Functional, Non-functional and Domain requirements for a Ticket Vendor Machine

-Functional Requirements:

The ticket vendor machine must allow users to select their destination from a menu of options.

The ticket vendor machine must support multiple modes of payment, including credit cards and digital wallets.

If a user pays with a credit card, the machine must issue a paper ticket with a bar code and charge the user's credit card account.

If a user pays with a digital wallet, the machine must display a QR code for the user to scan with their mobile phone.

The machine must validate credit card transactions before issuing tickets.

The machine must issue tickets quickly and reliably, with response times of no more than 10 seconds.

-Non-Functional Requirements:

The machine must be reliable, with a mean time between failures (MTBF) of at least 10,000 hours.

The machine must be designed for ease of use and intuitive operation.

The machine must be secure, with appropriate safeguards to prevent unauthorized access to credit card information or other sensitive data.

The machine must be able to operate in a range of environmental conditions, including temperature and humidity variations.

The machine must be able to operate continuously, with minimal maintenance requirements.

-Domain Requirements:

The machine must be able to accept a variety of different credit cards, including Visa, Mastercard, and American Express.

The machine must be able to accept digital wallet payments from a range of different mobile phone platforms.

The machine must be able to issue tickets for a range of different modes of public transportation, including buses and trains.

The machine must be able to operate in a range of different locations, including outdoor environments.

The machine must comply with relevant regulations and standards, such as those related to data privacy and security, and accessibility requirements for users with disabilities.

Use Case diagram for Ticket Vendor Machine, and Use Case Description

-Use Case Diagram

Use Case description:

Select Destination:

Actors: Passenger, Ticket Vendor Machine

Preconditions: Ticket vendor machine is operational and ready to use

Flow of Events:

Passenger approaches the ticket vendor machine.

Ticket vendor machine displays a menu of potential destinations.

Passenger selects a destination from the menu.

Postconditions: Passenger receives a ticket for the selected destination.

Make Payment:

Actors: Passenger, Ticket Vendor Machine

Preconditions: Ticket vendor machine is operational and ready to use, passenger has selected a destination.

Flow of Events:

Passenger selects the mode of payment, either credit card or digital wallet.

Ticket vendor machine returns to the initial state.

Postconditions: Passenger receives a ticket or digital ticket and payment is processed.

-Activity Diagram:

The activity starts when the passenger approaches the ticket vendor machine and selects "Buy Ticket" option.

The passenger then selects their destination from the menu displayed on the screen.

After selecting the destination, the passenger chooses their preferred payment method: credit card or digital wallet.

If the passenger chooses credit card payment, they insert their credit card into the machine.

The machine validates the credit card information and charges the account.

The machine verifies the payment and issues the ticket.

The ticket is then printed and dispensed to the passenger.

The transaction is completed and the passenger finishes by taking the ticket and leaving the machine.

-Architecture diagram:

Payment and processing

Ticket input

User Interfere layer

User Input System

Ticket Printing System

Ticket Data Storage

-Deployment Diagram:

Payment and processing

Ticket input

Ticket Vendor Machine device software

User Input System

Ticket Printing System

Ticket Data Storage