system known as Android. Phones, watches, and vehicle stereos all run on the Android operating system (OS). It is a popular open-source project that Hardware manufacturers and cellular carriers who want to use Android on their products receive a component of the Android platform, which Google actively develops, for free. Since effective research is based upon this knowledge, the application integrates to this web based which multiple Android users like commuters, drivers are given the opportunity to link their mobile devices to other Google products, such as cloud storage, email platforms, and video services.

Geolocation

Figure 17. Geolocation

Source: https://tinyurl.com/47vju5ap

According to Estes (2016), Geolocation is a technology that determines or describes a user's precise geographic location using information from their computer or mobile device. Any Internet-connected gadget can access geolocation to obtain all kinds of information in real time and pinpoint-accurately locate the user at any given time. Location-positioning services and location-aware applications are built on geolocation technology (apps). It is used for the application to detect user's current location.

Evaluation System

Characteristics for evaluating software materials:

Functional Suitability which is how well an application is able to provide functions that meet the stated and implied needs.

Reliability which is how well an application, product, or component performs specified functions under specified conditions.

Performance Efficiency which is the performance related to the number of resources used.

Usability which is how well an application can be used to achieve specified goals effectively, efficiently, and satisfactorily.

Security which is how well an application, protects information and data from security vulnerabilities.

Compatibility which is how well an application can exchange information as well as perform its required functions while sharing the same hardware or software environment.

Maintainability which is how well an application can be modified to improve, correct, or adapt to changes in the environment as well as requirements.

Portability or the set of attributes that bear on the ability how well a system, product, or component can be transferred from one environment to another.

Conceptual Model of the Study

The Input-Process-Outcome model is used in the conceptual model to show how a system will be created. It is a useful graph that aids in determining the necessary inputs, the output, and the procedure to be followed in order to convert inputs to output (Schembri, 2012).

The specs required to build the suggested application are shown in the input section. It consists of the software, hardware, and knowledge. In the process block, the methodology for software development is described.

It describes the steps that the software development team needs to take to create the application. The goal of the study is also shown in the output block. The suggested application's design and development are the main objectives of this study.

INPUT	PROCESS	OUTPUT

Knowledge Requirements
- Identify the features of the application.
- Web concepts such as the Internet and the application platform Programming Language: Dart.
- Framework: Flutter.
- Other technologies: Gitlab, Map Apl, Facebook Apl, Firebase, and Android Studio.

Software Requirements
- Android Studio
- Gitlab
- Flutter
- Google Map Apl
- Facebook Apl
- Firebase
  Hardware Requirements

Memory: 2gb RAM
5gb Available space on the Rom
Internet Connection speed: 4mbps
Android Version: 8 to 10

Agile Methodology
Research Gathering+
Requirement Analysis
Development (Sprints)
Deployment
Monitor and Maintenance

Deployment (Sprints)
Sprint Planning
Design
Development
Test and Deploy
Feedback and Review

**Pasabay App
Easy Pick-up**

Evaluation Stage

Figure 18. Conceptual framework of Pasabay App Easy Pick-up

The input section displays the specifications needed to create the suggested application. It includes the knowledge, software and hardware. The approach for software development is covered in the process block. It outlines the procedures or stages that the software development team must follow in order to create the application. The output block also displays the study's ultimate objective. The goal of this study is to design and develop the suggested application. To understand how the model was utilized by the authors, explanations regarding certain topics of the model are provided in the following;

1. Inputs

The ideas, beliefs, and resources needed to create the application are displayed in the inputs box. It is divided into three categories: hardware, software, and knowledge requirements.

Knowledge Requirements

The development team's knowledge requirements are the facts and abilities they need to be familiar with in order to create the suggested application. The majority of the knowledge that the team needs to have in order to construct the application is web-related. The Internet and the web platform are two important web concepts that have a significant impact on the development process. Additionally, proficiency with the application of such web technologies Additionally, the application's functions and database data manipulation are built using the necessary knowledge. Programming languages, frameworks, libraries, and other open-source technologies fall under this category.

Dart is the language utilized in the creation of the application. Flutter will be used to build the application's front end, which is the user interface or what the user sees. The backend of

the application will be developed using the Dart and Firebase while in the front-end the development team uses a flutter framework.

Software requirements

The software requirements are the non-tangible components that are needed in the development of the application. These are the software, tools and/or application that a phone must have for the application develop and maintained by the development. The software that a phone that is used for the development must have been an Android Studio, Gitlab, Flutter, Google Map ApI, Facebook ApI, and Firebase. The authors do not recommend using old version of android. As for the code editor, the recommended using android studio.

Hardware requirements

These are the tangible components that are needed to developed and operate an application. This includes the memory and Internet Connection speed with speed of 4mbps, and Android Version: 8 to 10. Regarding to the RAM of the phone, despite having a minimum requirement of 2gb, or more, the authors recommended to using 4gb RAM or more.

2. Process

The approach that the development team will employ to create the application is displayed in the process block. There are various approaches, including Waterfall and Agile. The study's conclusion was to use Agile Methodology, an approach for creating application using sprints. The choice was chosen since the application's development phase and documentation were being implemented simultaneously. For applications where adaptability is a major

consideration, the Agile technique is appropriate. As a result, the Waterfall technique, which attempts to concentrate on one phase at a time and deliver the full application modules at the conclusion of the software development life cycle, is not used.

In the Scheerens model (1990), the process mechanisms can be divided into two levels, Agile Methodology and Deployment (Sprints). Variables included on the Agile Methodology include the following (see also Scheerens et al., 2003):

❖ *Research Gathering* such as gathering data and information of user of the Pasabay App Easy Pick-up.

❖ *Requirement* Users are analyzed to determine specific feature expectations, clarify any misunderstandings or conflicts in requirements as required by various users or groups of users, avoid feature creep, and record each step of the project development process from start to finish.

❖ *Development (Sprints)* it is the process of discovering stake holder needs and requirements for a application or software application such as Flutter, Facebook Apl, Gitlab, Map Apl, and Android Studio.

❖ *Deployment* used to determine the flow of the project what is the status of the project.

❖ *Monitor and Maintenance* used to sure that the project is functioning well it is required that the software application check or have a maintenance after 3 months.

Variables on a Deployment (Sprints) include:

❖ *Sprint Planning* in the scrum process, sprint planning marks the beginning of the sprint. Sprint planning's goal is to specify what can be completed in a sprint and how it will be done. The entire scrum team collaborates on sprint planning.

❖ *Design* the framework of the research methodologies and procedures a researcher selects to carry out a study is known as the research design. The layout enables researchers to focus on developing research techniques appropriate for the topic and set up their investigations for success.

❖ *Development* a Develop, Test, Build, deploy cycle, which is an organized evolution of work processes from developing code to testing that code to building a release version of that code to be ultimately deployed in a production environment, is often used while developing software

❖ *Test and deploy* used to check what are the bugs of the project before the deploy happened.

❖ *Feedback and Review* used to determine what need to improve in the project the project must be a user friendly for the users to easily handle the application.

3. Output

The Input-Process-Output model's output block comes last. An Easy Pick-Up Pasabay App is the study's suggested application.

Chapter 3

RESEARCH METHODOLOGY

This chapter describes the project design, development, operation, testing, and evaluation procedures. It begins with brainstorming, research, and data collection through interviews. The system architecture, use case diagram, context diagram, and data flow diagram were created as tools to help visualize and design the system.

Project Design

The proponents conducted the research using a qualitative method that focuses on the end-users' experiences during their commute. This aids in understanding how the current transportation and travel system works, what problems arise in this system, and which solution is best suited for the study. There are a variety of factors, such as documents and interviews compiled from the study's target groups, from which the author gathered information to determine transportation issues. Gathering information from the people involved was an instrument that aided in understanding the problem. This data collection method is critical in ensuring the research's validity and credibility in order to create dependable and trustworthy resources. The proponents chose a group of commuters who were involved in a current issue. Participants in the study included commuters such as students and workers. Following our request for permission to conduct interviews, the respondents agreed to take part in the study. The proponents then analyzed the information gleaned from the interview. Finally, the proponents

presented the data in narrative and graphic form issue. The narrative or documentation is the author's tool for presenting data to aid in identifying problems encountered in the study. Figures such as use case diagrams and context diagrams were created to provide a visual representation of the system and an overview of the study's backbone.

These are the diagrams that were created using the data that was obtained to assist others visualize and understand the facts about the system.

Integration of different ride-hailing application

The Pasabay App Easy Pick-Up was designed and developed by the proponents to integrate different ride-hailing application such as Facebook, Grab, Angkas, Google API and Joyride. The application is free that can be used to ride their acquaintances such as friends, families, or relatives. The passenger can choose available drivers' near from their location with same destination. The passengers can see also how many available seat the vehicle have. In additional the process starts with the client. After logging in, the passenger is directed to "Homepage". The passenger has entered the information needed in the booking process. While the driver is the one who accept or decline the booking request of the passenger.
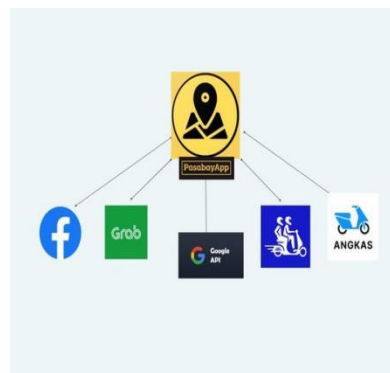
Figure 19. Integration of different ride-hailing application

System Architecture

The system architecture diagram is a conceptual model that shows how the system is put together (Whitsett, 2019). Visualizing the ideas underlying the system's creation is beneficial.
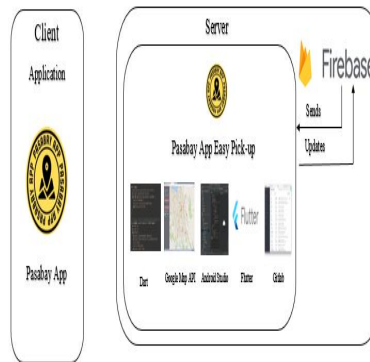
Figure 20. System Architecture
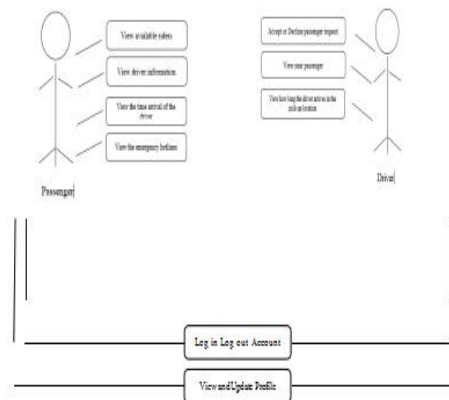
Use Case Diagram

Figure 21. Use Case Diagram

A graphic or visual representation of how end users and the system interact is called a use case diagram (Rouse & Gibilisco, 2015). It displays the various system user roles. Additionally, it shows the system's components and functionalities that users can access. The driver and the

passenger are the two users of the system shown in the use case diagram. Each user has the ability to change their profile and log in and out of the system.

The Passenger access focuses on the viewing of available drivers to book a trip. The passenger allows to view the rider information for their safety. Also, if emergency happened there is an emergency hotline wherein, they can use it to call a help in the policemen and in their relatives.

The Driver access focuses on the viewing of near passenger that will request to ride with. The driver allows to accept or decline the passenger request. Also, the driver sees the near passenger in their location.

Context Diagram

   The context diagram provides a system overview. It demonstrates the system's limits and/or scope as well as how it interacts with both internal and external elements (Computer Science Department, University of Cape Town, 2011). Additionally, the system's inputs and outputs as well as the data flow between the system and its users are displayed. The Angkas App Easy Pick-Up has two users. Before using the application's features, each user must input their account information, which consists of a username and password.
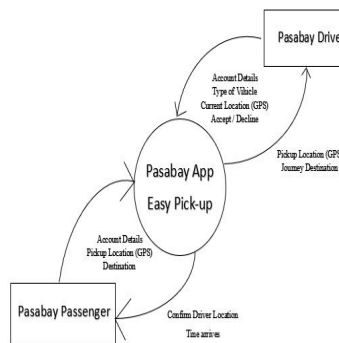
Figure 22. Context Diagram

Data Flow Diagram

The data flow diagram is an explosion of the context diagram. It Provides graphical information regarding the glow of data, where it is stored and retrieved, and the processes within the system (Visual Paradigm, n.d.).
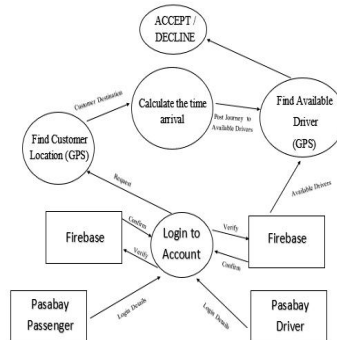
Figure 23. Data Flow Diagram

Project Development

In developing the mobile application, the developer used Google Map API, Google Place API, Google Geolocation API, Google Geocoding API, Google Direction API, and Facebook API. For front-end development that used was Flutter, while Dart was used for the back-end development. For the database, Firebase was used. Open-source technologies were also used such as Figma, Git, and GitLab. The developer used Android Studio as the IDE Code Editor and Postman to test the APIs call.

Test Case

Functional test utilizes test cases that describes the best scenario which will be conducted. The effectiveness of the application function will be based on the test case results. It provides inputs, execution and expected outcomes in a certain objective. Table shows the test case form used in the functional testing.

Test Case Tittle
User Scenario
Assumptions/Preconditions:
Action   Expected Result
1
2
3

Table 1. *Test Case*

The test case form includes the following information:

1. Test Case Tittle, which refers to the matter/issue that identifies the User Scenario in a summarize format

2. User Scenario, describes a basic story of an action or goal that a user wants to accomplish.

3. Assumptions/Preconditions, which states the predicted criteria to be met before the testing can be conducted

4. Action, which are the step-by-step procedures conducted by the researcher

5. Expected Result, shows what is the expected output on a test conducted.

Module Testing Characteristics

The characteristics and actions taken by the researchers were transformed during the testing process. The researchers developed the following processes to test the program.

Evaluation Procedure

The respondes profiles and the methods used to assess the application are covered in this section. A survey was conducted to evaluate the effectiveness of the application. Survey method was used to choose the respondents. The evaluation process was completed in the following way:

1. A survey was used to assess the effectiveness of the application. Thirty (30) individuals' drivers, students and professional alike received the evaluation tools.

2. The researchers outlined the system's goals and illustrated how it functions.

3. The evaluators were asked to appraise the system using the survey questionnaire by the researchers. The questionnaire was sorted into each category and distributed using Google forms.

4. The survey responses were collected, compiled, and the weighted means for each of the criteria as well as the total weighted mean for all the criteria were calculated.

5. The chart that was used to explain the findings for the equivalent descriptive rating.

Together with survey questionnaires, the researchers also used other data collection methods. tools for gathering information that helped the study achieve its goals. Data collection refers to the methodical collection and measurement of information on factors of interest in the obtained responses to research questions, testing hypotheses, and assessing findings in a study. To collect data, a 5-point Likert scale that is psychometric in nature was utilized to gauge respondents' levels of agreement with various arguments. The researchers' questionnaire was used to gather information on how each criterion affected the study's ultimate results.

Evaluation Result

Scale	Range	Interpretation
5	4.51 -5.00	Excellent
4	3.51 -4.50	Very Good
3	2.51 -3.50	Good
2	1.51 -2.50	Fair
1	1.00 -1.50	Poor

Table 2. *Evaluation Result*

The study used 50 respondents, both drivers and passengers, who were chosen through the purposive sample method. They performed the role of the application's evaluator-respondents.

The range from 4.51 to 5.00 implies that the application is "Excellent," from 3.51 to 4.50 that it is "Very good," from 2.51 to 3.50 that it is "Good," from 1.51 to 2.50 that it is "Fair," and from 1.00 to 1.50 that it is "Poor," according to the respondents.

Statistical Treatment of Data

The gathered data were tabulated and calculated using statistical computation. The mean and the standard deviation were computed. These are the formulas that were used for compute of the result.

$$\overline{X} = \frac{\Sigma x}{N}$$

Where $\overline{X}$ - weighted mean

Σ means - "summation of"

X - Score proper weight

N - total number of respondents

Chapter 4

RESULTS AND DISCUSSION

This chapter presents the project description and structure, capabilities and limitations, project test results, and the final evaluation outcome of the study.

Project Description

The Pasabay App Easy Pick-up is an application specifically designed to help commuters book their travels on a very short notice similar to other ride-hailing apps but the difference is that, it can share a ride with a person they know and it uses some new technologies such as Geolocator API. Its main objective is to develop an application that has an integration of various technologies that will be use by the Users real-time.

It was an application that offered a platform to Commuters and Drivers. The Pasabay App Easy Pick-up is basically comprised of software components to develop its features and integrate various technologies into one application.

The key features of the application are the Near Driver Location module that allows the commuter to see which car and which driver is closest to its location. Additionally, the Send Trip Request to the driver that allows to share a ride through the use of Facebook API. These features of the application are some differences from other ride-hailing apps.

The application runs on smartphone devices. It can only be used if the smartphones have internet connections. The software used for planning to production was Gitlab. For Android app development built and also used to design, build, run and test software's was Android Studio IDE. Firebase was used to help build the application and serves as its database. Figma, for interface design of the application. To integrate various technologies (i.e., Geolocator API, Facebook API, Google Map API, Etc.) the flutter was utilized.

Project Structure

The development application is basically comprised of software components, program that run the application using smart phones for searching available drivers, chatting, and also booking. The software used to run the application are the following; Android Studio IDE for Android app development built and also developers used it to design, build, run, and test software, in this case, apps for the Android platform. The Gitlab used from planning to production, GitLab brings teams together to shorten cycle times, reduce costs, strengthen security, and increase developer productivity. The Firebase is an app development platform that helps build apps. And also the Figma, Figma is for collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows.

Figure 24. Registration Form

Shows the component of the system is a program or software that users require to make a register account when the user does not have account to the system application.
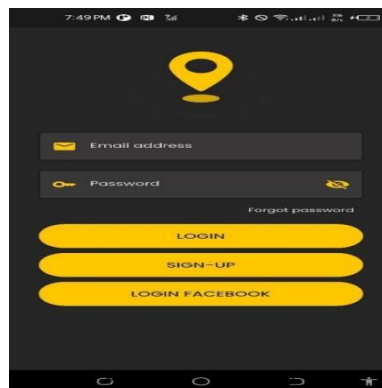
Figure 25. Log-in form

Pasabay App is another multidimensional trip planning app, available for Android only. The app allows users to set their relative priorities among saving money, saving time, the environment, and convenience. Using the search bar, map, and user input, the app provides route

suggestions and the availability of near-east and accessible Pasabay Riders. The users must enter their registered email address and password and press Log in. For those who are not registered yet, they could press Sign Up, which requires minimal information.
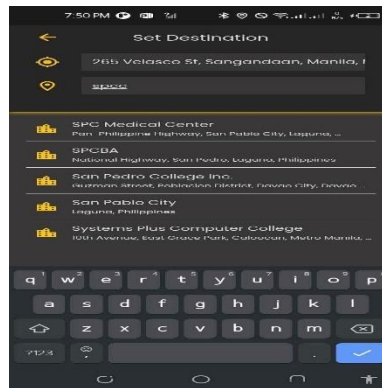
Figure 26. Searching for available driver module.

This depicts the actual look of the *Pasabay App,* where your current location and destination are necessary. It is like point A and a point B. This could be the main basis of the application to arrange and pass the information to the moderators to find the nearest *Pasabay Riders.*
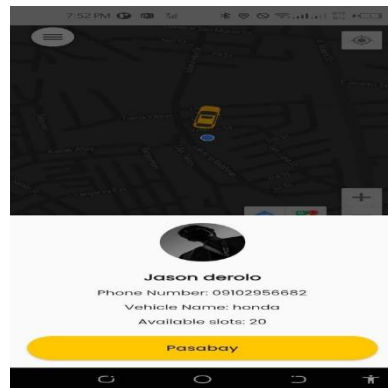
Figure 27. Driver's Information

It also has a driver's riprofile that you would see before you book a ride. the name,

phone number, and the type of vehicle of the driver will show here and also the available

slots on the vehicle.
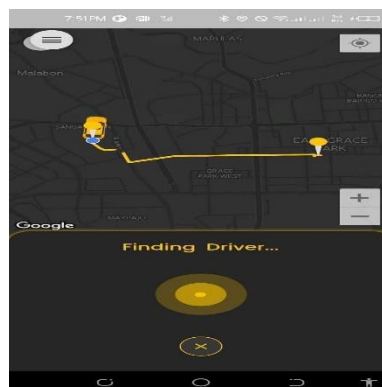
Figure 28. Waiting for the available driver's

This image depicts the information of showing where the driver is, which could give you

enough time to do some extra work or take a rest. There are also buttons to cancel and zoom in

and out of the map. If the drivers encounter a problem, or even the passenger, you can cancel the

booking, but before doing that, you must inform each other to give reasons and explain the situations.
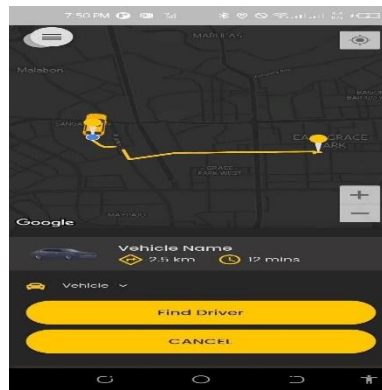
Figure 29. Nearest Driver's

Once you've already provided the details of your destination, you can now click the nearest hotel. From there, you can see who is the nearest and just wait for a few minutes for them to accept your booking. This could be applicable for friends in the *Pasabay App.* This application just makes carpooling more convenient. With a map and the exact location of each and every one of the users, this could help to easily monitor each and every one. Instead of chatting, you can do some housework because you just need to monitor the map, and this could be very helpful.
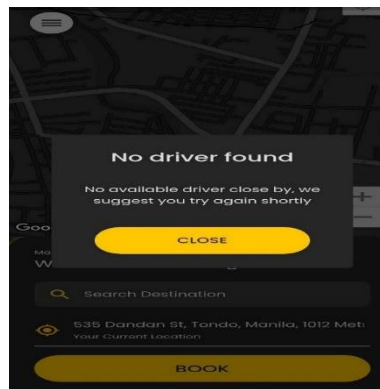
Figure 30. No Driver Notification

Shows the system that when the user tries to find an available driver, the notification "no driver found" will appear when there is no nearby driver in the user's location area.
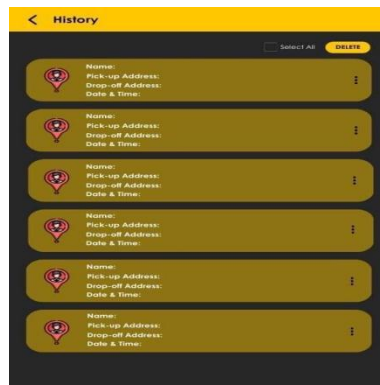
Figure 31. History

Upon entering the history, it displayed the previous activities that includes the information of the user such as Name, pick up address, Drop off address, Date and time. The select all button allows the user to select all the items within the history. The delete button allows the users to remove the previous activities.

.
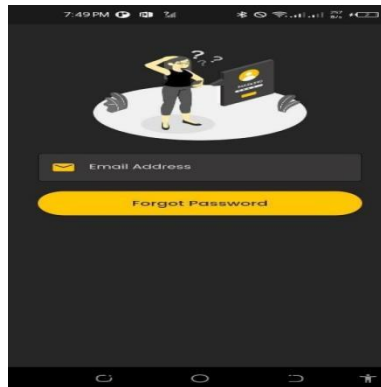
*Figure 32. F*orget Password using OTP

In Figure 2, the users must enter their registered email address for security purposes. The verification message will be sent to the registered email address to verify that the person who is using the app is not deceitful. To avoid scammers and secure the important details of users and riders. Once the verification was sent to the user's email, The user can proceed to email the application and click the verification button.
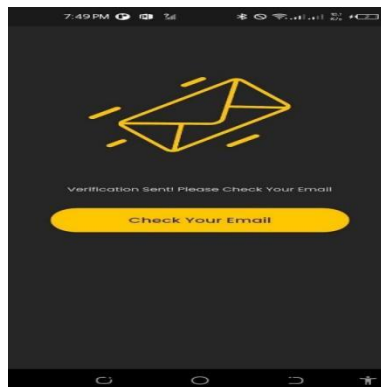
Figure 33. Checking verification code

Once the verification was sent to a registered email, the pasabay app will identify first if the email entered in the application was a registered or not before sending a verification to user's

email address. There are instances of making a type error of incidence in which hard to avoid. After checking to the email address, you can now use the *Pasabay App.*
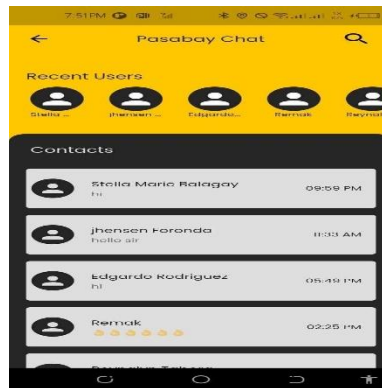
Figure 34. Chat Bot

The Figure 31, shows the contact list of the users, in this stage the Pasabay App can save the contact list and recent users of *Pasabay App*, and can chat anytime there is also a search bar to find a contact person in a list easily.
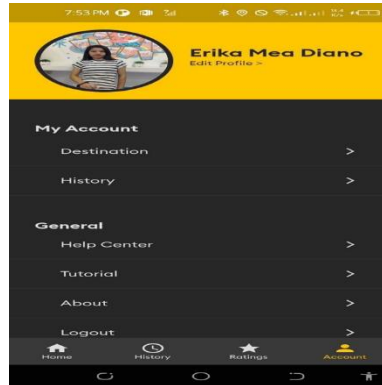
Figure 35. User's Profile

Have a user account so, before you book a ride, you need to create a user profile to be able to use the app, and it will allow only the relatives, friends or acquaintances of the driver because it has connected on Facebook account of the driver.

Project Evaluation

According to the evaluation's findings, Portability received the highest weighted mean (4.53), interpreted as "Excellent," indicating that the application provided users information on the topics it covered. The respondents included drivers, students, and professionals.

This demonstrates how portable the application was. Moreover, this implies that users encounter no difficulties. This suggests that the application was straightforward to use and to gain access. With a weighted mean value of 4.08 and a rating of "Very Good," the application received the lowest possible score for the criterion Functionality indicated by its capacity.

Test Result

The tests and operation produced the findings as stated. The technique had been carried out by the researchers. The findings demonstrate that the application is suitable to function, performance efficient, compatible, useable, secured, and maintainable for the user when using the application, and selecting a available vehicle using ISO 25010 and TUP Assessment Sheet for application created.

Test Result

Respondents Weighted Mean Ratings of the Project

Criteria	Weighted Mean	Adjusting Rating
A. Functionality		
a. Perform specific function	4.00	Very Good
b. Searching feature work properly.	4.13	Very Good
c. Searching for available driver works properly	4.17	Very Good
d. Emergency button works properly.	4.63	Excellent
Sub mean	**4.08**	**Very Good**

B. Suitability

a. Produced appropriate functions for users need.	4.03	Very Good
b. Searching is appropriate for users need	3.87	Very Good
c. Emergency button is appropriate for users need	3.97	Very Good
Sub mean	**3.96**	**Very Good**

C. Suitability

a. Application is easy to understand	4.56	Excellent
b. Visual appealing	3.87	Very Good
c. Buttons are in order	3.97	Very Good
Sub mean	4.66	Excellent

D. Reliability

a. Provides accurate information.	3.93	Very Good

b. Provides correct location.	4.23	Very Good
c. Provides accurate chat information.	4.47	Very Good
Sub mean	4.21	Very Good
E. Portability		
a. Portable application	4.53	Excellent
Sub mean	4.53	Excellent
Weighted Mean	**4.33**	**Very Good**

Table 3. *Test Result*

Chapter 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATION

This chapter presents the summary of findings, conclusions and recommendations based from the results of the evaluation, comments and suggestions.

Summary of Findings

The proponents developed the "Pasabay App Easy Pick-up" which efficiently booked a car for commuters that can be accessed near to their location, while also providing benefits to both commuters and drivers. The application is also consisting of various technologies which is the main purpose of the application. The Pasabay App Easy Pick-up was created using Android Studio IDE. Other software application was used such as Gitlab, Firebase, Figma, Geolocator API, Facebook API, Google Map API, and Flutter.

The user app enabled commuters to log into the application using their validated email and password credentials. But the it has third party app which they can connect their Facebook account in accessing the application. In entering the application that was connected with the driver application, commuters viewed their profile information, can book a car, view map and track the driver through the use of geolocation map, edited their profile settings, chat app, viewed history trip and about us page, emergency button with emergency alert message that was sent to the emergency contact person of the commuters.

The driver's app required its own validated credentials to access it, but it has also third-party app which they can connect their Facebook account in logging into the app. The map allowed the drivers to see the routes that can be taken to get to the destination that the commuters want to go to. They can also view their profile information, edited their profile settings, chat app, viewed history trip and about us page. Drivers can also accept or rejected request trip from commuters. They can also use the geolocation map to track the commuters who booked to them.

The proponents were able to validate, test, and analyze their findings by gathering responses from 30 respondents. Respondents were picked using a purposive sampling technique in accordance with TUP 25010, and they included Passengers, Drivers, Students, and Professionals. The evaluators considered the application's functional adequacy, performance efficiency, compatibility, workability, durability, and satiability while deciding its acceptability. With a weighted average score of 4.33 overall, the application was rated as "Very Good".

Conclusions

With regards to the objectives of the study as well as the outcome of the testing and evaluation made, the following conclusion were derived.

1. The " Pasabay App Easy Pick-up " was successfully designed such that:

    a. An Android Studio IDE for Android app development built and also developers used it   to design, build, run, and test software, in this case, apps for the Android platform.

b. Gitlab that used from planning to production, GitLab brings teams together to shorten cycle times, reduce costs, strengthen security, and increase developer productivity.

c. A Firebase app development platform that helps build apps.

d. A Figma collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows.

2. The Application was used Geolocator API for GPS Tracker will assist in improving the accuracy of the suggested application's users' position. Proponents have also included a chat system in case the driving app's connectivity fails, allowing them to interact with both the driver and the passenger.

3. The proposed system is an app-based service provider that provides ride-hailing, and ride-sharing services through its app. System software is tested and improved based on its functionality, usability, and efficiency performance test results showed that it is excellent and can perform a safety service for all roadways.

3. In terms of its functionality, durability, and satiability, the proposed system performance was deemed "Very Good" for earning an overall mean rating of 4.33.

Recommendations

      The following are some recommendations for future enhancement and improvement of the system:

1. Refinements and enhancements on the system's design are recommended

2. Further research should be done so that the developed application system may be easily using the Pasabay app Easy pick up.

3. Availability of Application in IOS operating system.

4. Give the user the option to call the driver or a passenger.

5. Increasing the tracking driver or passenger area limit.

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Appendix A

GANTT CHART

Activities	August		September				October				November				December				January				February				March				April			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Planning (Requirment Analysis,Design)	▓	▓	▓	▓	▓	▓																												
Build (Design & Development ,Testing & Implementation)							▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓								
Application Deployment																											▓	▓	▓					
Application Maintenance																															▓	▓	▓	▓

Appendix B

SOFTWARE EVALUATION INSTRUMENTS

Instruction: Please evaluate application by using the given scale and placing a checkmark (✓) under the corresponding numerical rating.

Name (Optional): _____ Date: _____

 Age: _____
Gender: _____
Category of respondent/evaluator:
☐ **Student** ☐ **Driver** ☐ **Professional**

Numerical Rating Equivalent	
5	Excellent
4	Very Good
3	Good
2	Fair
1	Poor

INDICATORS	5	4	3	2	1
A.Functionality					
Capability					
1. Each part of application performs its specific function.					
2. Does the searching feature are working properly?					
3. Does booking a available driver work properly?					
4. Does the emergency button is work properly?					
B.Suitability					
Content					
1. The application produces functions that are appropriate and fitted to the user's need?					
2. Does the searching feature is appropriate to the user's need?					
3. Does the emergency button is appropriate to the user's need?					
C. Usability					

Understandability					
1. The capability of the application is easy to understand					
User Interface					
1. The design, illustration, colors are visually appealing.					
2. The buttons are in order.					
D. Reliability					
Accuracy					
1. The Pasabay application provides accurate information.					
2. When you search location it provides accurate information.					
3. When you used chat features it provides accurate chat information.					
E. Portability					
1. Does the application is portable?					

Reco mmendations:

_____
_____
_____
_____

Summary   **Sum**
a. Functionality------------------   _____
b. Suitability ----------------------   _____
c. Usability ---------------------   _____
d. Reliability ----------------------   _____
e. Portability ------------------   _____

_____
Signature

Appendix C

SUMMARY OF EVALUATION RESPONSES

Respondents	Functionality				Suitability			Usability			Reliability			Portability
1	3	4	4	4	5	4	4	4	4	5	5	5	3	5
2	4	4	4	4	4	4	4	3	4	4	4	4	4	4
3	4	4	5	3	4	5	3	3	5	5	4	4	5	4
4	4	5	4	4	3	4	4	4	5	4	4	4	4	4
5	4	4	5	4	4	4	4	4	5	4	4	5	5	5
6	5	4	4	5	4	4	3	5	5	4	5	4	5	5
7	5	5	4	4	5	4	4	3	4	5	3	4	4	4
8	4	4	4	3	4	3	4	3	5	5	4	4	5	5
9	4	4	3	4	3	3	4	4	5	4	5	5	5	5
10	3	4	3	3	4	4	3	5	4	3	5	5	5	5
11	4	4	5	5	3	3	4	4	5	5	4	3	5	5
12	3	3	4	4	5	4	4	3	4	4	5	5	5	5
13	4	5	5	5	3	3	4	4	4	5	4	4	5	5
14	4	5	5	5	3	4	5	4	5	5	4	3	4	5
15	4	5	4	3	5	5	4	4	4	5	4	4	5	5
16	3	4	5	5	4	5	5	3	4	5	5	5	5	4
17	3	4	4	3	4	3	3	5	4	3	4	5	5	4
18	5	4	4	5	4	4	4	4	4	5	5	4	5	5
19	3	3	3	3	4	3	4	5	5	5	3	4	4	5
20	4	3	3	4	4	4	3	3	3	3	5	5	5	5
21	5	5	5	4	4	4	4	5	4	3	4	4	4	3
22	4	3	5	4	3	3	4	3	5	5	4	3	4	3
23	4	4	3	4	5	4	4	4	5	5	5	5	4	5
24	5	4	4	4	5	4	4	4	3	5	5	4	3	4
25	5	3	4	3	3	4	5	5	4	3	4	4	3	4
26	3	5	4	5	4	5	5	3	3	3	3	3	4	4
27	5	5	5	5	5	4	3	4	3	5	3	4	5	5
28	4	5	5	3	3	3	5	5	5	5	5	4	4	5
29	3	4	5	5	5	4	5	4	4	4	4	4	5	4
30	5	4	3	4	5	4	3	3	4	5	5	5	5	5

Appendix D

CORRESPONDENCE

Republic of the Philippines
Systems Plus Computer College
of Information Technology
Caloocan

Date: _____

_____

_____

_____

Dear Respondent:

The undersigned are students of Bachelor of Science of Information Technology Program at the Systems Plus Computer College.

In this regard, we would like to seek your assistance in evaluating our project entitled, "PASABAY: Ride-hailing Application for Android OS."

We are looking forward to your outmost assistance. Thank you very much.

Very Truly Yours,

Jhovince Co
Rica Peñalosa
Angela Aquino
Reynalyn Tabora
Erika Mae Diano
Aubrey Nicole Albay
Daniel Ongayo
Ricky Amante
Remark Alpuerto

Researchers

Appendix E

PROFILE OF RESPONDENTS

Variable	Category	No. of Responses	Percentage
Age	>13 years	1	3.3%
	14-28 years	27	90 %
	43-50 years	2	6.7%
Gender	Female	10	33.3%
	Male	20	66.7%
	Drivers	13	43.3%
	Students	5	16.7%
	Professionals	12	40%

Appendix F

TOTAL BUDGETARY REQUIREMENTS

Item no.	Quantity	Unit	Specification	Unit Price Php	Amount Php
1	1	Unit	AMD Ryzen 3, 16 RAM, 128SSD, 2GB Build in Graphic Card	13,000	13,000
2	1	Unit	Techno Spark 7 Pro, 4GB RAM, 128 Internal Storage	7,000	7,000
3	1		SMS Gateway	200	200
4	1	Unit	Micro USB Cable	80	80
				Total Amount	20,280

Appendix G

TOOLS AND EQUIPMENTS USED

Tools

    Software

        Android Studio for coding
        Post man for calling API request
        Figma used for prototyping
        Git for version control
        Dart for back-end
        Flutter for front-end
        Firebase used for storing a real-time data

Equipment

Quantity	Unit	Description
1	Desktop PC	AMD Ryzen 3, 16 Ram, 128SSD, 2GB Build in Graphic Card
2	Mobile Phone	Techno Spark 7 Pro, 4GB RAM, 128 Internal Storage & Vivo 1807, 4GB RAM, 64GB Internal storage

Appendix H

PICTURES TAKEN DURING TESTING AND EVALUATION

- During Testing and Application Evaluation of Student Respondents

- During Testing and Application Evaluation of driver Respondents
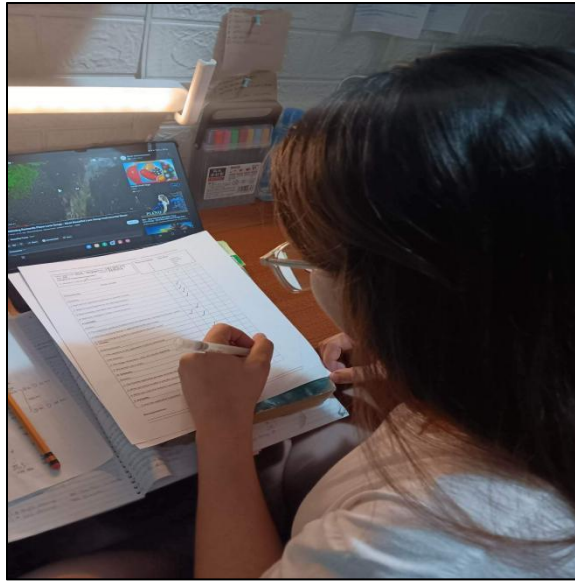
- During Testing and Application Evaluation of Professional Respondents
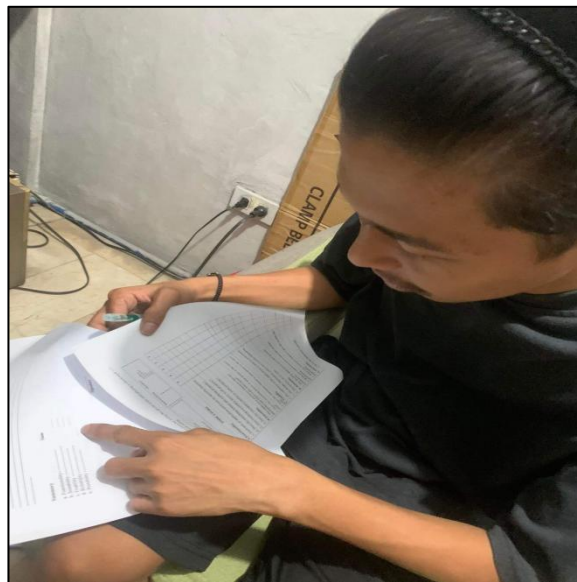
- Additional Testing and Evaluation of Application

Appendix I

User's Manual

Getting Started

1. GETTING STARTED

STARTING PASABAY APP

1. Download and Install the App: Download the ride-hailing app and install it on your android phone.

2. Open the App: Open the ride-hailing app on your smartphone.

3. Enter your validated email address and password.

LOG IN UI
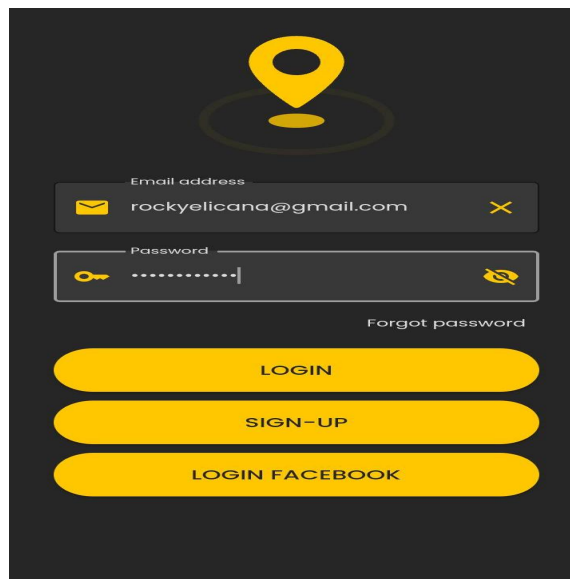
Figure 33. Login UI
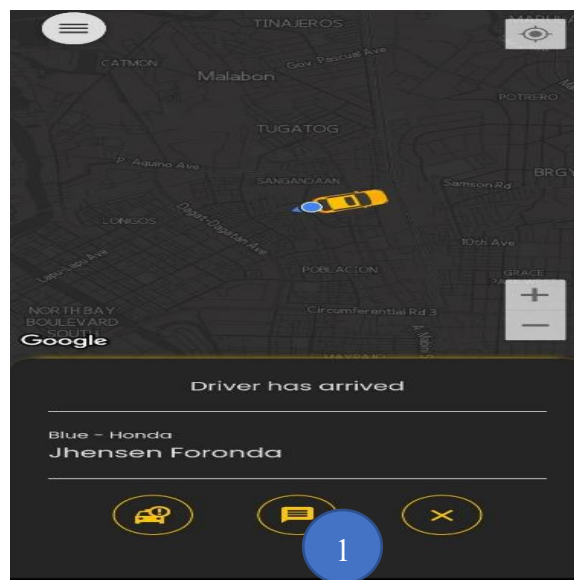
*Note: Before using the app, make sure that your smartphone's **GPS is enabled**. This allows the app in locating your current position and suggesting pickup places depending on your current location.*

LOG IN MODULE

1. Type your login details, such as your **Email address** and **Password.**

2. Click **LOGIN.**
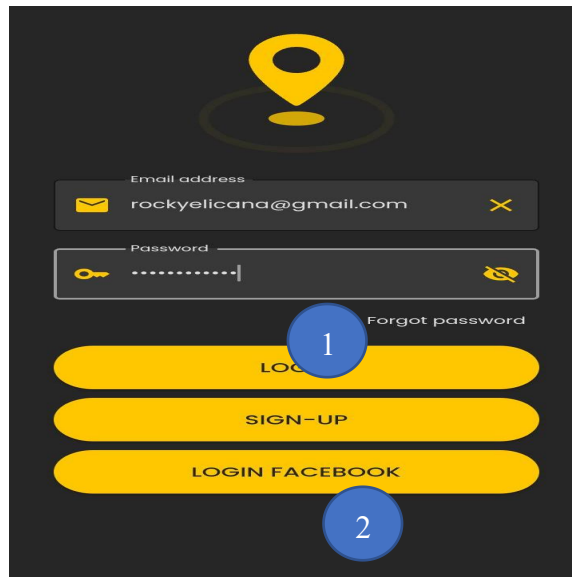
Figure 34. Log In

SIGN UP MODULE

1. To register as a user of the app, click the **SIGN-UP** button.
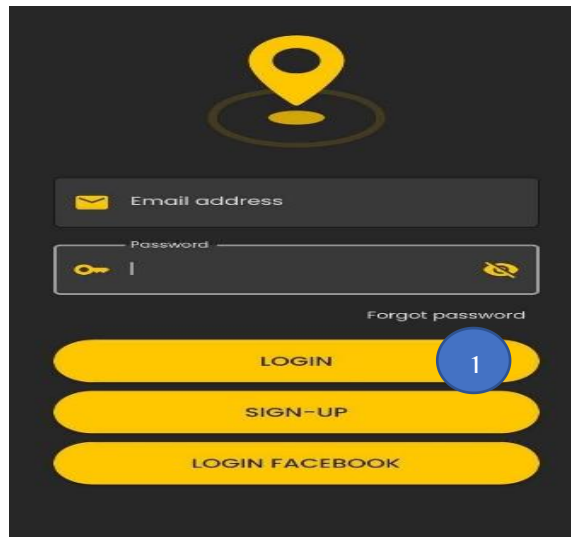
Figure 35. Log In

2. Create an account by entering your personal details

    2.1 Fill up textbox **Full name** ex."Ricky Elicina".

    2.2 Fill up the textbox for **Email** ex."rockyelicina@gmail.com".

    2.3. Fill up the textbox for **Phone number** ex."09102956682".

    2.4. Fill up the **Emergency number** ex."09158327874".

    2.5. Fill up the **password textbox** ex."pasabay12345".

3. After that click the **REGISTER.**

Figure 36. Sign Up

RESET PASSWORD MODULE

1. Tap the **Forgot Password**: If you cannot remember your password, tap on the "**Forgot**

Password" button.
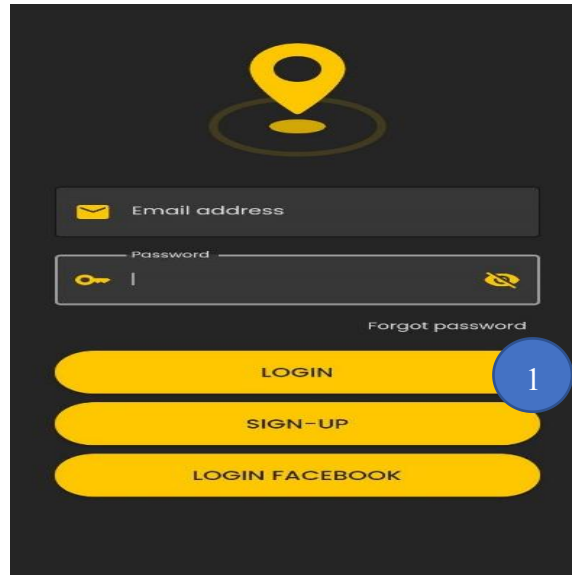
Figure 37. Log In

2. Type the email address associated with your account   ex"rickyelicina@gmail.com"

3. Click **Forgot Password** button
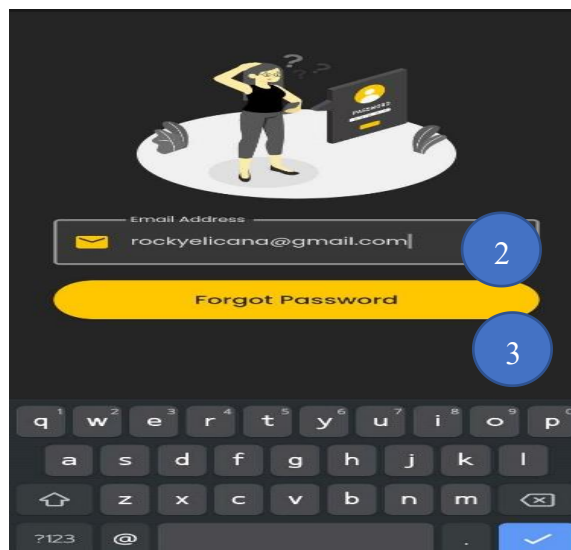
Figure 38. Reset password

4. Verify Your Account: The app may ask you to verify your account by sending a

verification code to your email. Enter the new password on the app to verify your account.

5. Tap **Check Your Email** to send the verification
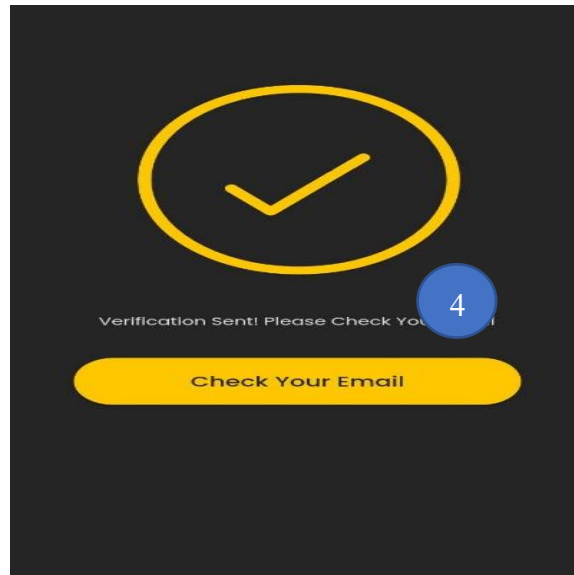
Figure 7. Reset password

6. Once your account is verified, you will be prompted to create a new password. Enter a

new password that is strong and secure.

7. Save Changes: Tap the **SAVE** button to save your new password.
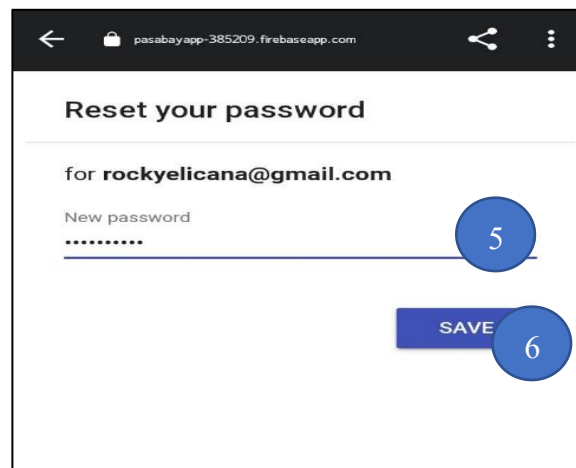
Figure 39. Reset password

8. **Password changed**: Finally, you can sign in with your new password.
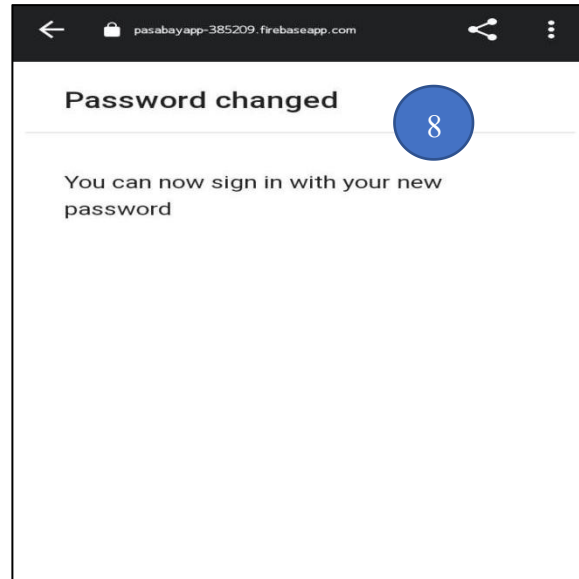
Figure 40. Reset password

LOG IN WITH FACEBOOK MODULE

1. Select the "**LOGIN FACEBOOK**" option.
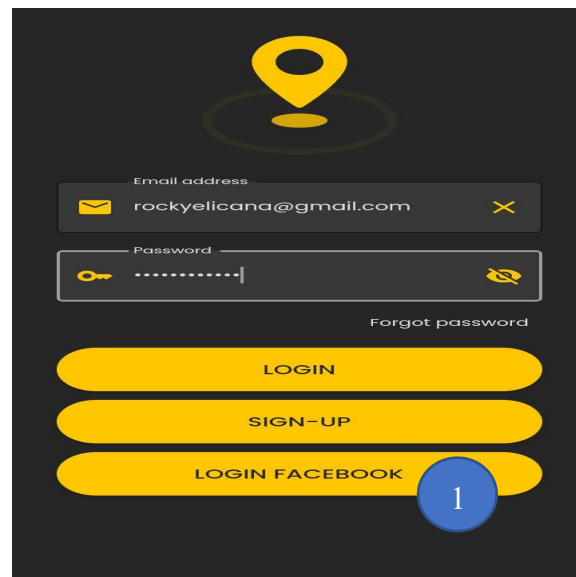
Figure 41. log in Faceebook

1. Tap the **Facebook app** to grant permission for the ride-hailing app to access your Facebook profile information.

\
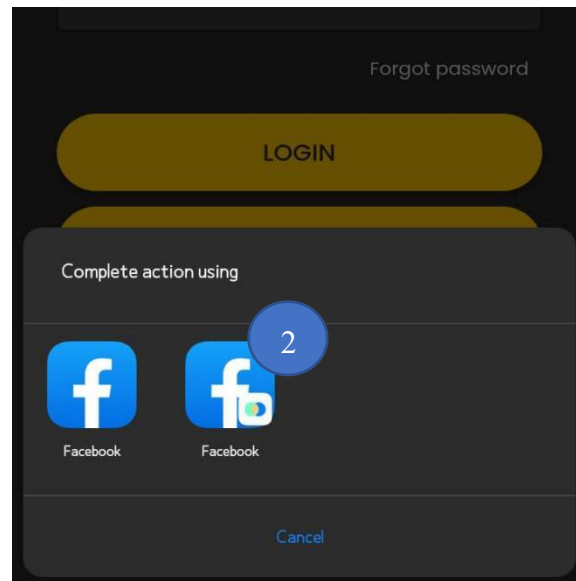
Figure 42. log in Faceebook

2. Just wait and once you've logged in using your Facebook account, you should be able to access all of the ride-hailing app's features as normal.
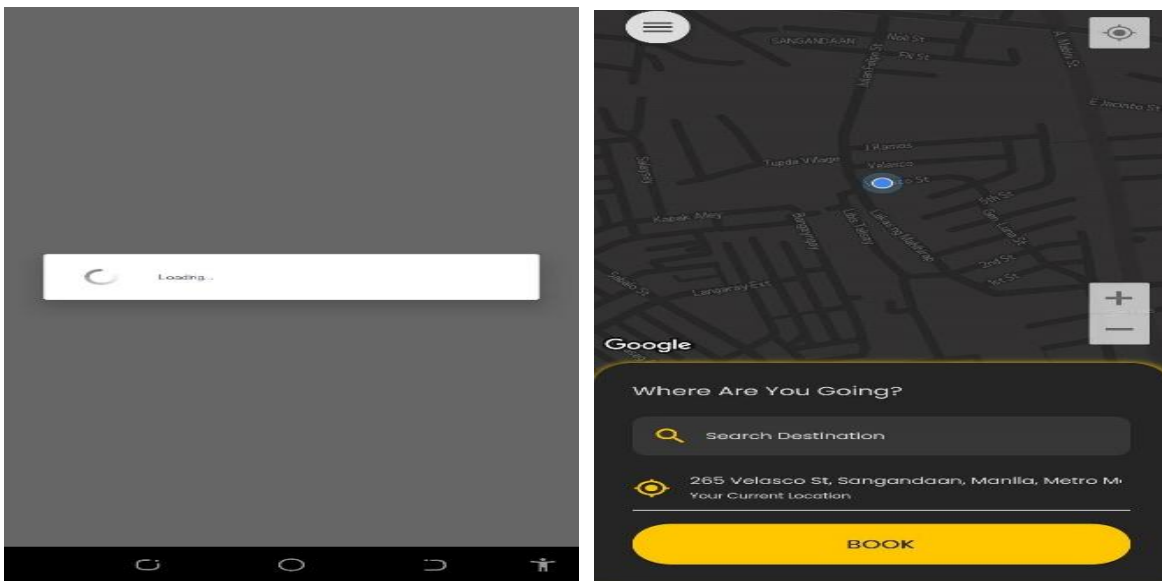
Figure 43. log in Facebook

BOOKING MODULE

1. Enter Your Destination: In the app, below in the "**Where Are You Going**?". Type your destination in the **Search Destination**.
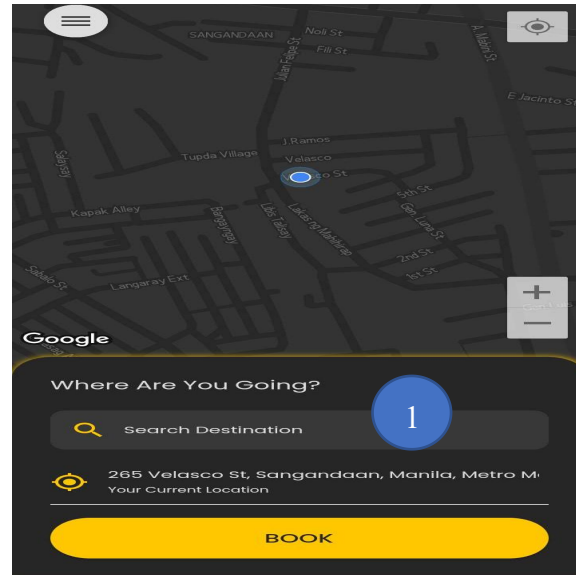
Figure 44. Booking

*Note: Before using the app, make sure that your android phone's **GPS is enabled**.*

This allows the app in locating your current position and suggesting pickup places

depending on your current location

2. Enter your destination ex. "system plus----". The app will automatically detect where you want to go.

3. Confirm Your Pickup Location: The app will automatically detect your location using GPS.
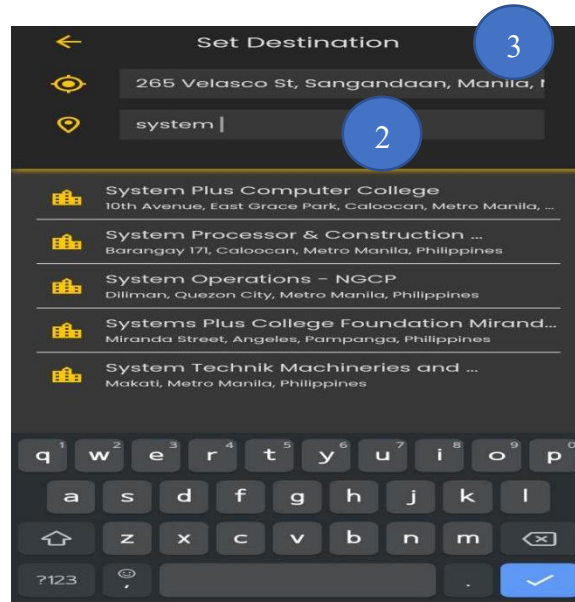
Figure 45. Booking

4. When it's finished, tap **Find Driver** button to find the closest yellow ride in the app.
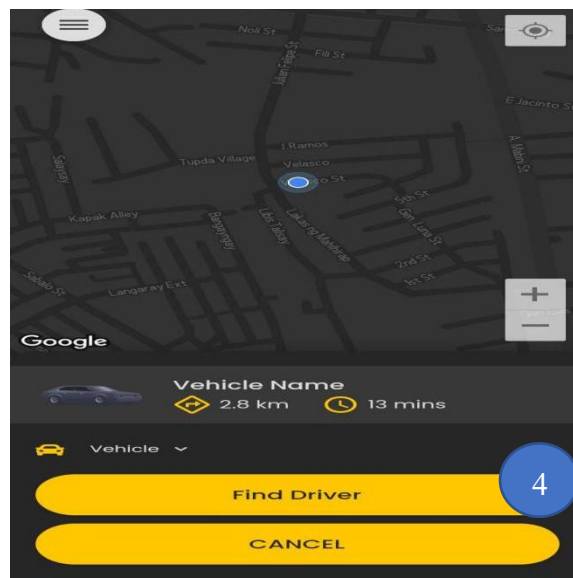
Figure 46. Booking

5.   There is initially a chance that there won't be any rides available. So, you can try again.
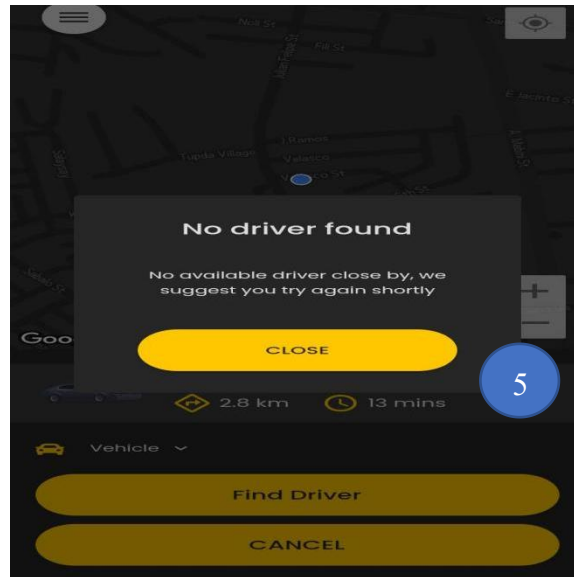
Figure 47. Booking

6. When you've finished looking and there's available, just tap yellow vehicle that are available.

7. Once a yellow cab appears on the app, you can view information about it, including its **profile, name, phone number, vehicle name**, and any open slots.

8. When you select the "**How many Passenger**?" button you will see the number of the passenger
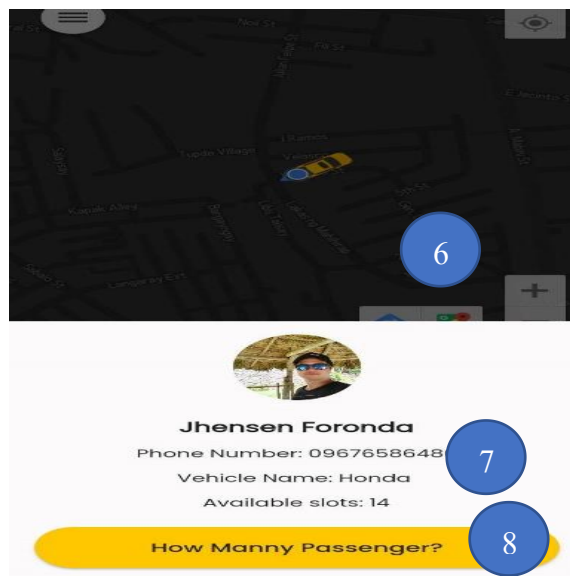
Figure 48. Booking

9. This will demonstrate that there are 4 passengers in the vehicle.
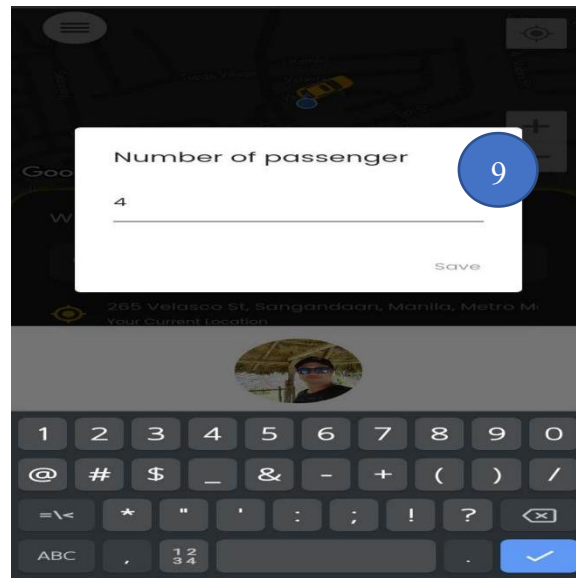
Figure 49. Booking

10. Once you've decided which car you want to ride in, simply tap the **Pasabay** button.
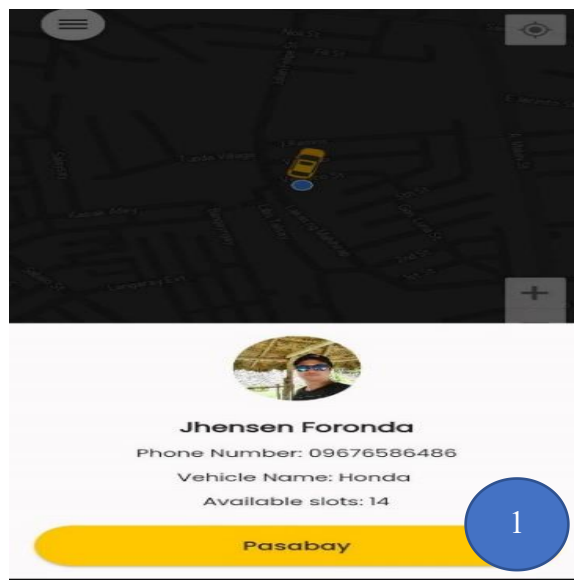
Figure 50. Booking

CANCEL A BOOK MODULE

1. Click the **Book** Button.
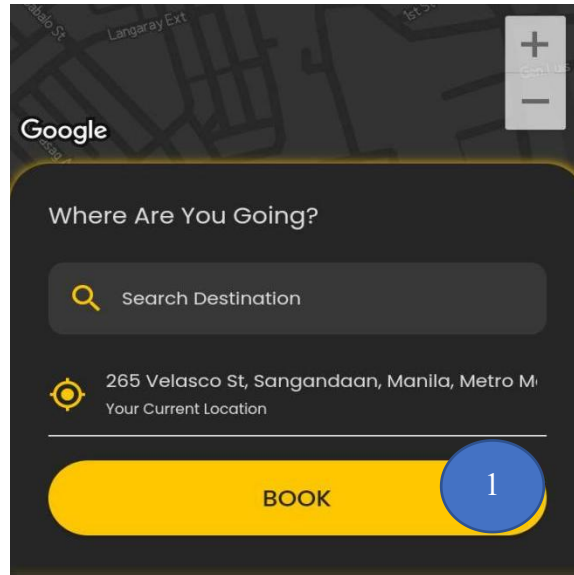
Figure 51. Cancel a Book

1. Look for an icon with an ex-sign in a circle, then hit the **"Cancel"** button and confirm that you wish to cancel your booking.
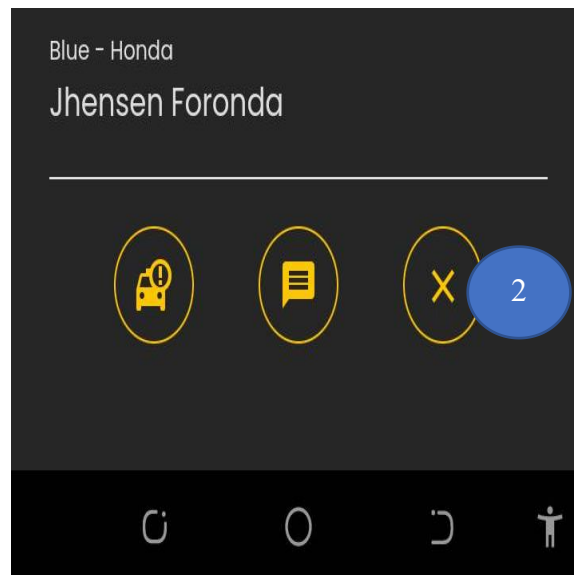
Figure 52. Cancel a Book

CHAT MODULE

1. Once your ride is confirmed and a driver is assigned, you can access the chat feature in the app.

2. Find the driver's name and photo on your ride screen and tap on it to open the chat window.

Figure 53. Chat
*Note: Before using the app, make sure that your android phone's **GPS is enabled**.*

This allows the app in locating your current position and suggesting pickup places

depending on your current location

3. Type your message in the chat window and send it to your driver. You can use the chat feature to communicate with your driver about the pickup location, drop-off location, or any special requests you may have.

4. You can also receive messages from your driver through the chat feature. If your driver needs to contact you, they can send you a message through the app.

5. It's important to remember that the chat feature is intended for communication related to your ride only. Use the chat feature respectfully and avoid any inappropriate or harassing messages.
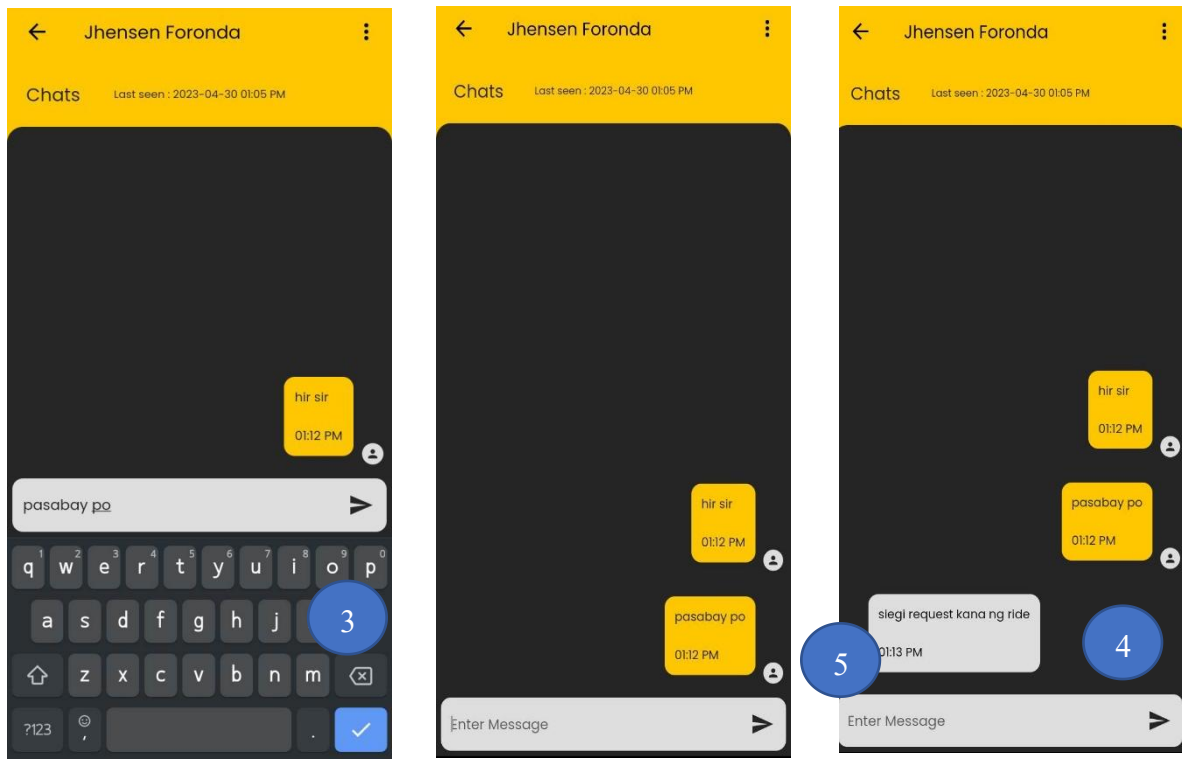
Figure 54. Chat

CHAT WITH FRIENDS MODULE

1. On the left side of the app, tap the **navigation button**.

Figure 55. Chat with Friends

2. Tap the **Friends** button on the following buttons.
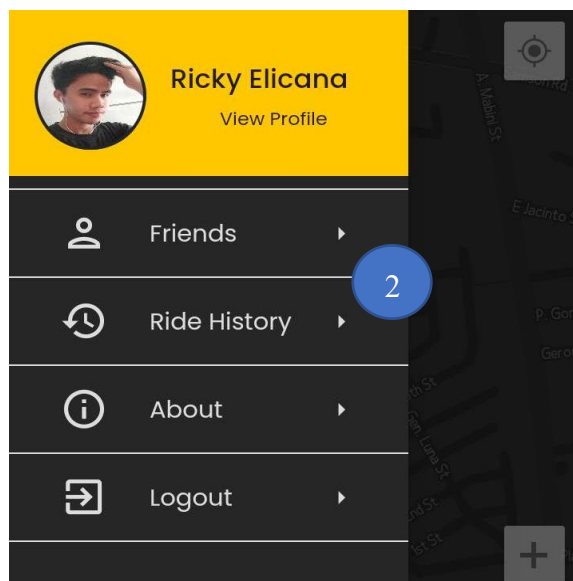
Figure 56. Chat with Friends

3. The contacts and recent contacts will be displayed in the Pasabay conversation.
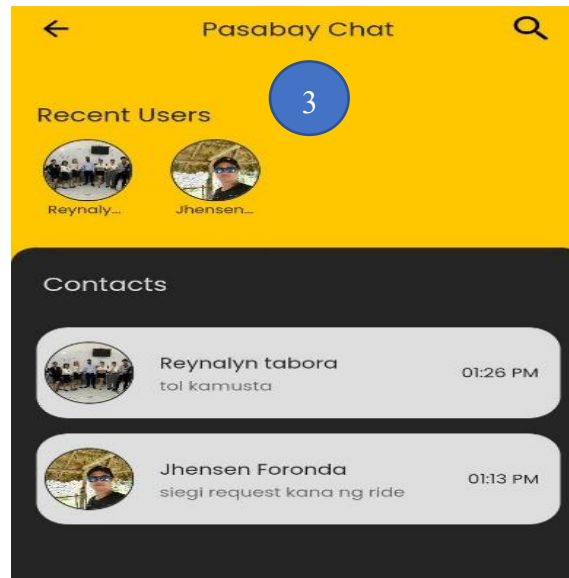
Figure 57. Chat with Friends

4. The app also includes a feature that allows you to search through all of your contacts.
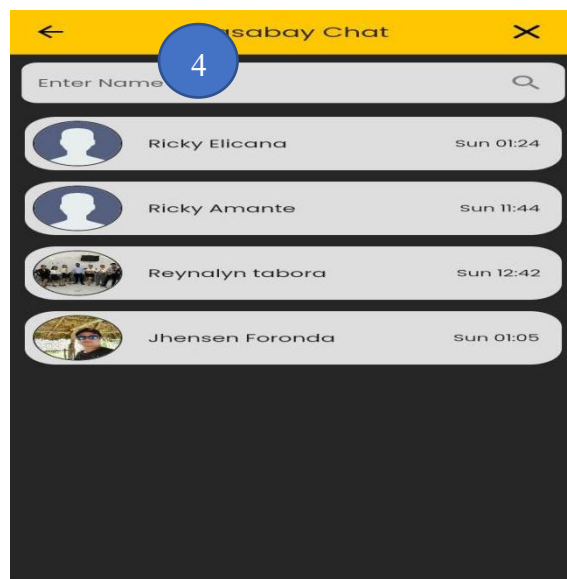
Figure 58. Chat with Friends

HISTORY MODULE

1. On the left side of the app, tap the **navigation button**.
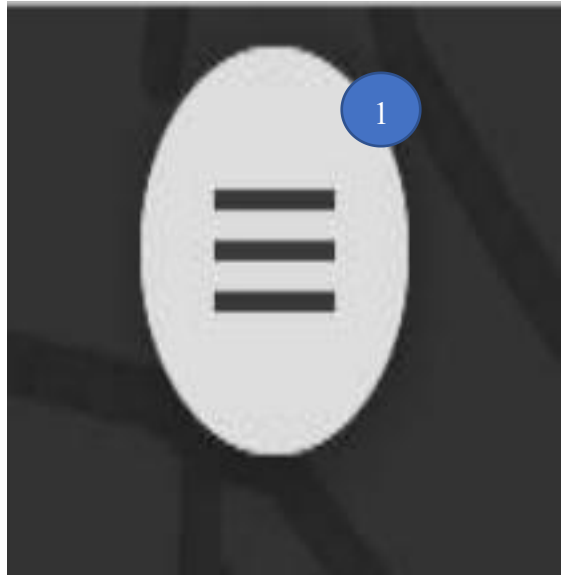
Figure 59. History

2. Tap the **Ride History** button to access your ride list of history.
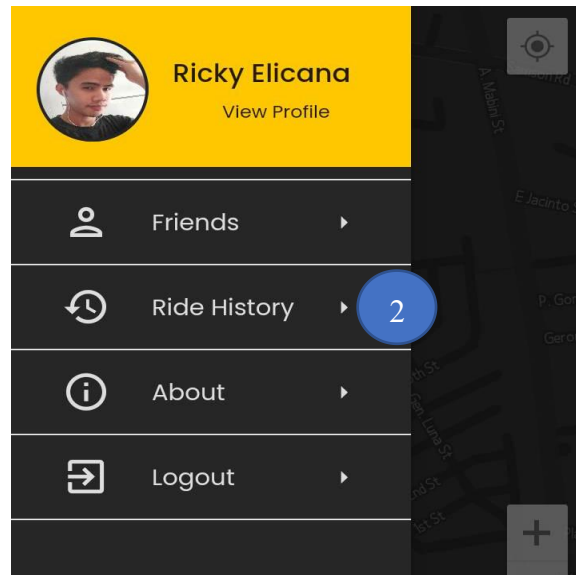
Figure 60, History

3. Once you're in your ride history, you should be able to see all of your past rides with the app, including the **date, time, pickup location, drop-off location**, and **Name of the driver**.
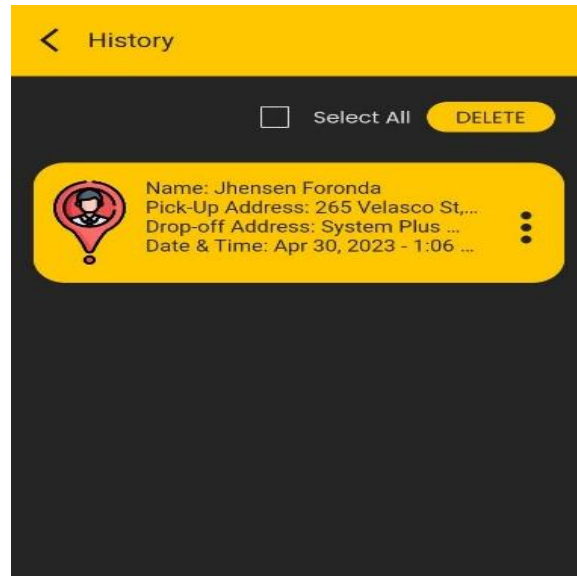
Figure 61. History

ABOUT MODULE

1. On the left side of the app, tap the **navigation button**.
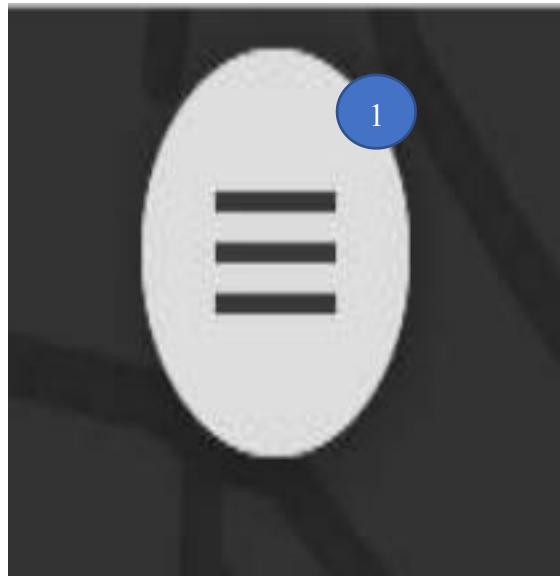
Figure 62. About

2. To learn more about the app, tap the **About button**.
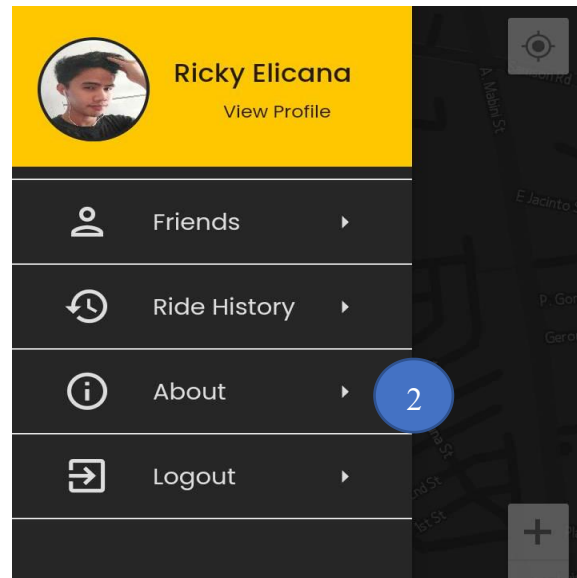
Figure 63. About

3. Once you enter the **about section**, you will see the details and what the Pasabay app is all about, as well as who the team behind it is.

Figure 64. About

LOG OUT MODULE

1. Look for the menu or profile icon on the app's home screen and tap on it.

Figure 65. Log Out

1. Tap on the "**Log Out**" button to log out of your account.
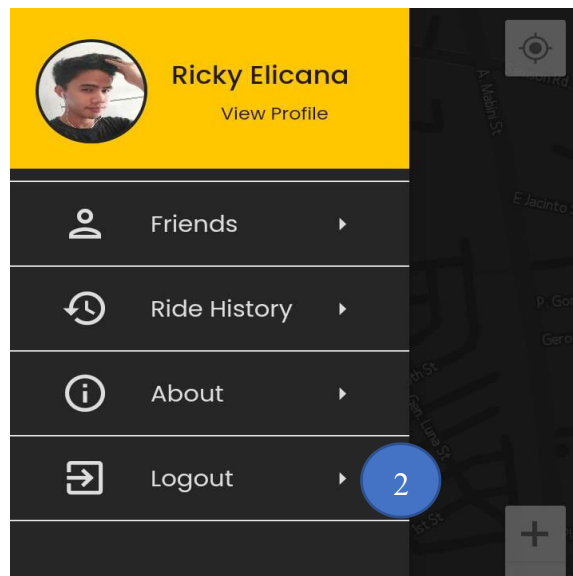
Figure 66. Log Out

2. Then its done!
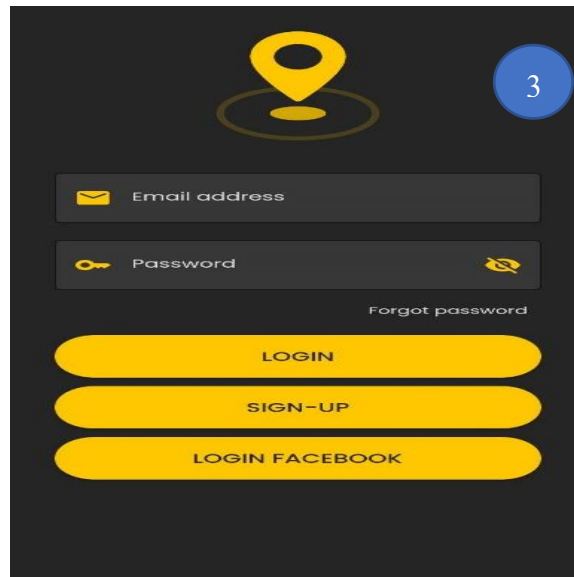
Figure 67. Log Out

EMERGENCY MESSAGE MODULE

1. Tap and look for the icon that looks like ride with warning sign to send an emergency message.
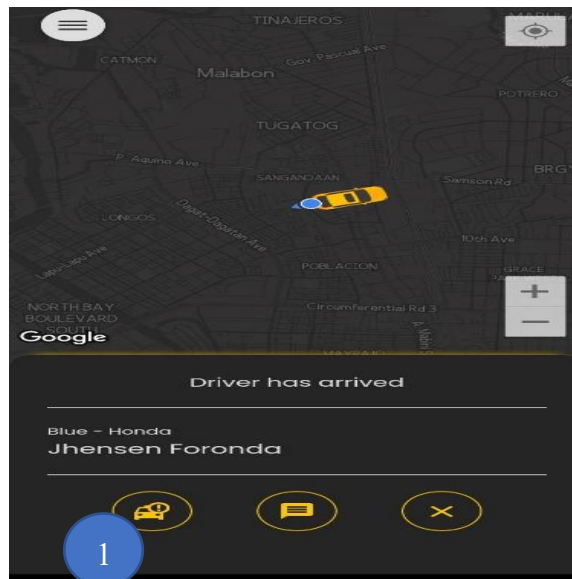
Figure 68. Emergency message

2. When you finish pressing, a message will appear that says "**Emergency Message send success**."
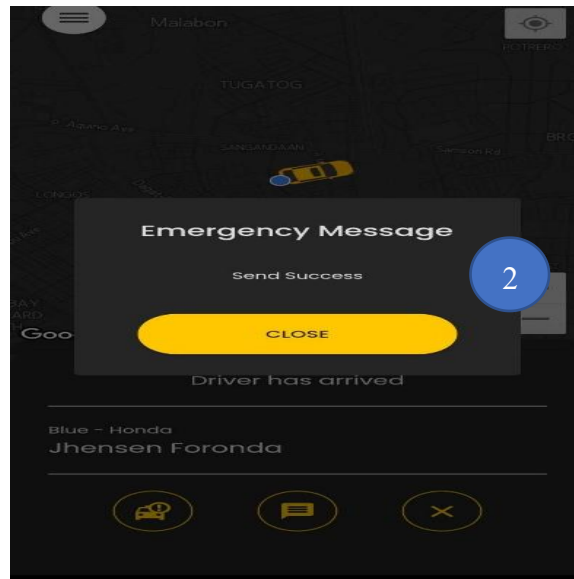
Figure 69. Emergency message

3. The app will then issue an emergency alert with details on the set information.
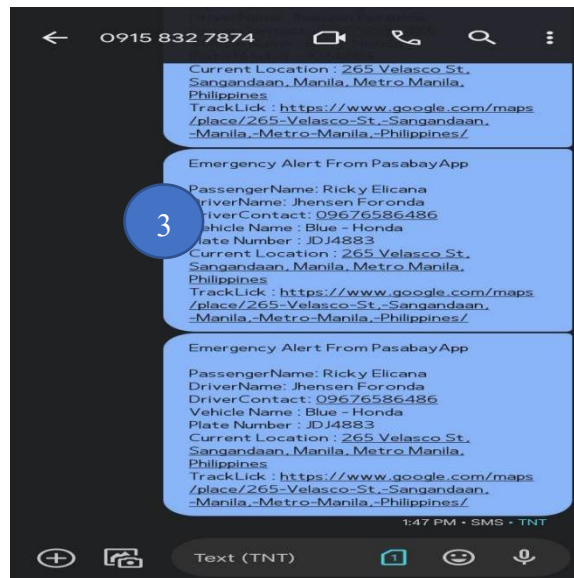
Figure 70. Emergency Message

REGISTER AS A DRIVER MODULE

1. To register as a Driver of the app, Tap the **Don't have an account, sign up here button**.
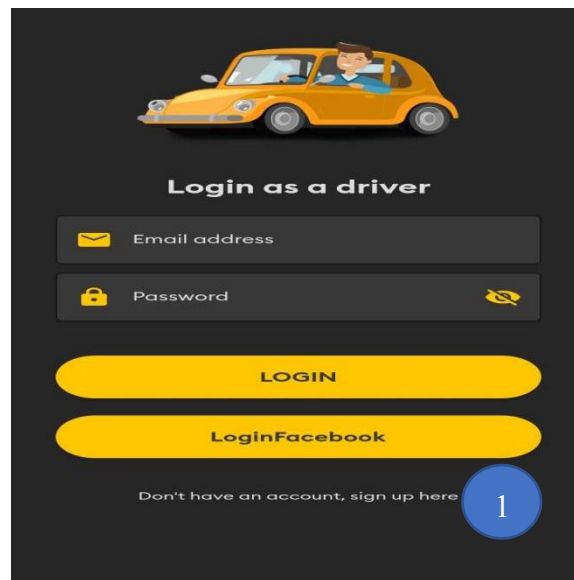
Figure 71. Log in As a Driver

2. Create a Driver account by entering your personal details
   2.1 Fill up textbox **Full name** ex. "Juan Dela Cruz".
   2.2 Fill up the textbox for **email address** ex."Delacruz@gmail.com".
   2.3. Fill up the textbox for **Phone number** ex."09102956682".
   2.4. Fill up the **Emergency number** ex."0956784686".
   2.5. Fill up the **password textbox** ex."pasabay12345".

3. After that press the **REGISTER**.

Figure 72. Log in As a Driver

4.Then you will proceed to the Enter vehicle details section, where you must answer the

following questions.

    4.1   Fill up textbox **Car Model** ex. "Blue".

    4.2   Fill up the textbox for **Car color** ex."Honda".

    4.3   Fill up the textbox for **Vehicle Number** ex."72838HDJKD".

    4.4   Fill up the **Maximum Slot** ex."12".

5. After that press **Proceed**

Figure 73. Log in As a Driver

ONLINE TO GET REQUEST RIDE MODULE

1. To be able go online just tap the **OFFLINE** Button
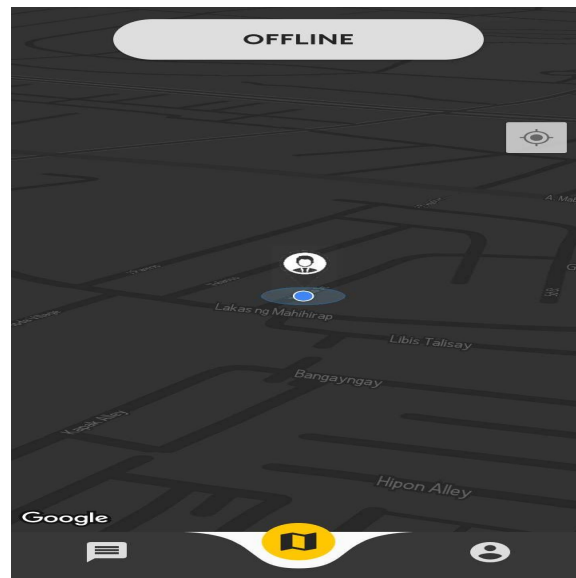
Figure 74. Online to get requested ride

2.   Tap the **CONFIRM** button
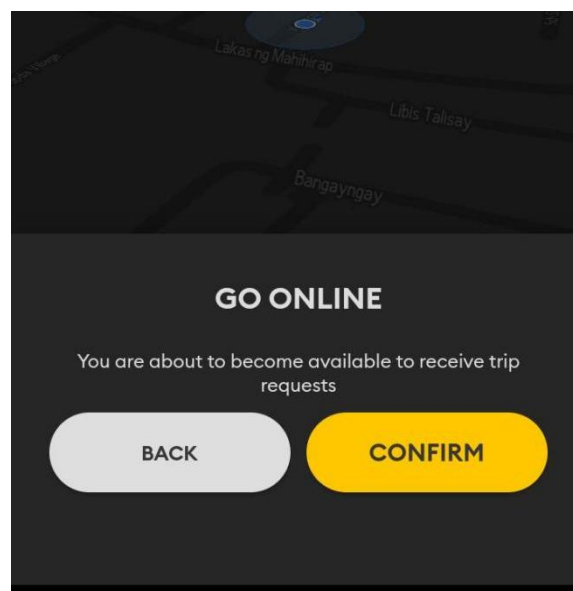
Figure 75. Online to get requested ride

3. Then you are finally online!
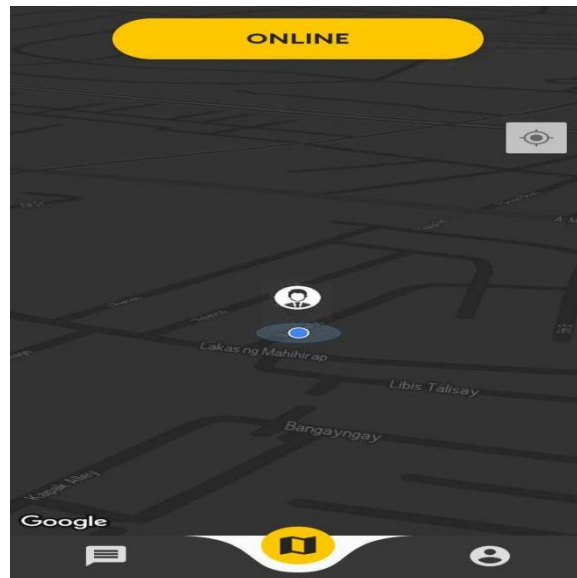
*Figure 7*6. Online to get requested ride

LOG IN DRIVER RIDE MODULE

1. Type your login as a driver details, such as your **Email address** and **Password.**
2. Click **LOGIN.**
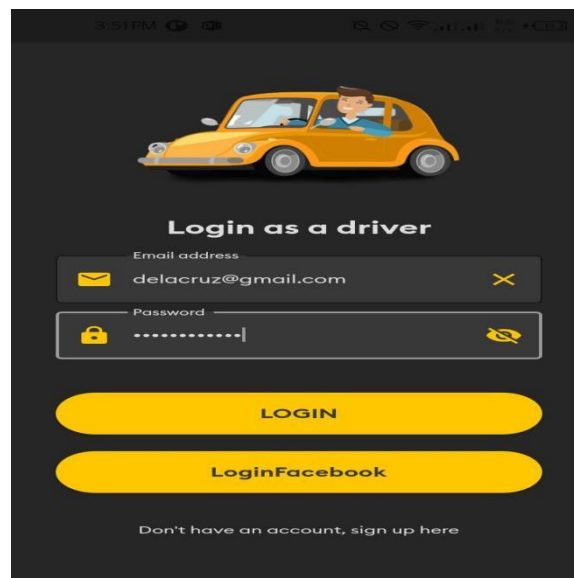
Figure 77. Log in Driver

3 Then that's it!
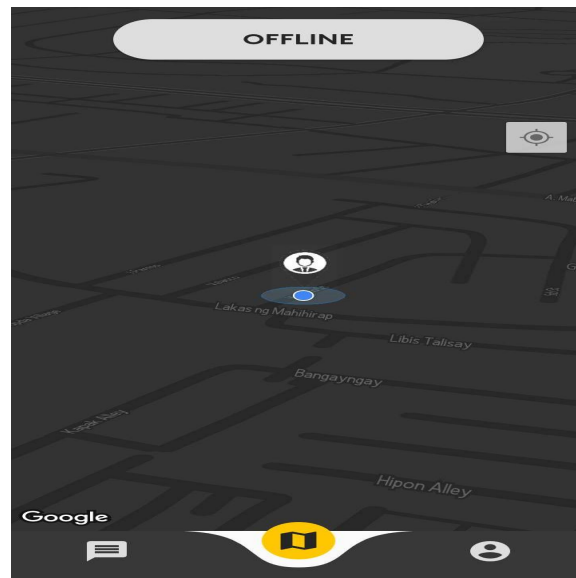
Figure 78. Log in Driver

ACCEPT TRIP MODULE

1. Wait for a ride request to come in. This will usually come in the form of a notification or a message within the app.
2. Once you receive the ride request, you should see information about the pickup location, destination, profile and name.
3. If you're available to take the ride, tap on the "Accept" button to confirm your acceptance.
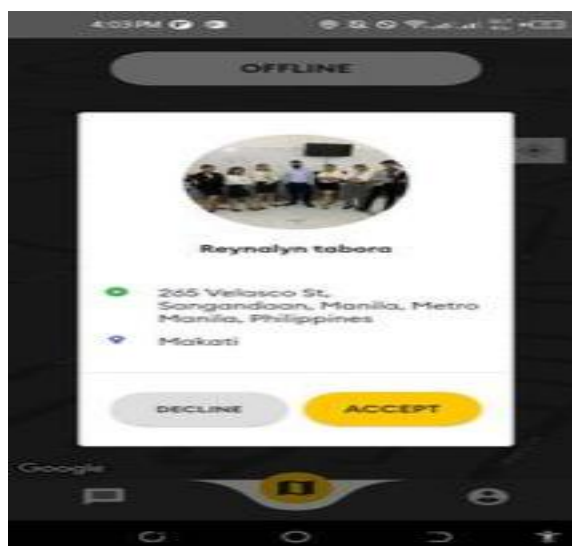
Figure 79. Accept trip

*Note: Before using the app, make sure that your smartphone's **GPS is enabled**. This allows the app in locating your current position and suggesting pickup places depending on your current location*

3. Navigate to the pickup location and wait for the passenger to arrive.

4. Once the passenger is in the car, confirm the destination and start the trip in the app.

5. Drive the passenger to the destination and end the trip in the app once you arrive.
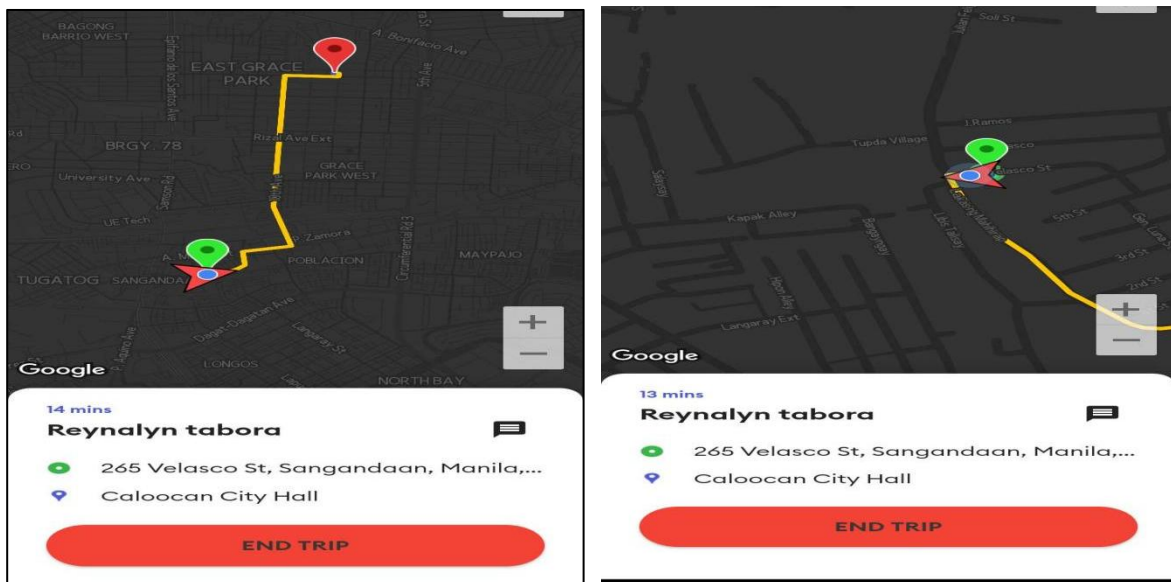
Figure 80. Accept trip

EDIT PROFILE MODULE

1. On the left side of the app, tap the **navigation button**.

Figure 81. Edit profile

2. Once you're in your account settings, look for an option to "**Edit Profile**"
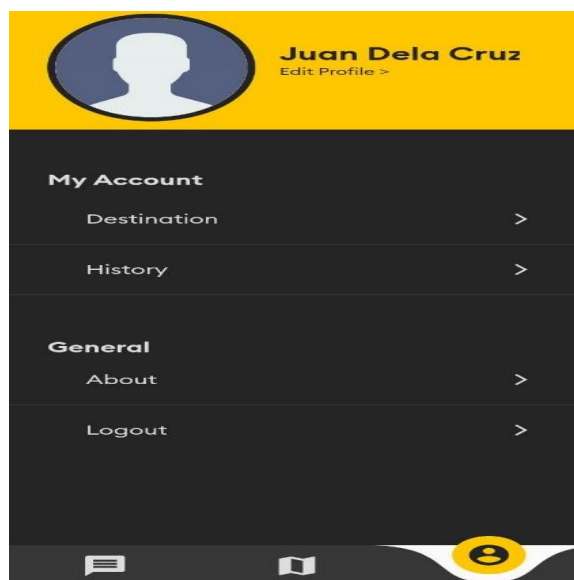
Figure 82. Edit profile

3. Tap on the "Edit Profile" option and you'll be taken to a screen where you can edit your profile information.

Figure 83. Edit profile

4. Once you've made the changes you want, tap on the "Save" button to save your updated profile information.

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Grade School Diploma

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- Grade 11 & Grade 12 Certificate of Exemplary Behavior
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Certificates and Awards

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Certificate of Completion

Elementary   **Baesa Elementary School**

Grade School Diploma

Certificates and Awards

- Grade 11/12 Exemplary Behavior Award