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PART A)
Functional system requirements for the turnstyle for movie theaters:

- The turnstyle will be one way and clockwise turning(also known as left handedness for full height turnstiles)
- The QR scanner will be on the right side of the turnstile located 4’ from the ground
- The turnstile will be at minimum 5’5” in length, 5’ in width, and 7’5” in height
- To the left of the turnstyle will be two doors that allow for push on one side and handle on the other.
- The the center bar of the doors will have the ability to be removed
- The handle side of the door will have an electronic lock that can be unlocked with an employee QR code
- All employees will have an QR code that works for both the door and turnstile
- The QR scanner will be able to handle both paper and digital QR codes
- The QR scanner will connect to the database for logging ticket in times
- It should not take a user more than 6 seconds to move through the turnstile
- The turnstile cannot operate without electricity
- The scanner will deny entry for tickets until 45 before the movie starts
- The scanner will deny entry for tickets 10 minutes before movie ends

The operational system requirements for the turnstile subsystem are:

- The overall subsystem should not cost more than $25,000 for initial implementation.
- The overall subsystem should not cost more than $4,500 per year to operate.

The subsystem maintenance and support requirements for the turnstile subsystem are as follows:

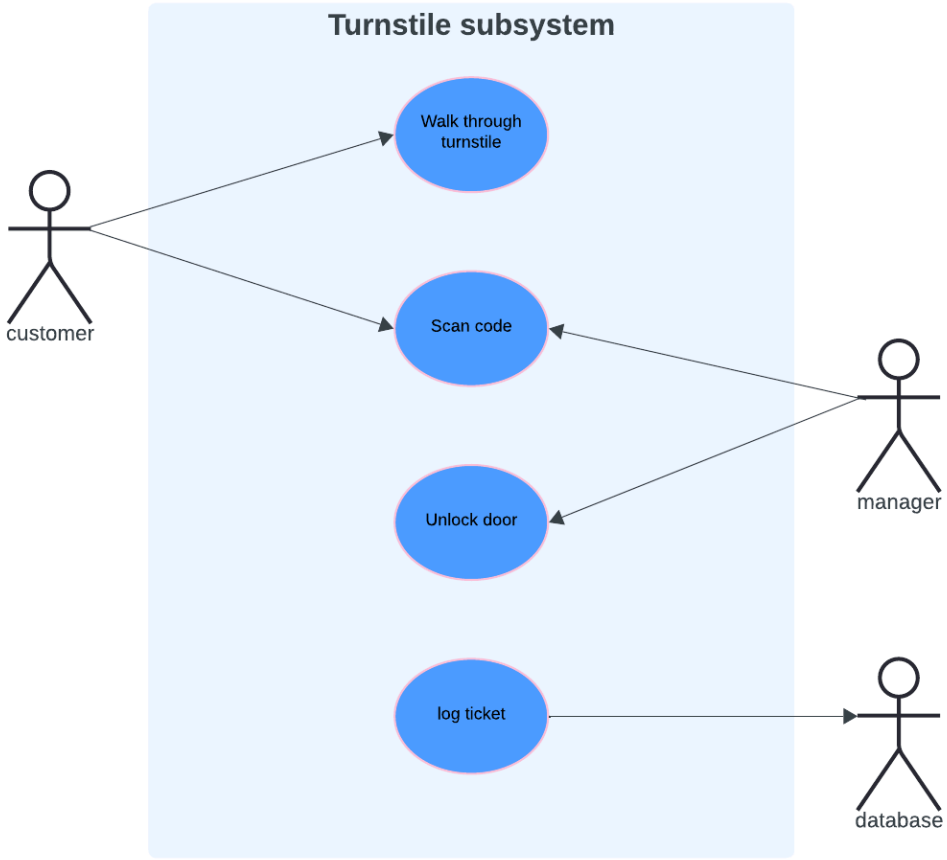
- There will be glass on the panel where the QR scanner is located
- The turnstile will be made out of 304 stainless steel
- The front scanner will need cleaning every week to ensure a clean read
- The ground will be a smooth tile leading into carpet underneath the turnstile
- The turnstyle itself will only require maintenance once every few months, however it will need cleaning every week for the sake of its appearance
- If it needs to be fixed, the parts are shippable and easy to locate
- The turnstile can only break via the turning system jamming or stopping, in which case the gate will be open for entry and exit
- The way to fix that issue would be to unstick the turnstile in any way, slightly pull back, and continue pushing forward

PART B)

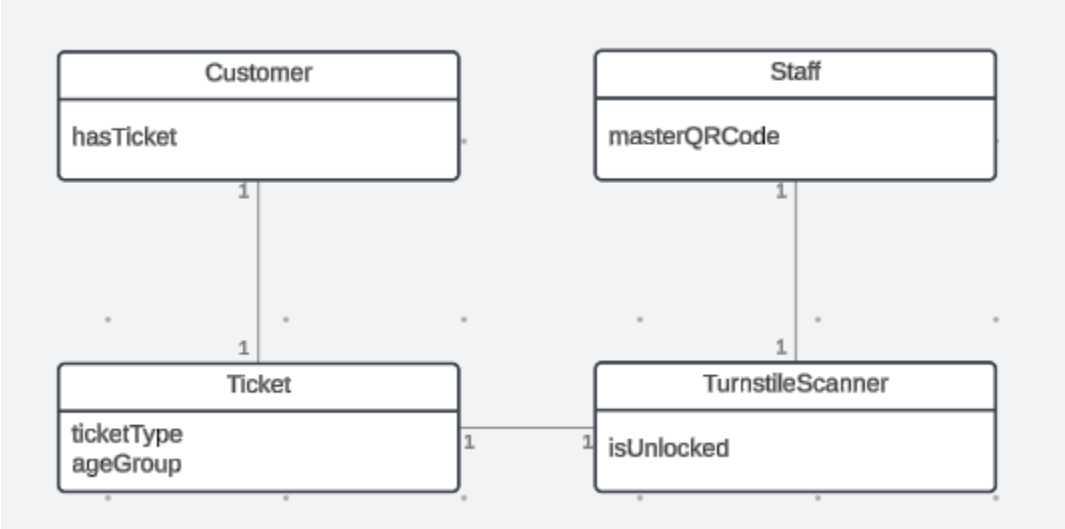
1. Identification of Use Cases:
   - Scan QR code = the user scan either the paper ticket with a QR code or the digital ticket with a QR code
   - Walk through turnstile = user walks through to the other side
   - Unlock door = an employee unlocks the door using the QR scanner to get to the other side
   - Log ticket = when a ticket is scanned, the database logs the info of the ticket

2. Determine the actors:
   - Managers
   - Movie theater employees
   - kids
   - Adults
   - Mechanics
   - Movie theater database

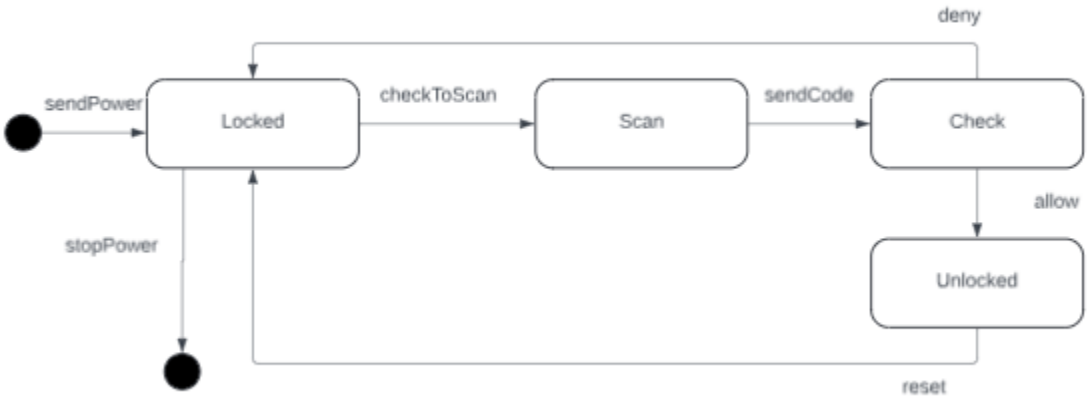
3. Use Case Diagram



4. Domain model class diagram



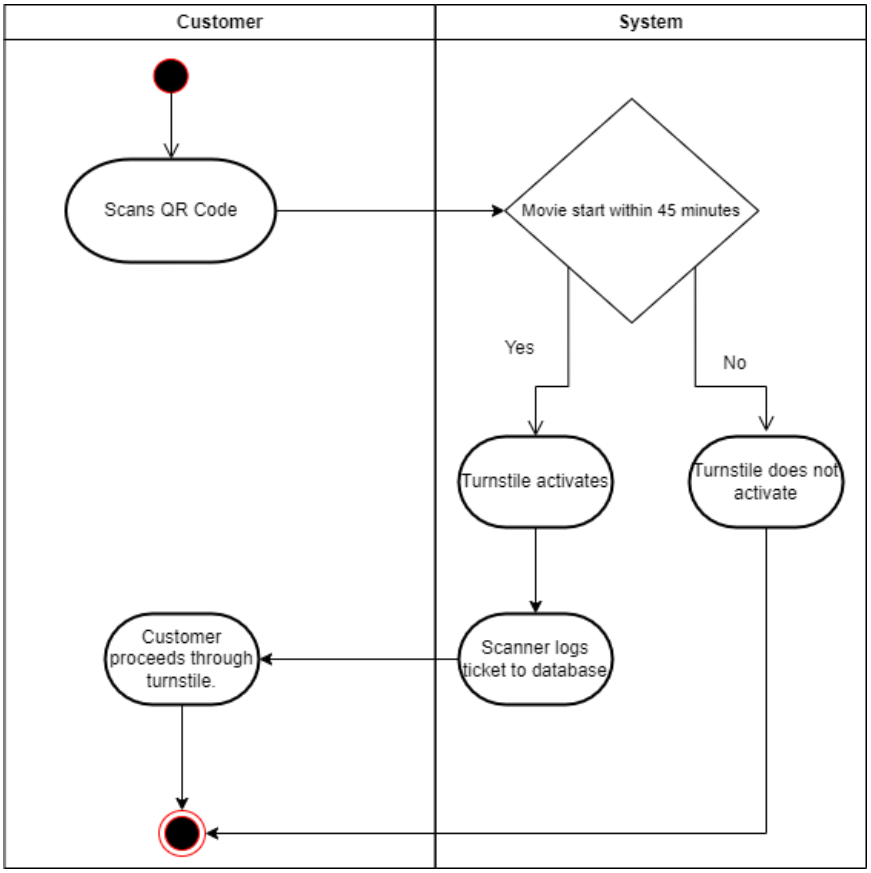
5. State machine diagram



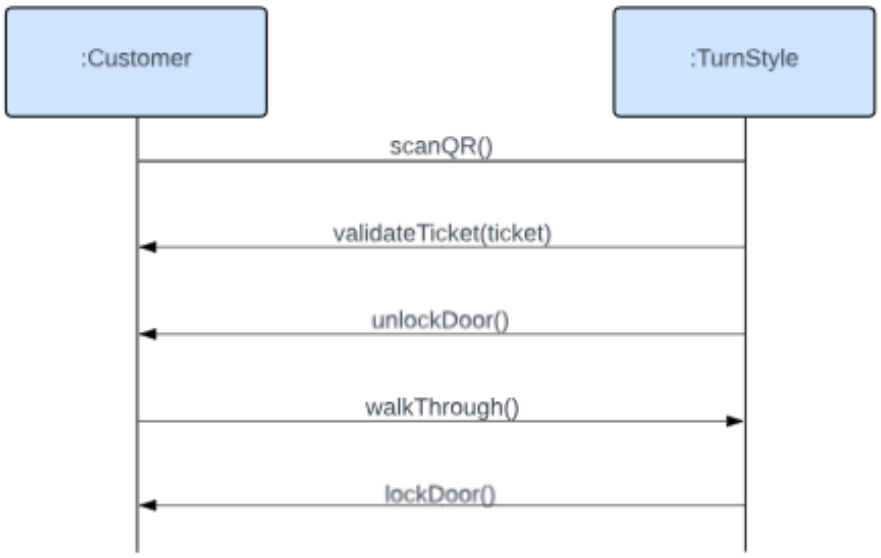
6. Use Case Description

Use Case Name:	Use the QR scanner.	
Scenario:	Use the QR Scanner to activate the turnstile.	
Triggering Event:	Person wants to use the turnstile to access part of the theater.	
Brief Description:	A person must use a QR code at the QR scanner to activate the turnstile and access the inner part of the theater.	
Actors:	Customers and Staff.	
Related Use Cases:	Invoked by the employee unlock door use case.	
Stakeholders:	Customers and Staff.	
Preconditions:	Online tickets or printer must be available to make code. Scanner must be operational.	
Postconditions:	Tickets must be logged into the database by scanner. Scanner must activate the turnstile.	
Flow of Activities:	Actor	System
	1. Customer/Staff scan QR Code 2. Customer walks through turnstile	1.1 System checks if code is a staff code or customer code 1.2 System checks if customer movie starts within 45 minutes 1.3 System logs QR Code usage to database 1.4 System unlocks turnstile 2.1 System locks turnstile
Exception Conditions:	1.1 If QR Code is neither staff or customer. 1.2 If the customer's movie does not start within 45 minutes.	

7. Activity Diagram



8. System Sequence Diagram



9. CRUD Matrix

USE CASES	Customer	Turnstyle	QR Scanner	Ticket
Customer Scans QR Code	R		R	R
Walking through turnstyle	C	U		
Unlocking the door		C	U	R
Logging the tickets	R	U		R
Customer purchases a ticket	C			C