Intelligent System for Road Finding Based on Metro Network

Your Path

مسارك

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9	هدير محمد العزيزي احمد الجبالي	8
10	فاطمه زين السيد قوره	5

Table of Contents

Software Requirements Specification

1.Introduction

There is no doubt that Egypt is taking leaps and bounds and making great efforts to advance the nation's technology. We are still striving with our utmost efforts to help it achieve progress. We are still presenting our uniform project that will help many people determine their destination and help our blind brothers so that they do not miss their appointments, and our illiterate brothers the ease of knowing their location through... Our project

2.Abstract

The Cairo Metro App represents a technological advancement that complements the Cairo Metro system, enhancing urban mobility and providing a seamless travel experience for commuters in the bustling city of Cairo, Egypt. These abstract aims to provide a concise overview of the key features and benefits of the Cairo Metro App. The Cairo Metro App serves as a comprehensive mobile application designed to assist passengers in navigating the metro system with ease. It offers a range of features, including real-time train schedules, It helps the blind and illiterate to know their location and alerts them when they reach their desired destination

3.Problems

1.Most people get lost in metro stations.
2.Blind people cannot determine their destination.
3.A large group cannot read and write.
4.The most widely used metro station in Cairo and has many stations and destinations.
5.Not all stations have the same name's place.
6. There are many different races in Egypt

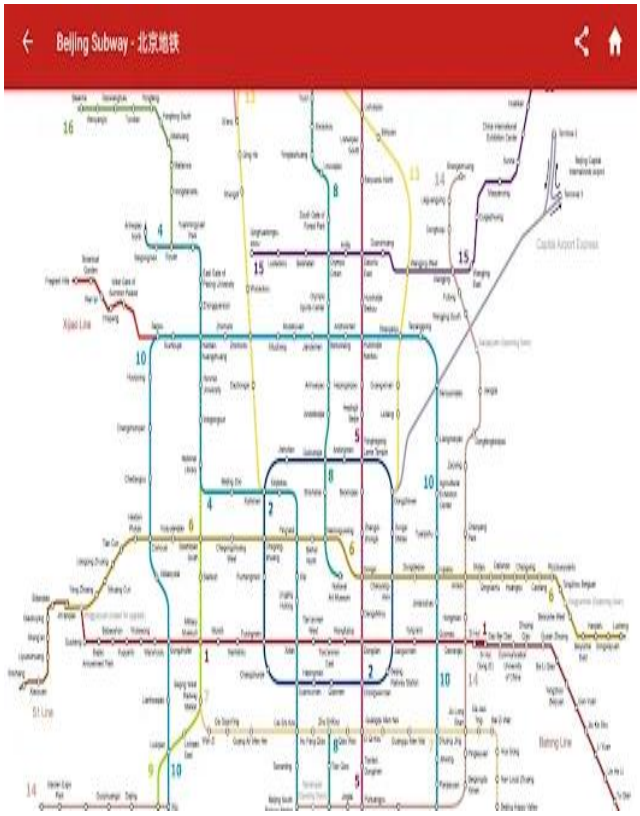
4.Objectives

1.Determine the nearest famous places to each metro station.
2.Allow the user the number, names and addresses of stations at his destination.
3.The project is available for all age groups.
4.Helping the blind and illiterate with an audio feature to let them know their current location.
5.Alert all users at each station by its name via GPS service.

5.Related Works

5.1.1 Metro Beijing App:

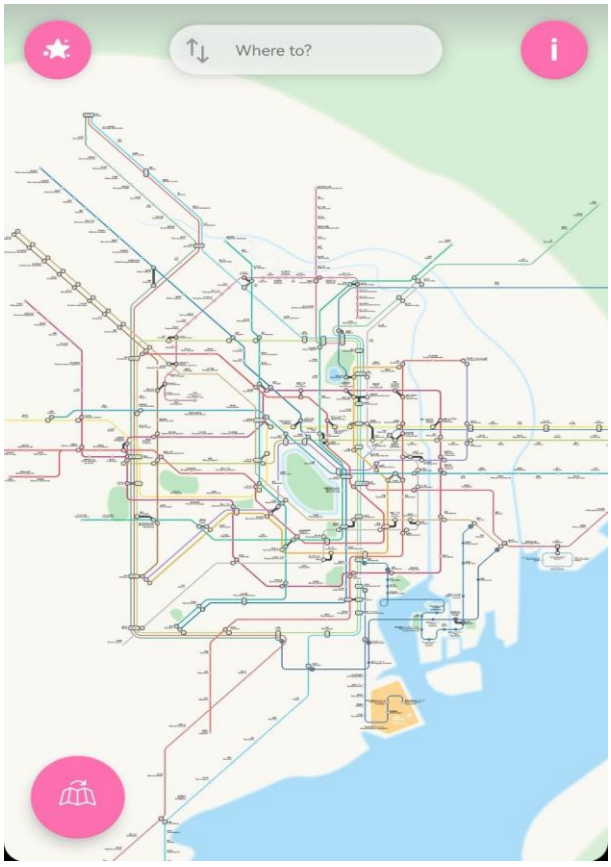
The Beijing Metro Mobile App stands as a modern solution for residents and travelers seeking to navigate the vast and intricate Beijing Metro system. which offers a comprehensive suite of tools and information to enhance the metro experience. The app provides up-to-date information on schedules, station details, real-time train arrivals, and service alerts.

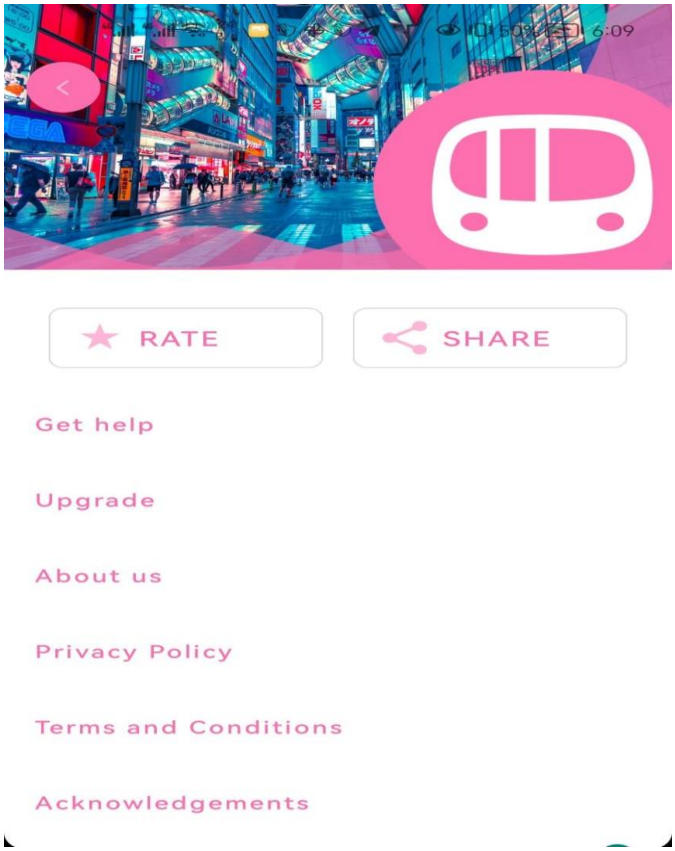


but Beijing metro app Contains some disadvantages such as language the application may primarily be available in Chinese, and it requests personal information and statements on your phone, dependency on technology in case of internet interruptions or wireless connectivity issues.

5.1.2 Map Way Metro App:

Metro Tokyo is one of the most extensive and efficient urban transportation systems in the world. It encompasses a vast network of subway lines that connect various parts of the city and its suburbs, providing a convenient means of commuting for millions of residents and visitors.

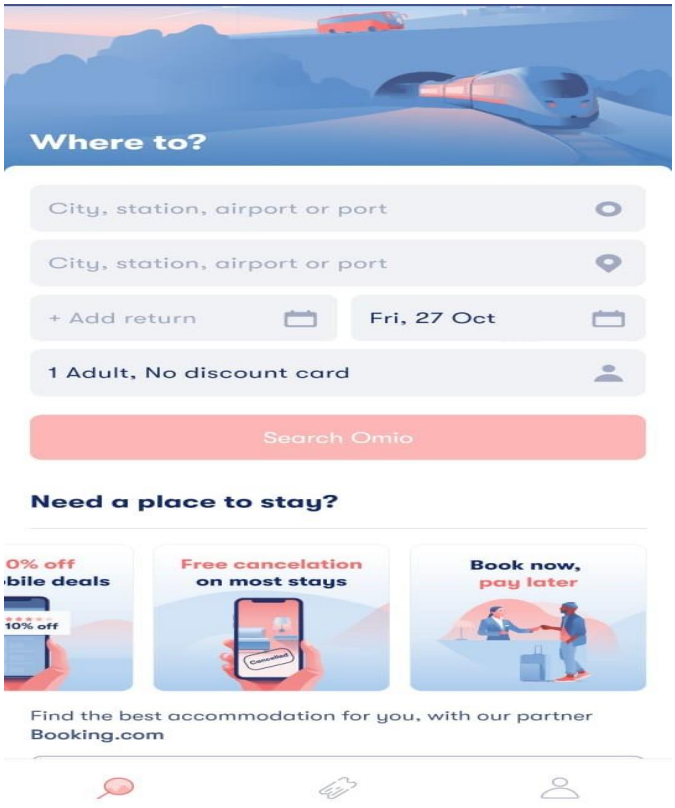




but Map Way metro app Contains some disadvantages such as Information updates in the app are inaccurate, application may encounter a complex user interface and experience service outages or difficulty accessing the app during times of heavy traffic.

5.1.3 Omio Metro App:

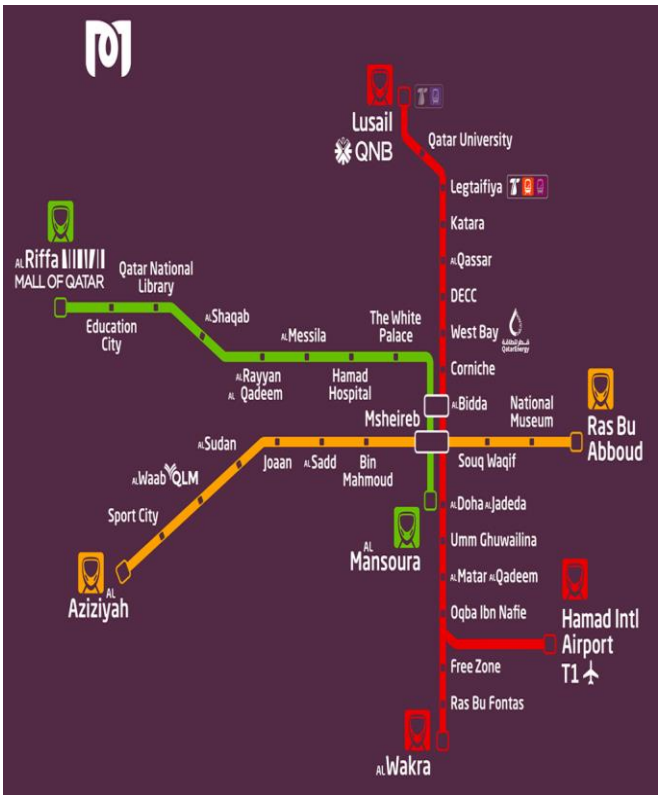
The Omio Metro App is a user-friendly, convenient, and versatile application designed to simplify the experience of using public transportation in various cities worldwide. This app provides a comprehensive platform for planning, booking, and navigating metro and public transit systems. Key features of the Omio Metro App include real-time information on metro schedules, routes, and ticket prices. Users can easily plan their journeys, select the most efficient routes, and purchase tickets through the app, reducing the hassle of waiting in lines or using paper tickets.

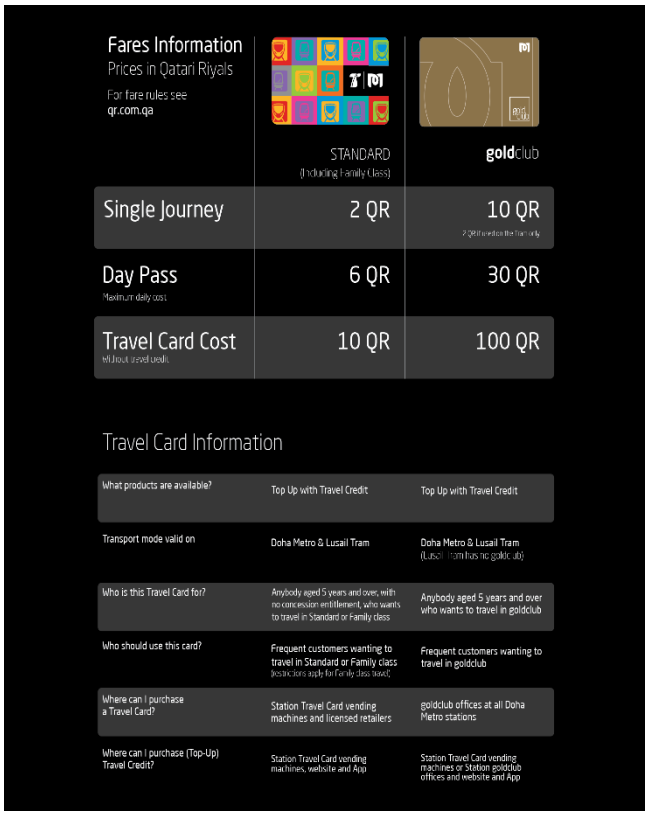


but Omio metro app Contains some disadvantages such as you may face additional costs when booking tickets through the app, experiencing difficulty integrating the payment process with some payment methods you may need to provide additional information to complete the reservation process and voice search not available in the app.

5.1.4 Doha Metro App:

The Doha Metro App is a cutting-edge mobile application designed to enhance the public transportation experience in Doha, Qatar. It serves as a vital tool for residents and tourists, providing comprehensive information and convenient features for navigating the Doha Metro system. Key features of the Doha Metro App include real-time information on train schedules, routes, and ticket prices. Users can efficiently plan their journeys, access interactive metro maps, and purchase tickets, making the app an indispensable companion for those using the Doha Metro.





but Omio metro app Contains some disadvantages such as Limited Availability The app is specific to Doha Metro users and those within the geographic scope of Doha. Language Limitations**:** Despite being available in multiple languages.

Comparison between Apps Features:

	Without internet	Voice search	Easy UI	Ticket Price	Time & Distance	Number of Stations	Languages
Metro Beijing App	✗	✗	✗	✓	✓	✓	✗
Map Way Metro App	✓	✓	✗	✗	✓	✓	✗
Omio Metro App	✗	✗	✓	✓	✓	✓	✗
Doha Metro App	✗	✗	✓	✓	✗	✓	✓
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5.2.1 Developing a TOD typology for Beijing metro station areas

Across the world, Transit Oriented Development (TOD) offers a strategy to integrate land use and transport systems by clustering urban developments around public transport nodes in functionally dense and diverse, pedestrian- and cycling-friendly areas. Even though the basic philosophy of TOD seems to be the same in all contexts, its specific applications greatly differ in form, function and impacts, calling for context-based TOD typologies that can help map these local specificities and better focus policy interventions.

5.2.2 Impacts of a Metro Station to the Land Use and Transport System: The Thessaloniki Metro Case

The paper deals with the interaction between the transport and land use system in an urban area having as a case study the Thessaloniki Metro (which is an on-going project)

and especially one of its main stations (the Papafi station) which is located outside the city center. The Thessaloniki basic metro line will have a length of 9.6 km, with 13 stations. The construction phase initiated in June 2006. The only experience in the country so far about the impacts of a metro station to the transport and land use system comes from the city of Athens where there is an extensive metro network.

5.2.3 Evaluating, Comparing, and Improving Metro Networks:

As public transportation systems become more complex, an analysis of their network features can be of substantial help for planners. This work is an application of a network design model that was validated previously. It uses three indicators relevant to ridership: coverage, directness, and connectivity. Coverage calculates the percentage of land covered by the network. Directness relates to the convenience to travel, to avoid unnecessary transfers. Connectivity appreciates the structure of networks by measuring the affluence of transfer stations. According to the 15- and 25-year transit plans produced by the Toronto, Canada, regional transportation authority, Metrolinx, the objectives were to apply the model to evaluate these plans, compare them with other transit systems worldwide, and propose possible improvements.

5.2.4 Environmental Study in Subway Metro Stations in Cairo, Egypt

Airborne viable and non-viable measurements were carried out in two different metro stations, one located in a tunnel and the other on the surface. The concentrations of airborne total viable bacteria (incubated at 37°C and 22°C), staphylococci, suspended dust and oxidants (ozone) were higher in the air of the tunnel station than those recorded at the surface station. In contrast, spore forming bacteria, Candida spp, fungi and actinomycetes were found at slightly higher levels in the surface station than in the tunnel station. A statistically significant difference ($p<0.01$) was found between the levels of suspended dust at both stations. Cladosporium, Penicillium and Aspergillus species were the dominant fungi isolates. Fusarium, Aspergillus and Penicillium are the most common fungi that produce toxins.

6.System analysis and design

The system development life cycle is composed of several clearly defined and distinct work phases which are used to plan for, design, build, test, and deliver information systems.

6.1 Planning and Requirement Analysis:

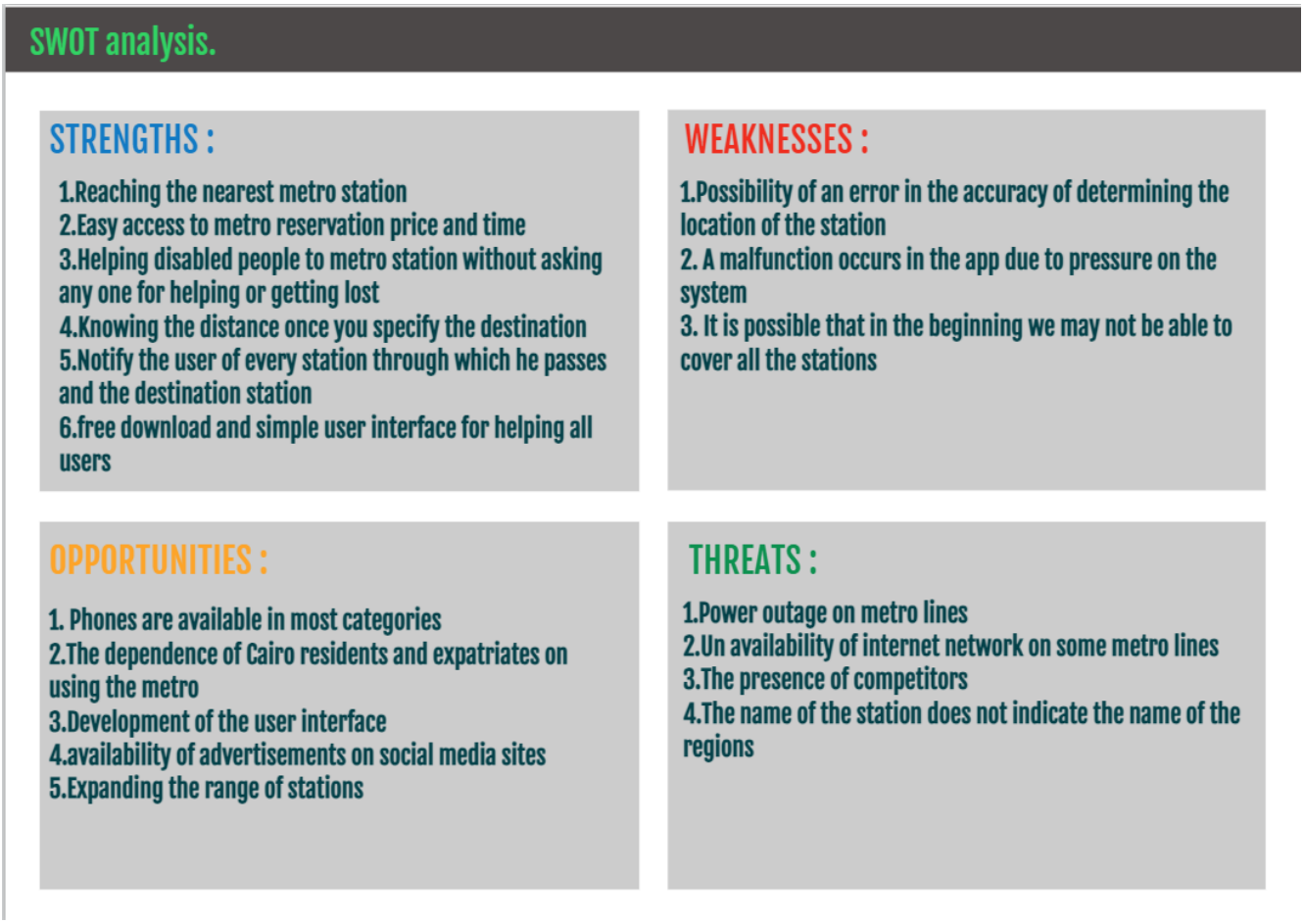
Requirement analysis is the most important and fundamental stage in SDLC. It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry. This information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational and technical areas. Planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage. The outcome of the technical feasibility study is to define the various technical approaches that can be followed to implement the project successfully with minimum risks.

6.1.1 SWOT Analysis

SWOT analysis is a strategic planning tool used by organizations to identify and evaluate their internal strengths and weaknesses, as well as external opportunities and threats. It's a structured framework that helps businesses and individuals make informed decisions and develop strategies for achieving their goals.

Gather information: Collect data and insights about your organization's internal strengths and weaknesses, as well as external opportunities and threats. This can involve market research, surveys, internal assessments, and competitor analysis.

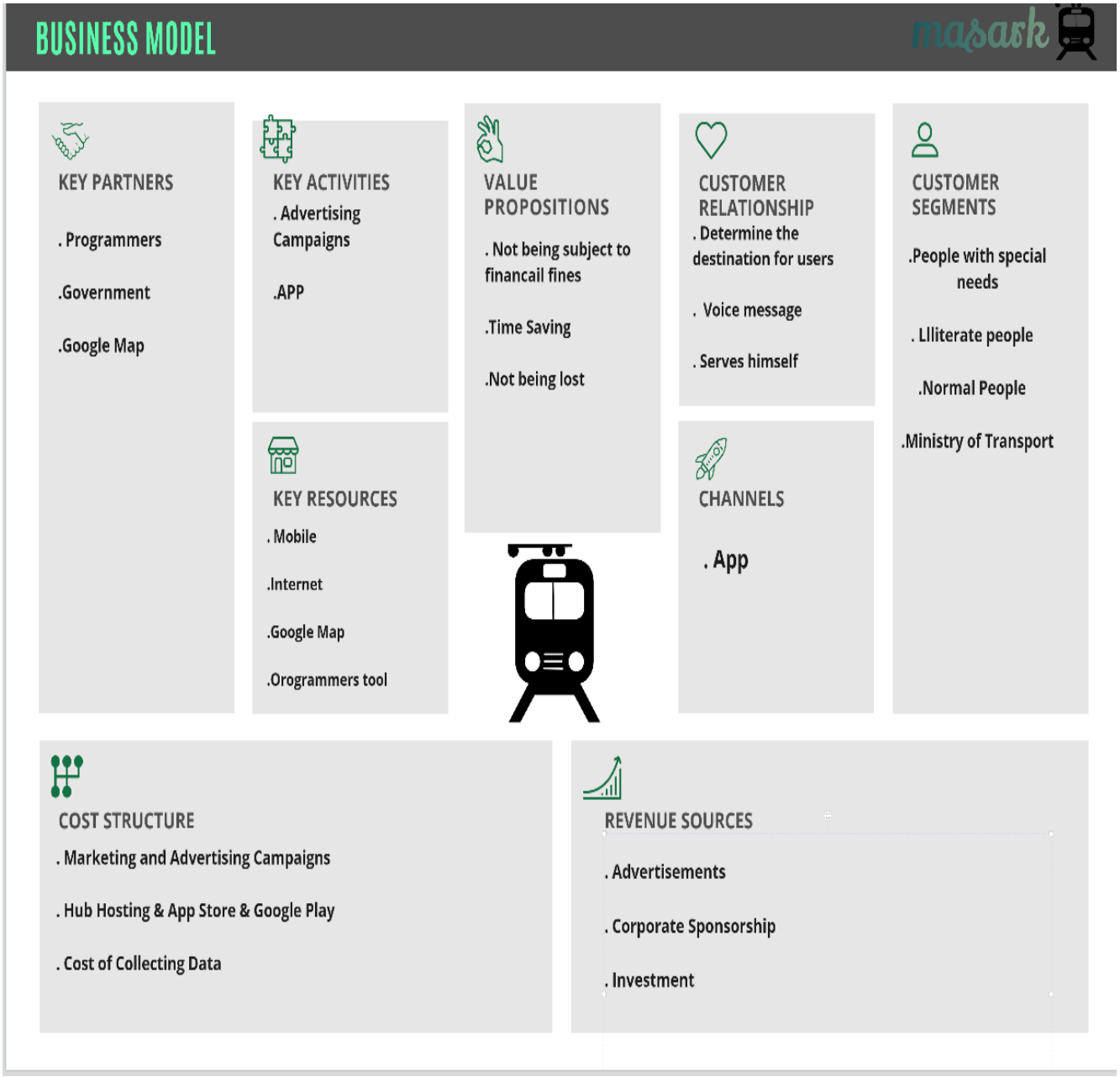
Create a SWOT matrix: Organize your findings into a four-quadrant matrix with each section representing one of the four elements: Strengths, Weaknesses, Opportunities, and Threats.



6.1.2 Business model

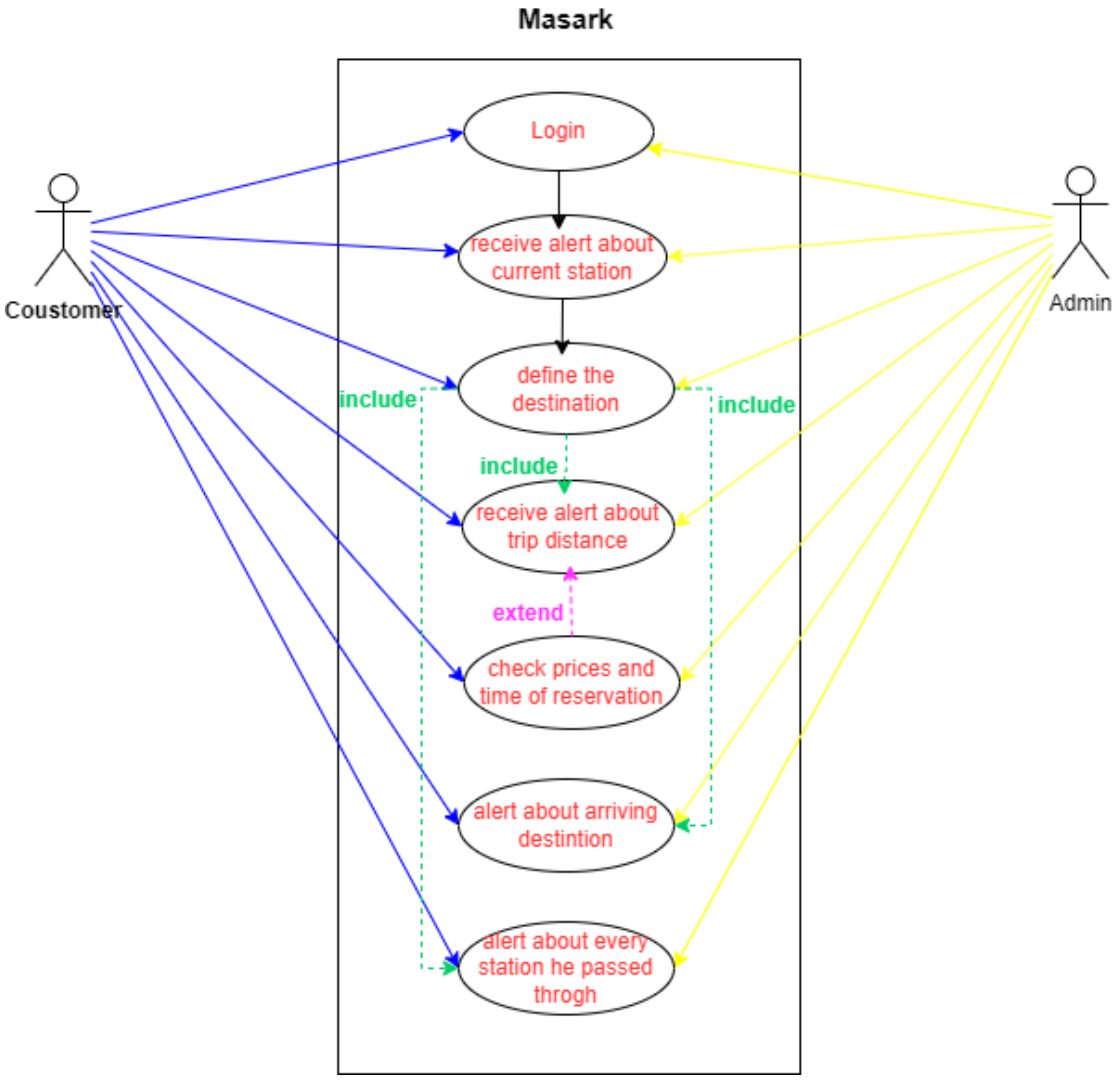
A business model is a framework or plan that outlines how a company creates, delivers, and captures value. It describes the way a business operates, generates revenue, and sustains its operations.

A well-defined business model is crucial for understanding the fundamental aspects of a business and is often a key element of a business plan. Business models can take many forms.



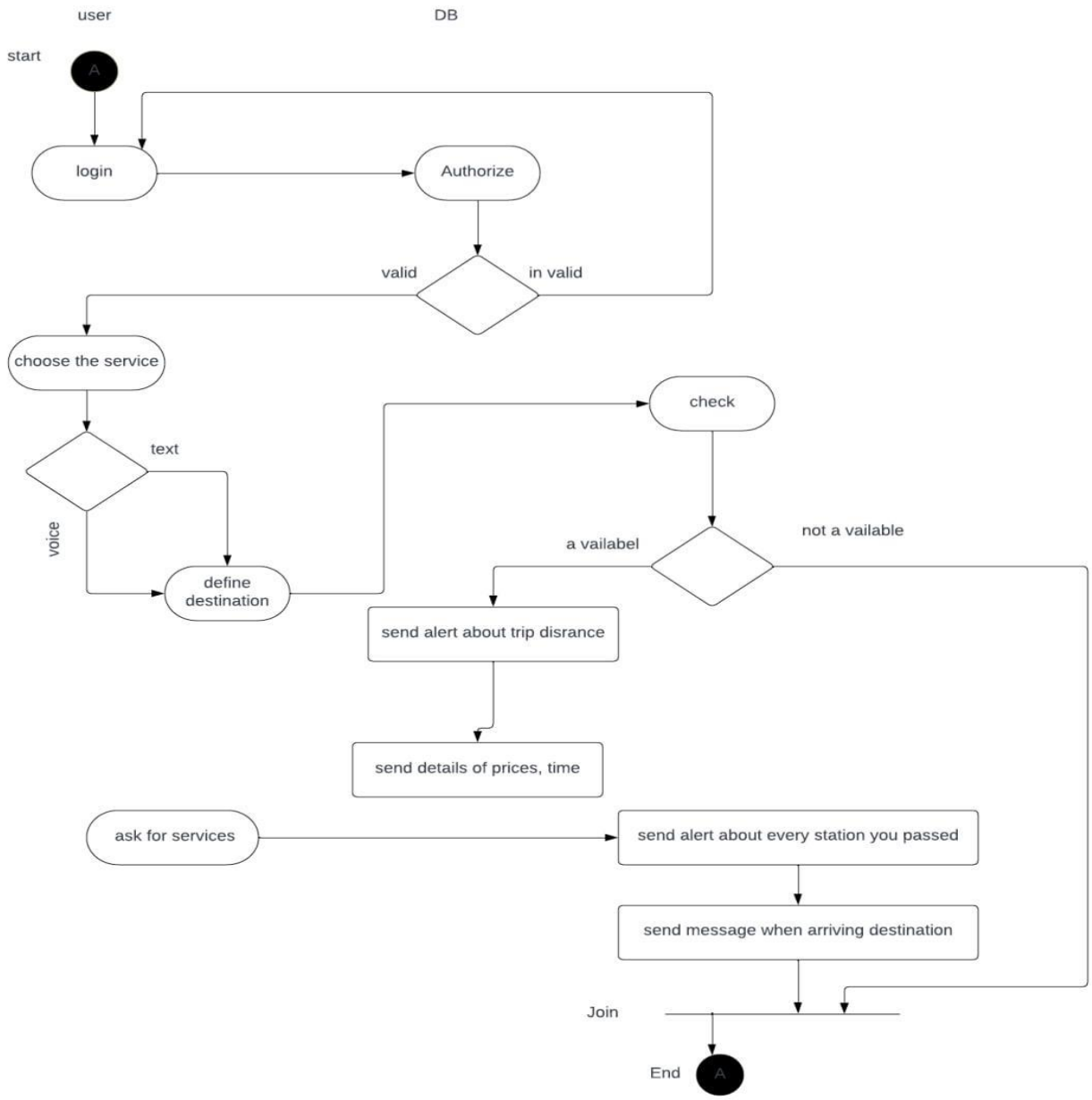
6.1.3 Use Case Diagram

A use case is a representation of a specific interaction or functional requirement of a system, often used in software engineering, system design, and requirements analysis. It provides a detailed description of how a user or an external system interacts with a system to achieve a particular goal or perform a specific task. Use cases are an integral part of the Unified Modeling Language (UML) and are commonly used in software development to capture and document system functionality.



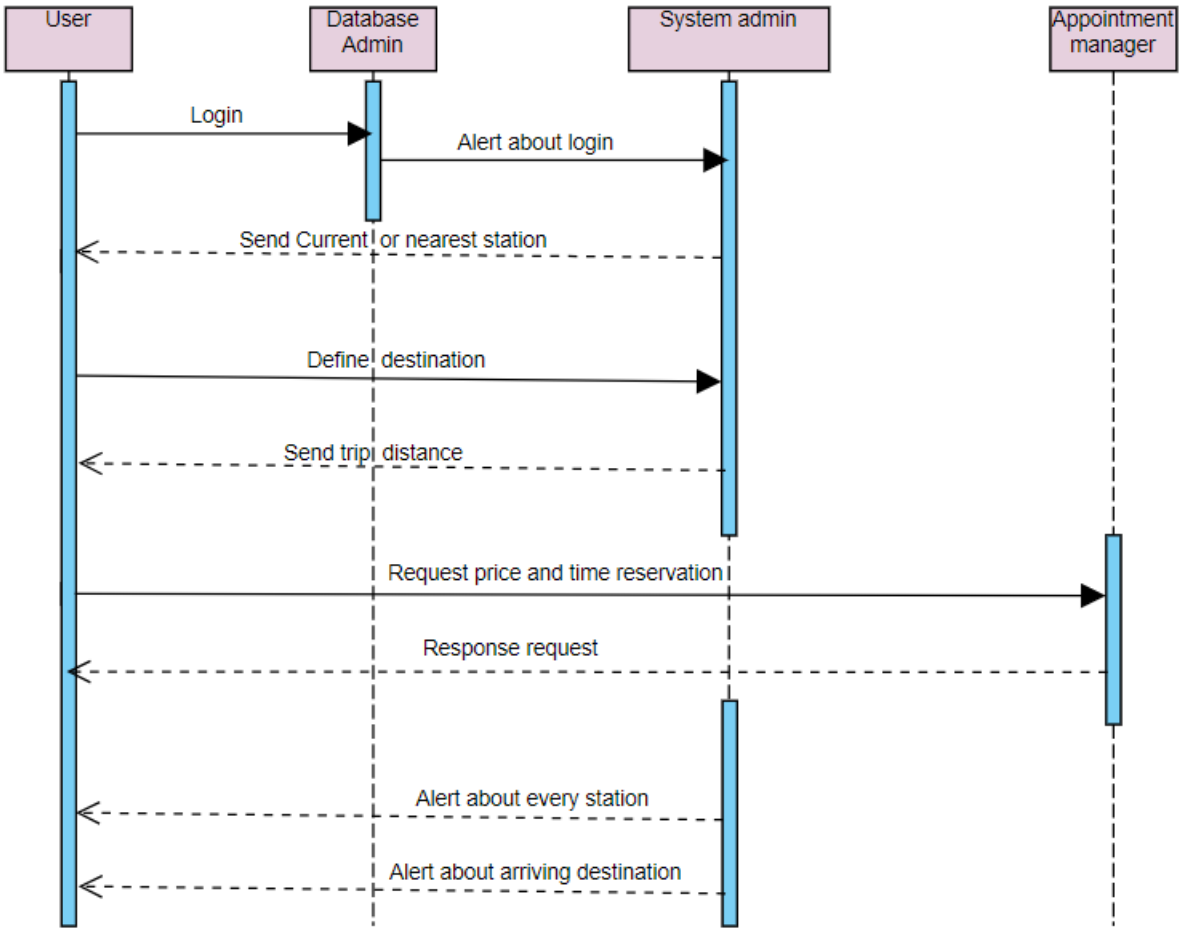
6.1.4 Activity diagram

An activity diagram is a type of UML (Unified Modeling Language) diagram that is used to model the workflow or behavior of a system, process, or business activity. Activity diagrams are often used in software engineering and business process modeling to visually represent the steps, actions, and decisions involved in a particular process or use case.



6.1.5 Sequence diagram

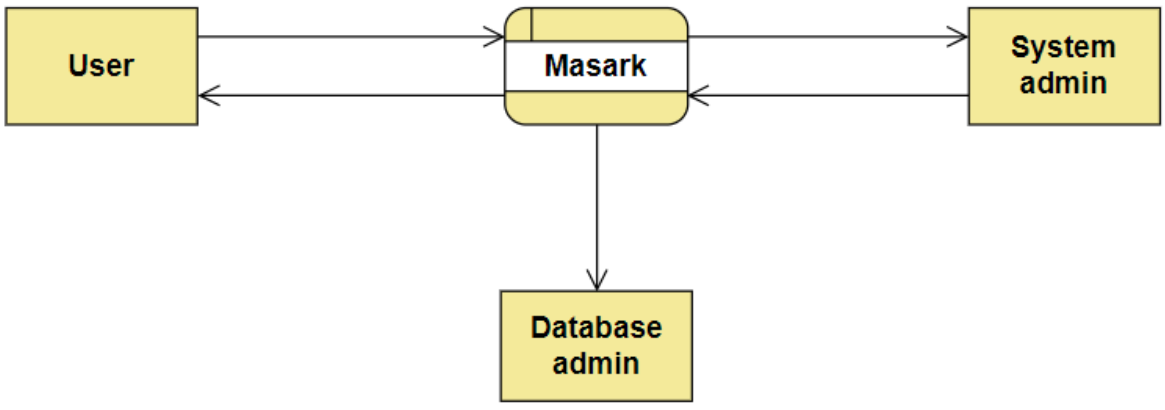
A sequence diagram is a type of interaction diagram in Unified Modeling Language (UML) that illustrates how objects or components within a system interact with each other over time. Sequence diagrams are used to represent the dynamic behavior of a system and are particularly useful for visualizing the flow of messages and interactions between various components or objects.



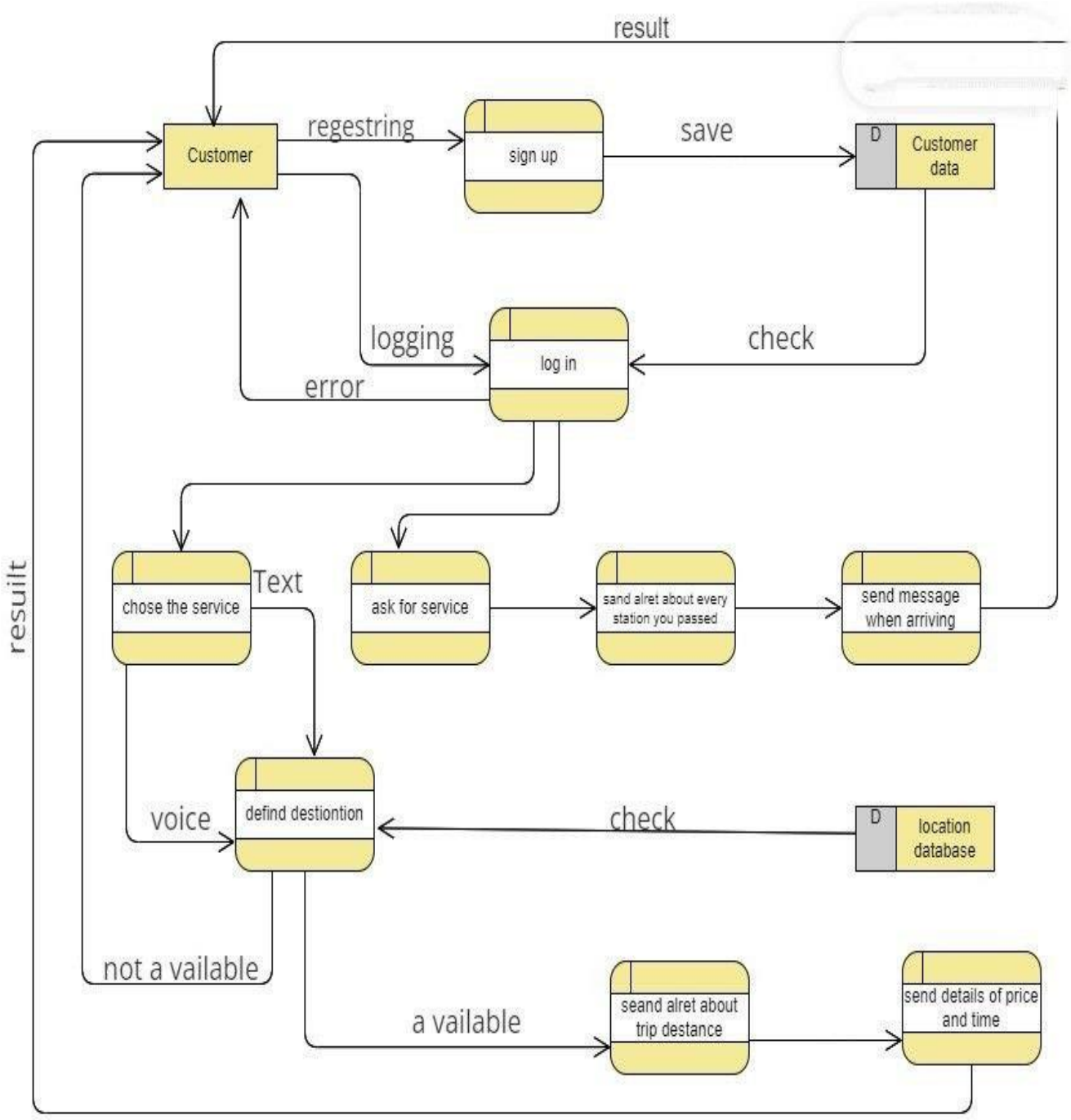
6.1.6 DFD Diagram:

Data Flow Diagram (DFD) is a traditional way to visualize the information flows within a system. A neat and clear DFD can depict a good amount of the system requirements graphically. It can be manual, automated, or a combination of both. It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system. It usually begins with a context diagram as level 0 of the DFD diagram, a simple representation of the whole system. To elaborate further from that, we drill down to a level 1 diagram with lower-level functions decomposed from the major functions of the system.

DFD level 0:



DFD level 1: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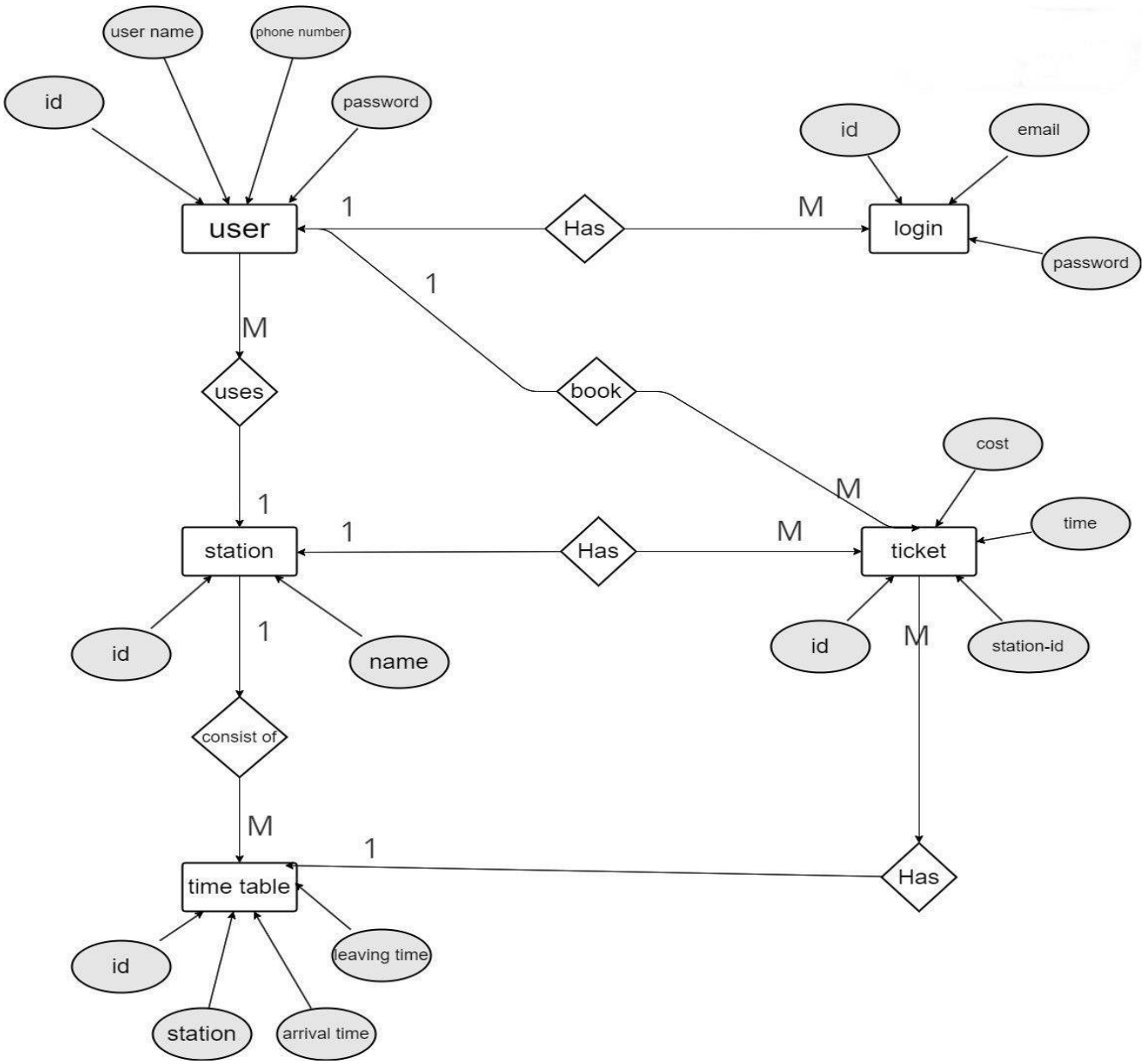
Customer data
logging
log in
check
error
resuilt
chose the service
Text
ask for service
sand alret about every station you passed
send message when arriving
voice
defind destiontion
check
D
location database
not a vailable
a vailable
seand alret about trip destance
send details of price and time

6.1.7 ERD Diagram:

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define their properties. By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases. ER diagrams are used to sketch out the design of a database.



7.References

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7.3 Others:

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