UNIVERSITY OF BUEA

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FACULTY OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF COMPUTER ENGINEERING

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CEF 440: MOBILE PROGRAMMING

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Project Title:

DESIGN AND IMPLEMENTATION OF A PASSENGER POSITIONING SYSTEM

TASKS 4:

SYSTEM DESIGN DIAGRAMS

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Contents

INTRODUCTION

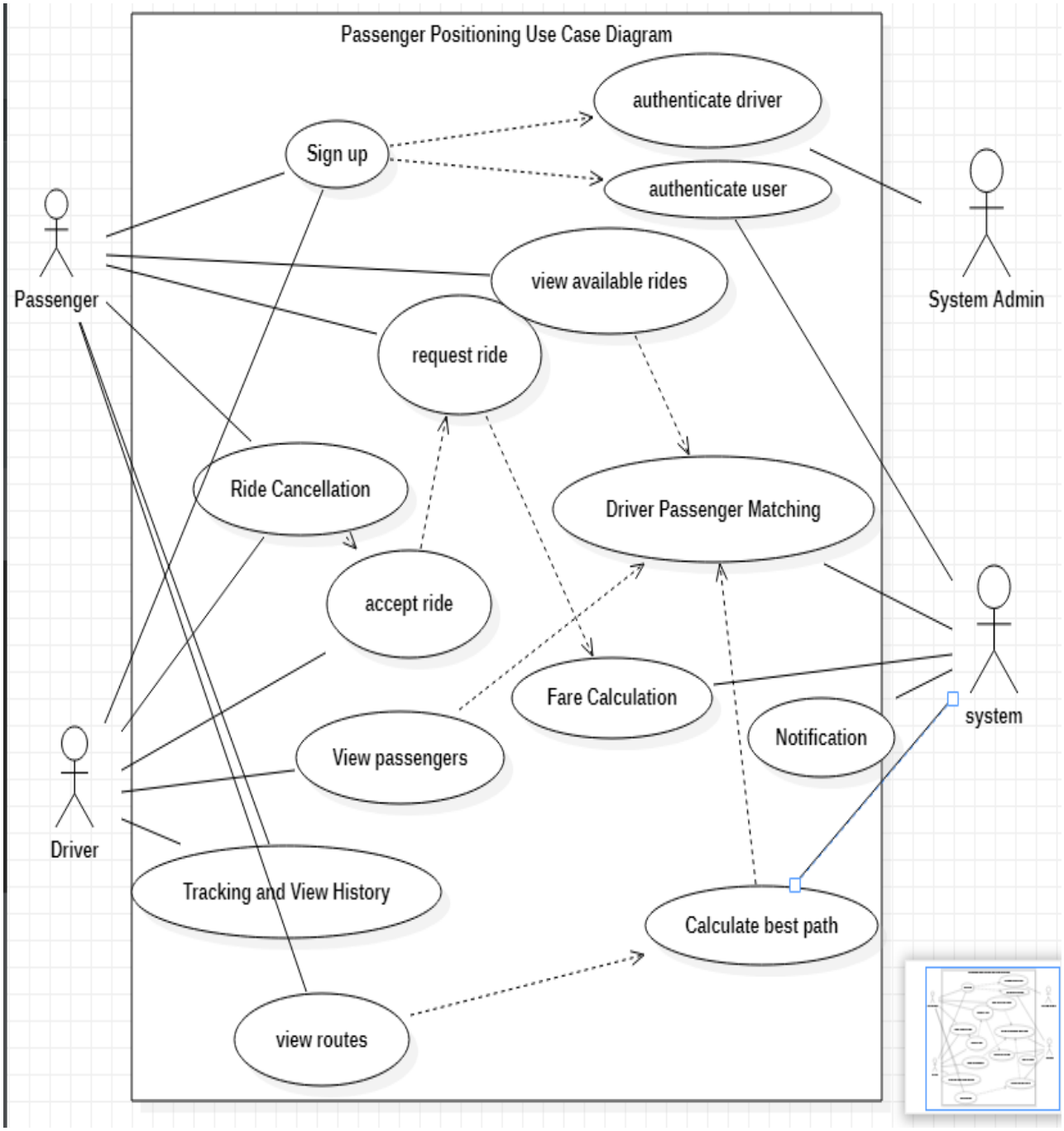
This report presents the system design diagrams of our passenger positioning system. These diagrams include all the critical UML design diagrams that are essential to the design and development of our application. By using these diagrams together, we ensure that the system is well-structured, efficient, and meets the needs of our targeted users. Each diagram is presented on subsequent pages with its importance to our development cycle.

Tools used for diagrams

-StarUML and Planttext.

USECASE DIAGRAM

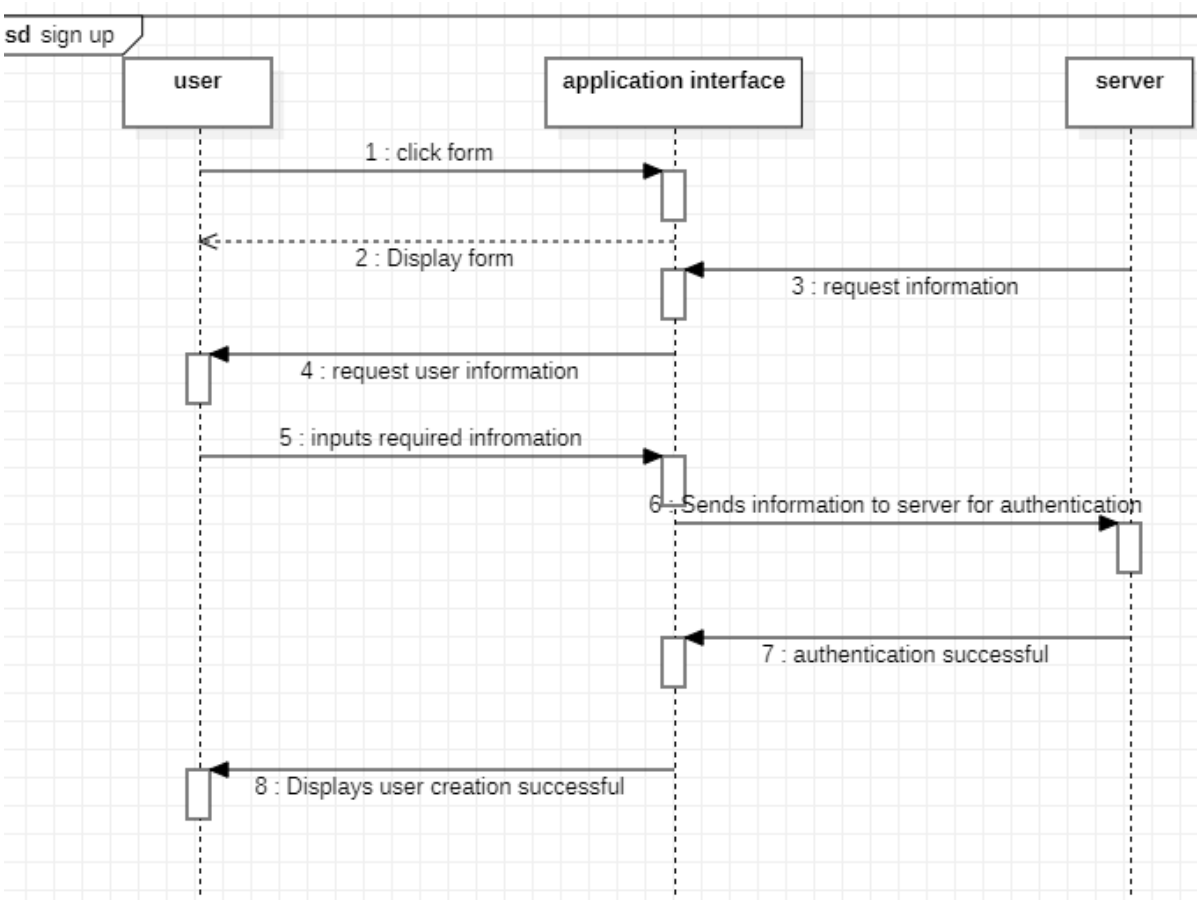
The use case diagram is an essential tool for defining the different scenarios in which the application will be used. It helps to identify the system's requirements and design the functionality to meet those requirements. The use case diagram is particularly important for understanding the interactions between users and the system, ensuring that the system meets the needs of its users. Our final use case diagram is shown below.


Passenger Positioning Use Case Diagram
authenticate driver
Sign up
authenticate user
Passenger
System Admin
view available rides
request ride
Ride Cancellation
Driver Passenger Matching
accept ride
system
Fare Calculation
Notification
View passengers
Driver
Tracking and View History
Calculate best path
view routes

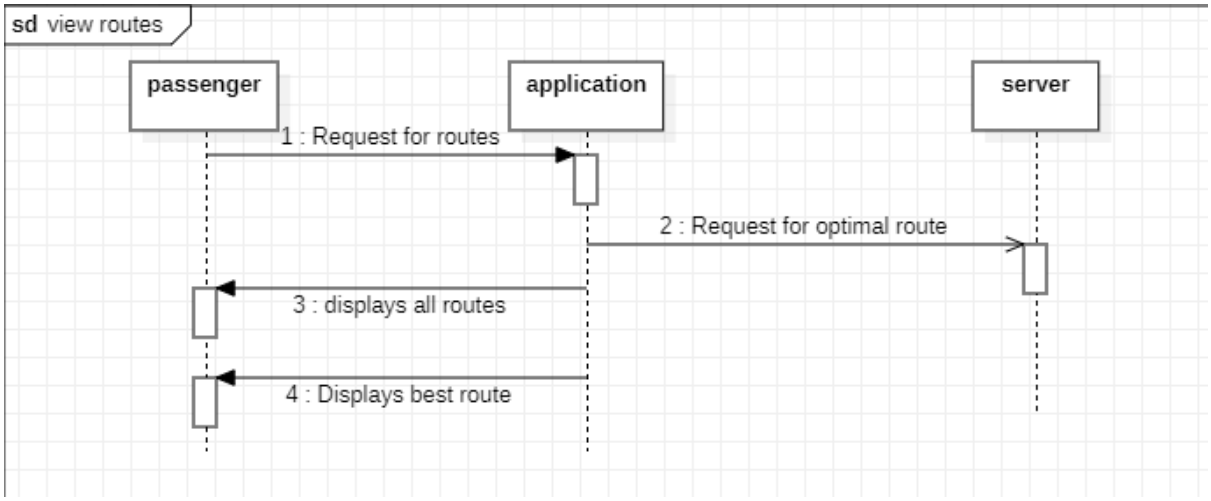
SEQUENCE DIAGRAM

UML sequence diagrams are visual representations of interactions between objects in a system over time. They are important because they help identify potential issues and improve a system's design before implementation. They provide a clear and concise way to represent complex interactions, validate system logic, identify errors, and are easily understood by all stakeholders. Below are the sequence diagrams for the use cases to be implemented:

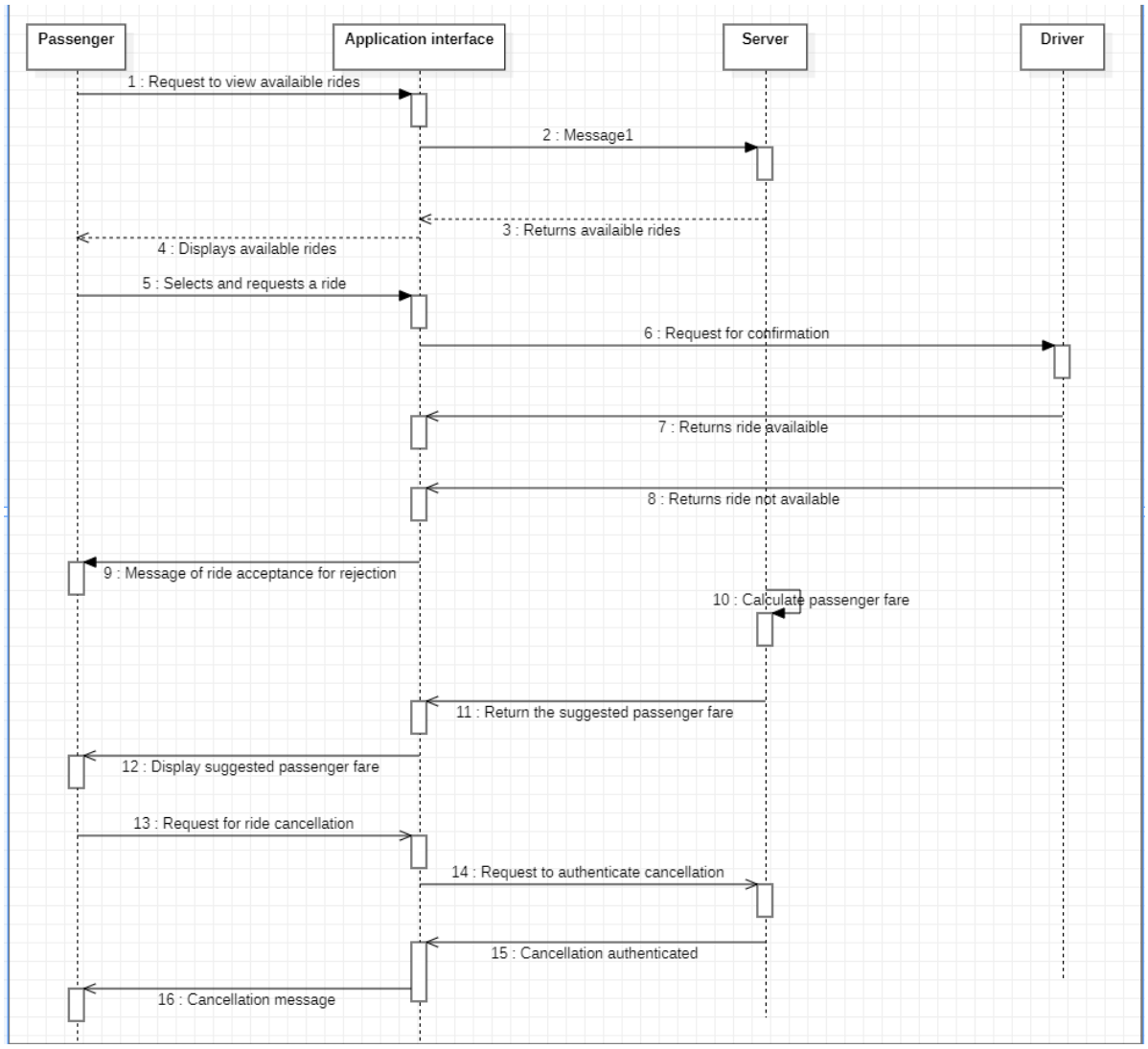
SIGN UP



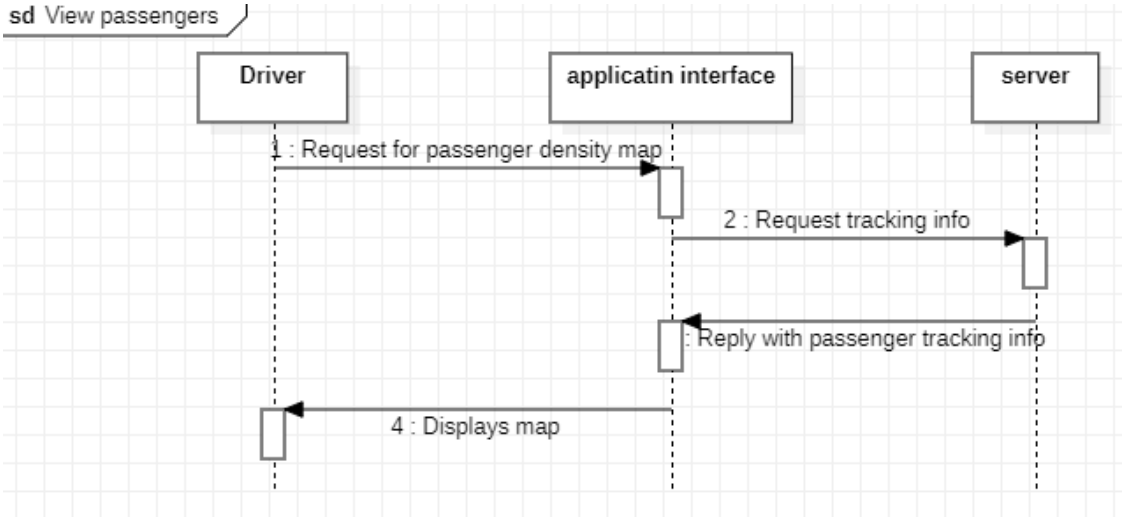
VIEW ROUTES



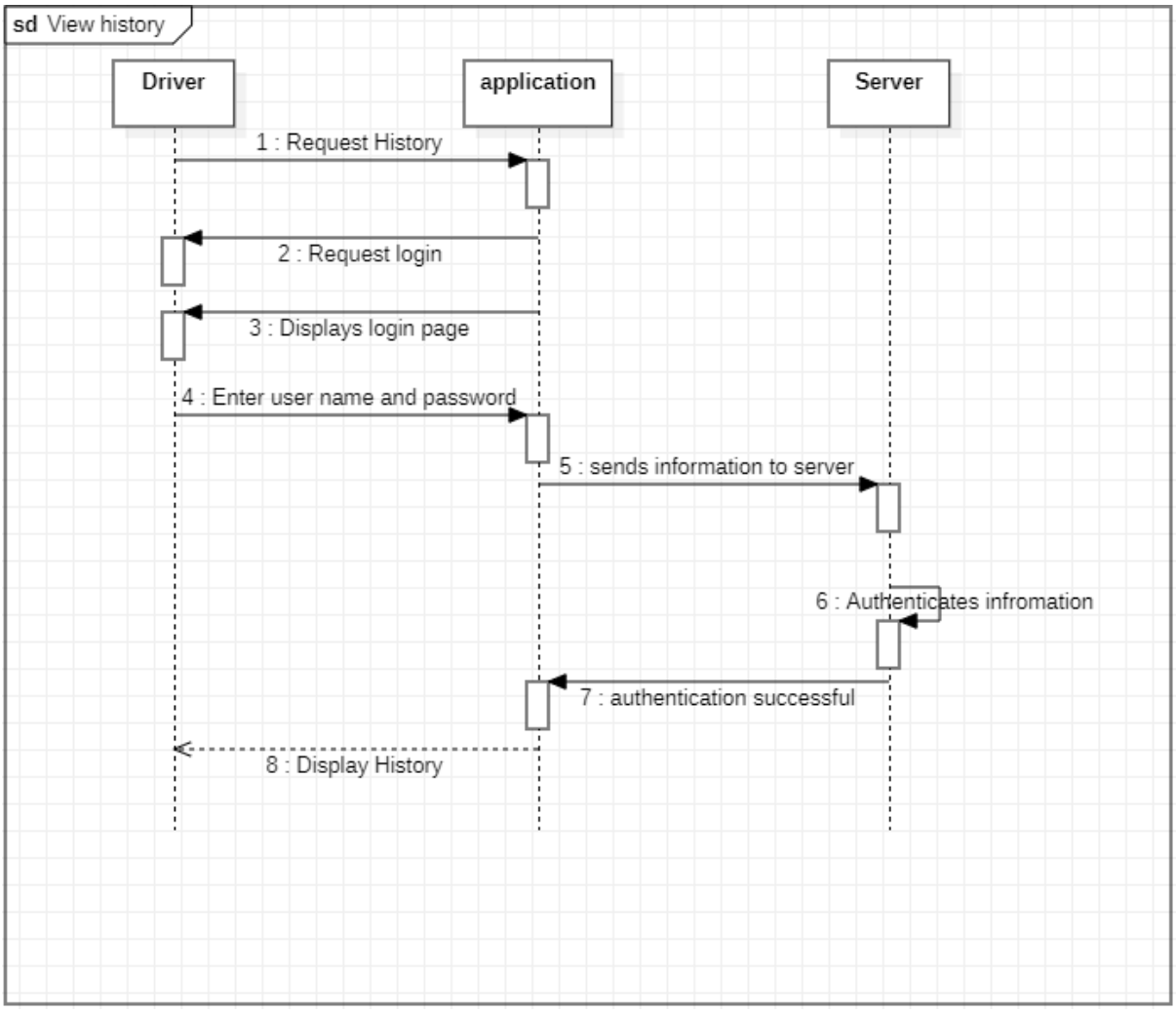
RIDE REQUEST



VIEW PASSENGERS



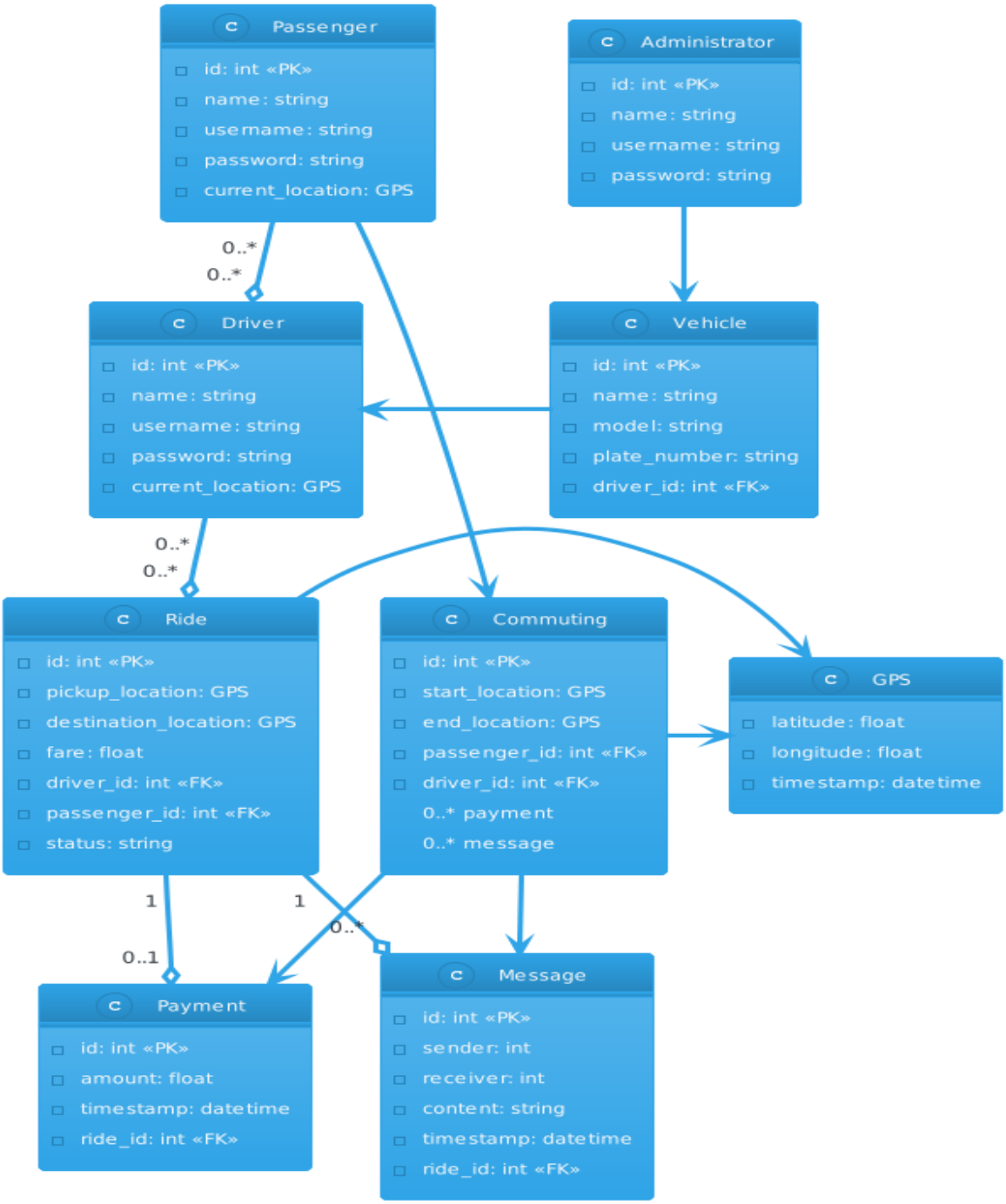
VIEW HISTORY



CLASS DIAGRAM

The class diagram is a crucial component of the design and development of the Passenger Positioning System. It provides a visual representation of the different objects in the system, their attributes, methods, and relationships with other objects. This diagram is particularly important for ensuring that the system is well-structured, maintainable, and scalable.

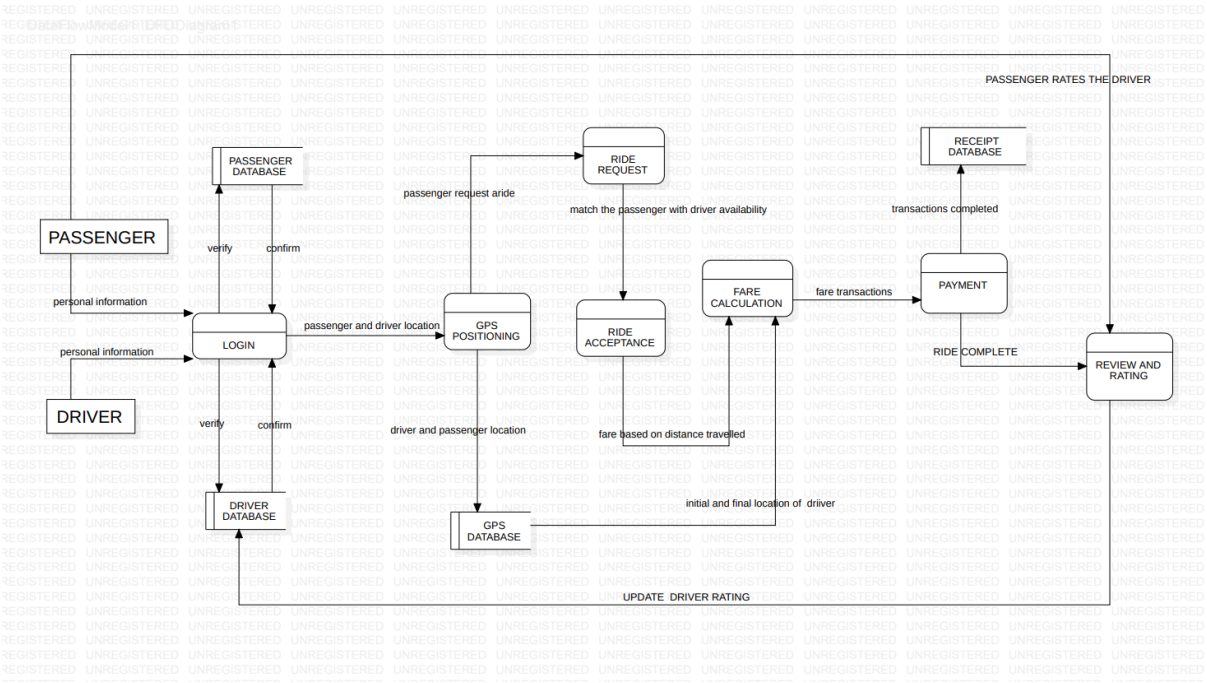
Class Diagram



DATA FLOW DIAGRAM

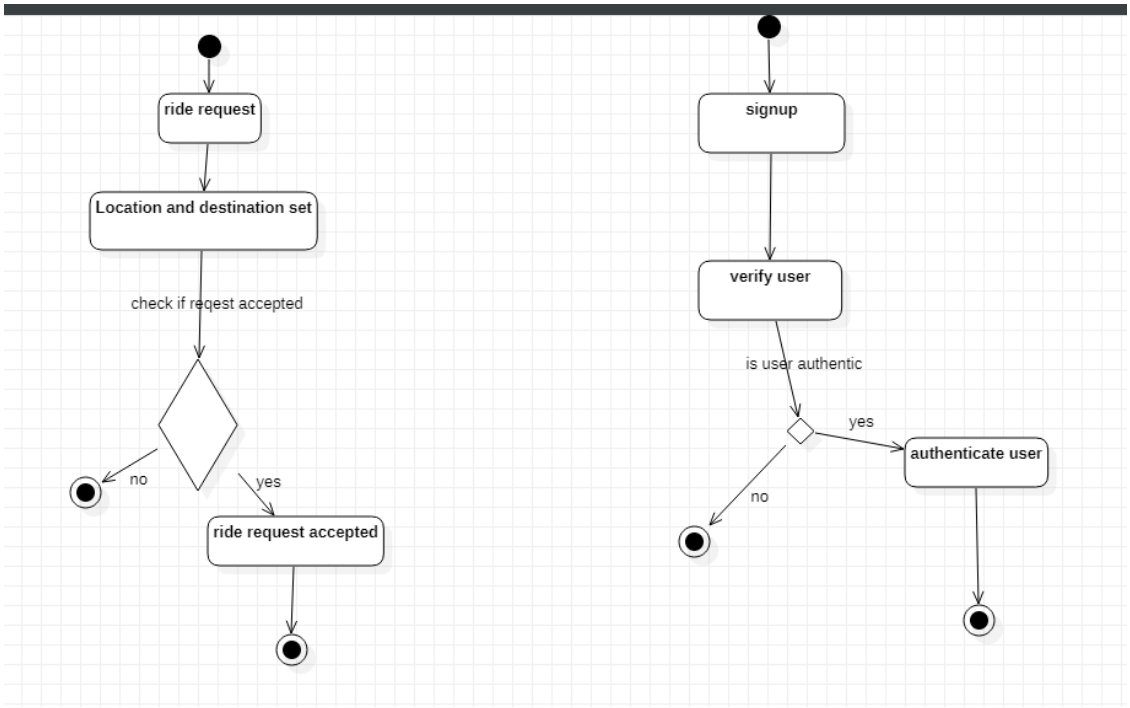
Data flow diagrams (DFDs) are diagrams that represent the flow of data through a system or process, showing inputs, outputs, and transformations. They were first introduced in structured analysis and design, and later became popular in systems analysis and data processing.

The importance of DFDs lies in their ability to help stakeholders understand how data moves through a system, identify potential bottlenecks or inefficiencies, and improve system design before implementation. They can be used in conjunction with other UML diagrams to provide a comprehensive view of a system's structure and behavior.



ACTIVITY DIAGRAM

The activity diagram is an essential tool for understanding the dynamic behaviour of the Passenger Positioning System. It helps to visualize the different activities involved in a process and the order in which they occur. The activity diagram ensures that the system is well-designed and meets the needs of its users. It is also essential in communicating the dynamic behaviour of the system to other developers, stakeholders, and technical documentation.



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2. Fowler, Martin. "UML Distilled: A Brief Guide to the Standard Object Modeling Language."
3. Booch, Grady, Rumbaugh, James, and Jacobson, Ivar. "The Unified Modeling Language User Guide.