

Theatre Ticketing System

Software Design Specifications

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March 1, 2023

System Description

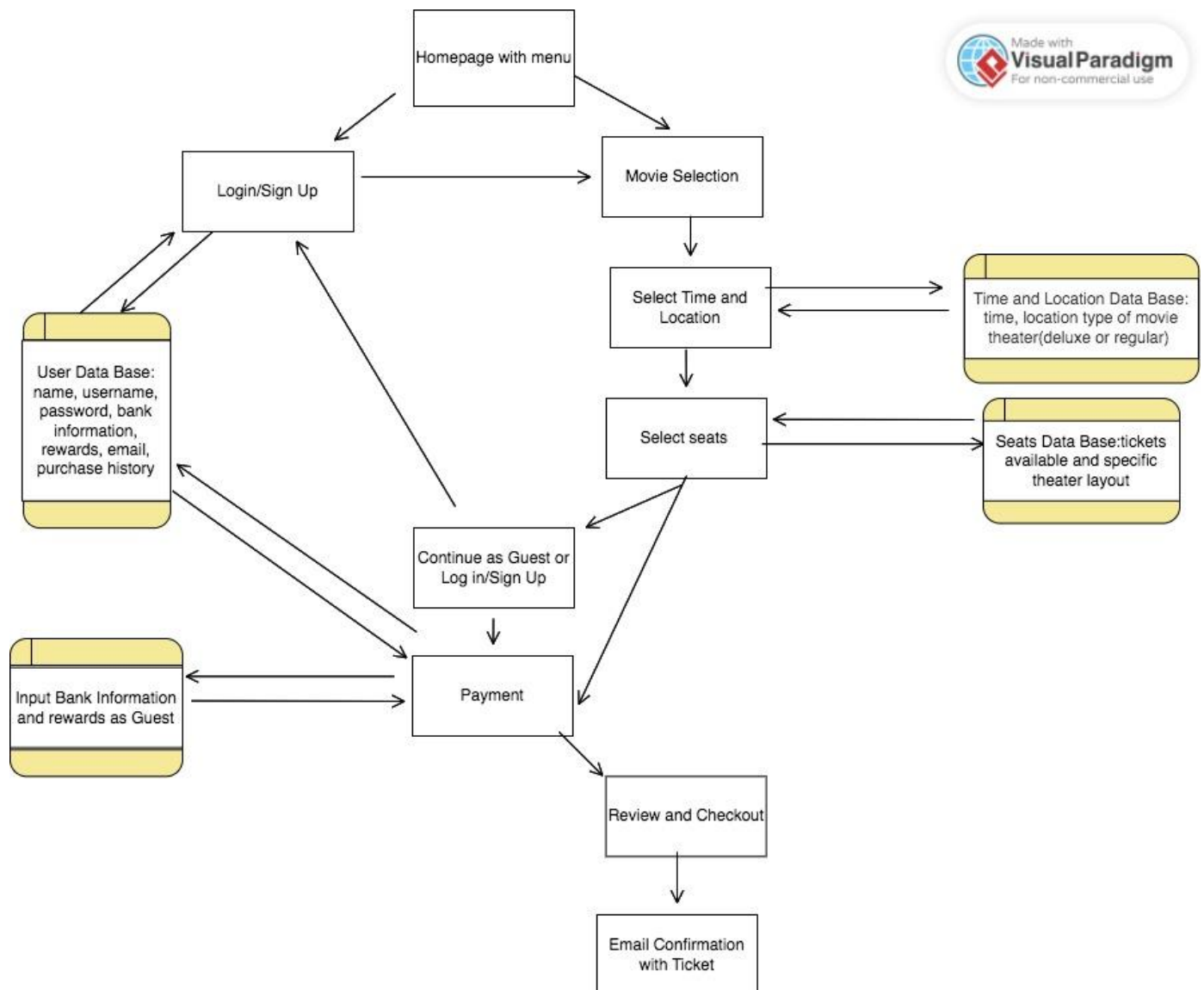
Brief Overview of System

The Theatre Ticketing System is a web-based platform that enables users to buy tickets for movies at various theaters. The system can be accessed through in-person kiosks and an online web browser. The system supports both physical and digital tickets while having tickets for both deluxe theaters (150 seats available and assigned seating) and regular theaters (75 seats available general seating). The system supports multiple languages (English, Spanish, and Swedish) and offers optional customer accounts. A maximum number of 20 tickets can be bought at a time and users are given five minutes to buy their tickets before having to restart. The system will also allow tickets to be brought up to 2 weeks in advance and until 10 minutes into the showing. Users can receive a refund for their tickets in person through an employee prior to showing only if their ticket was purchased with a user account. In regards to keeping our software system up to par, there will be a customer satisfaction rating at the end of the ticket buying process, and updates every once in a while. Looking at the bigger picture, our software will be responsible for handling ticket payments, handling user loyalty accounts, and ensuring their satisfaction and ease of use through the process.

Software Architecture Overview

The Software Architecture Overview provides a detailed view of the design and organization of the Theater Ticketing Software. This section highlights the major components of the system, how it interacts, and the technology that is used to implement them.

Software Architecture Diagram (SWA)



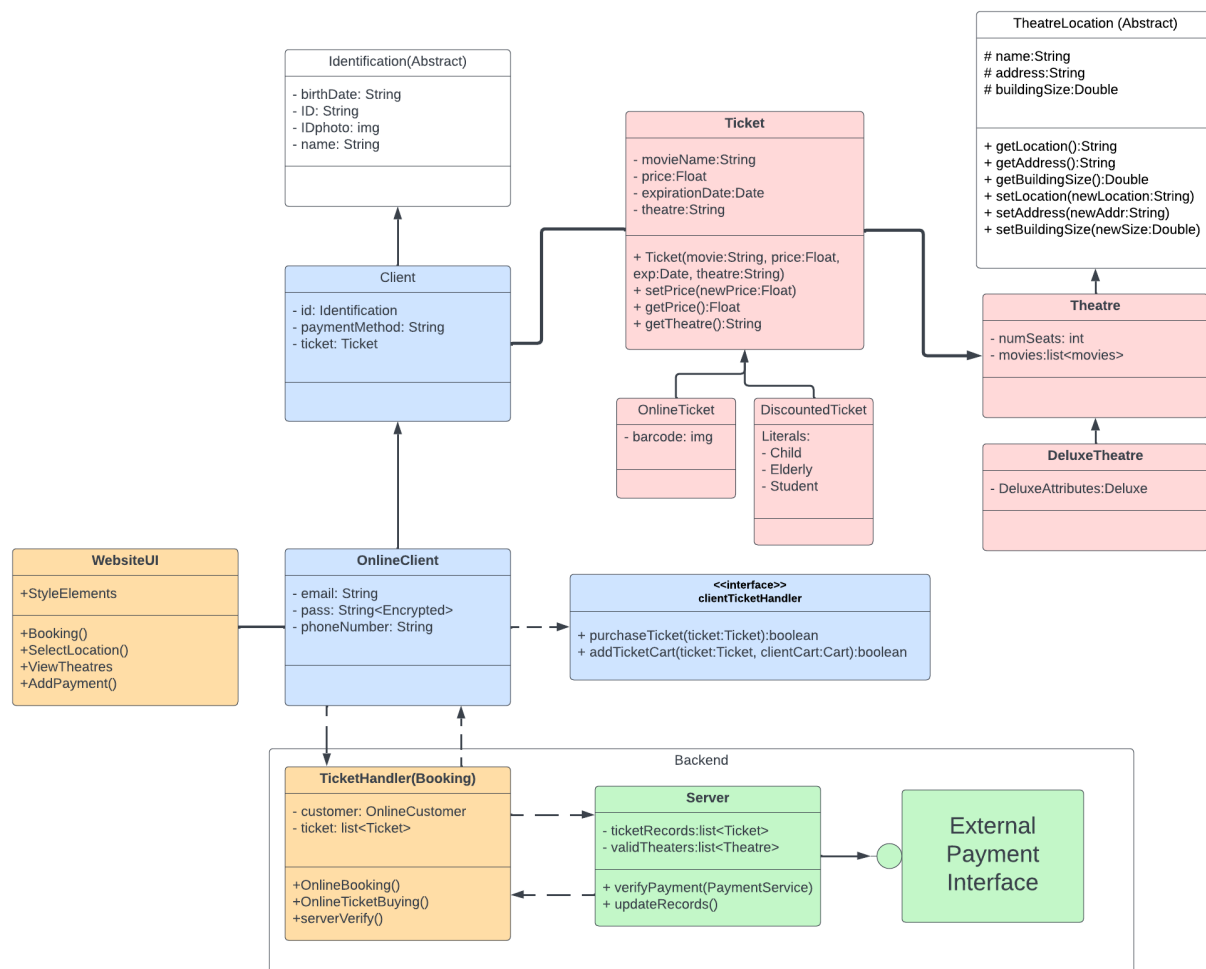
Software Architecture Diagram Description

The online web browser and in-person digital kiosk will first display a homepage to the customer. From the homepage, the customer will either be able browse through featured movies or click a tab from a menu which leads straight to a log in/sign up page.

If, from the homepage, the user goes straight into selecting a movie, the next step the user will have is selecting a time for the movie and location which will be accessed from a database. Then they will select their specific desired seats in the theater chosen which will also rely on the database. After, they will be led to a page asking if they would like to continue as a guest or to log in/sign up. If at this point, they choose to continue as a guest, they will be prompted to enter their payment information. If they choose the alternate option, they will be prompted to the log in/sign up page, and either access their existing information from the database by logging in or store new information into the database by signing up. Then they will be prompted to the payment page where they will confirm the information that was accessed from the data base. Regardless of those two options, the user will then review and finalize their order and receive an email confirmation with a digital ticket.

If the second route is followed, and the user decides to log in before selecting a movie, they will be directed to the log in/sign up page after selecting that tab from the menu in the homepage. Data will either be accessed from the database (for people that already have an account) or new data will be stored in the database (for people creating an account). They will then be taken back to the homepage to select a movie. Once a movie is selected, the same process will be followed as the previous route, in regards to selecting a time, location, and seats. If already logged in, the system will automatically jump to the payment page and completely ignore the prompt to continue the guest or log in/sign up. The database will be accessed for previous bank information as well as any rewards the account holder may have. Then, same as before, the user will confirm everything, review and checkout, and receive an email confirmation with their digital ticket.

UML Diagram



UML Diagram Description

The UML Class for the theater ticketing system is designed with three distinct attributes: Theatre, Client, and Server. Each of these interact with each other to fulfill the design requirements. Attributes in each respective category have been colored red, blue, and orange/green respectively in the UML Diagram.

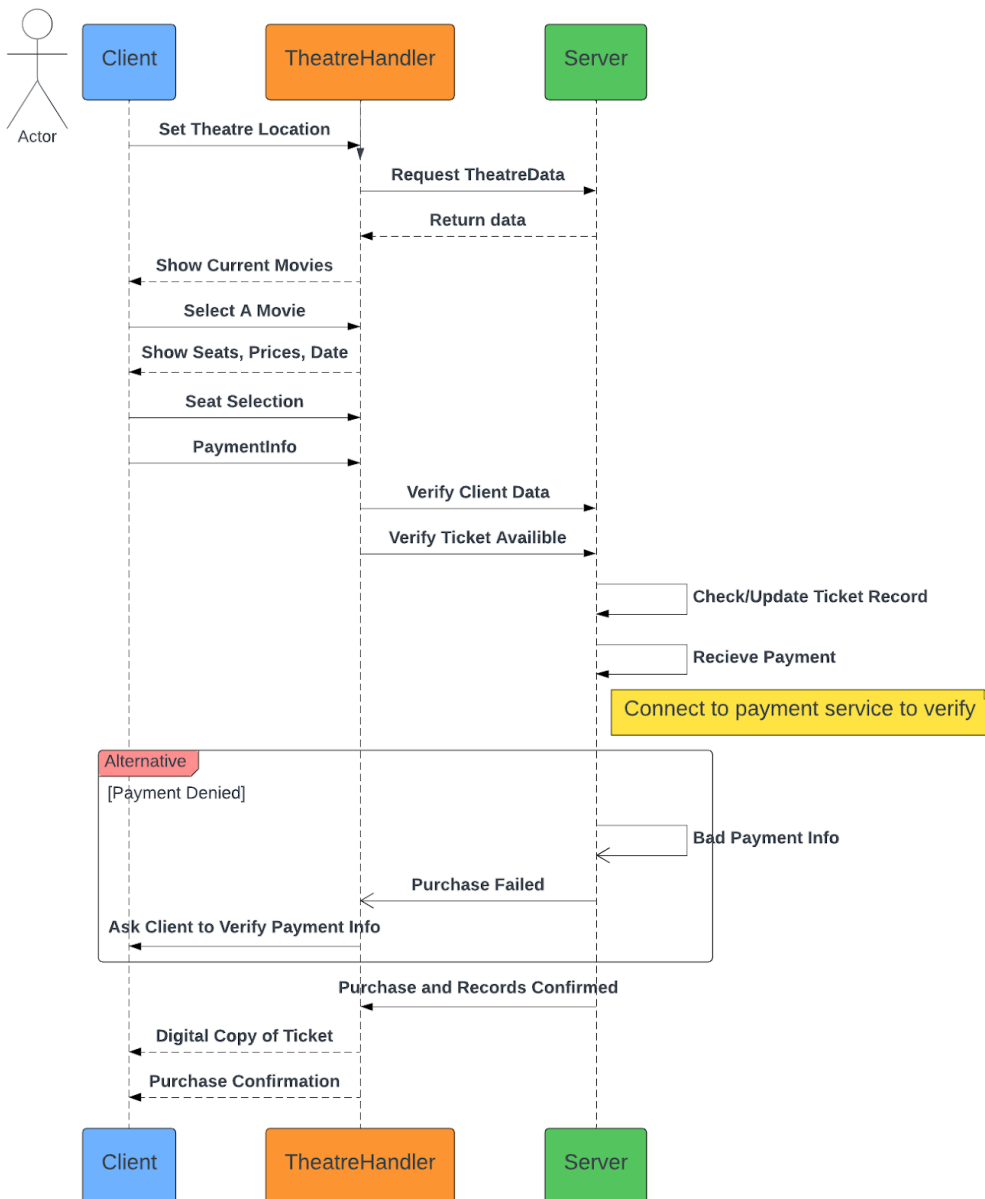
For red (theater) classes, they serve as the base for how the Theatre/Ticket classes store key information such as the list of movies and the prices of tickets. All of the key fields have accessors and mutators to ensure that records can be updated if and when they need to. Additionally, the foundational design allows for features such as Discounted/Online Tickets and different types of Theatres to be added with significantly less development time.

The blue (client) classes serve to create an interface for the client to login with correct credentials. It keeps track of relevant client fields such as their username, password, and phone

number. Additionally, it enables the client to send requests to the server using the clientTicketHandler interface.

Finally, the orange/green(server) classes handle the client's requests, verify their information, and keep track of the master records of available tickets/movies at a given theater. The TicketHandler class acts as an intermediary between the client and the server, where its functionality is explained in greater detail in the UML sequence diagram.

UML Sequence Diagram

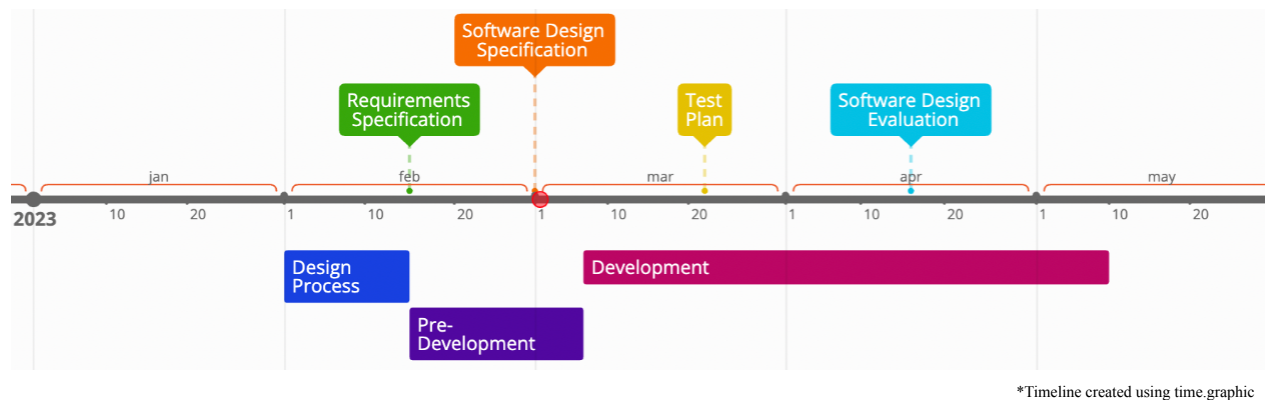


To demonstrate what a typical operation between a client and product might look like, a UML Sequence Diagram is included. Assuming the user is logged in and their credentials have been verified, they can send and receive information from the TicketHandler class, which acts as an intermediary between the client and server. To update the site, the OnlineClient class interacts with the TicketHandler and WebsiteUI classes to show relevant/requested information. After the client sends a purchase order, it is forwarded from the TicketHandler to the server to verify payment information and ticket availability. The server then interacts with the corresponding payment service that the client uses (Bank software, Paypal, etc). Based on the validity of the payment (credible information, adequate funds), the server will either charge the client and update the master ticket record, or request that the client verify their payment information is correct.

To increase security, features that verify that the TicketHandler is operating correctly and relaying the correct information should be implemented. If the client attempts to send malicious information or if the TicketHandler becomes out of sync with the server, then the server should take action such as restarting the session with the client or canceling a transaction if one was in progress.

Development Plan and Timeline

The proposed plan for the Theatre Ticket System project is a development period that spans all Spring 2023 with a release scheduled for early Summer 2023. Within this team of software developers, the system will be divided into its components including the system operations, attributes, classes, and interface which is outlined in the UML diagram of the software design detailed above. By following a strict design arrangement, an early prototype is expected to be ready by mid-to-late Spring. This gives us sufficient time to debug the system and also reassess the project requirements if needed. In addition, a testing plan is a part of the plan during the middle of development, in March. This testing plan will reinforce and assist the evaluation process. The goal is to be able to catch problems early instead of at the end of development in order to adapt accordingly. Towards the end of the development period, a software design specifications reevaluated will take place and is also in place to assist the project development.



The above timeline, spanning from early February to mid-May, illustrates the estimated timeline for the Theatre Ticket System. As previously mentioned, the project has been divided into tasks for the project members. The first tasks that need to be completed are the parent classes of Theater and Customer followed by DeluxeTheater and OnlineCustomer. These tasks will be completed by developers Andrea Abed, Diana Yousefnejad, and Ryan Bouzan. This will be followed by the Ticket class and the OnlineTicket and DiscountedTicket classes by Carlos Lopez. The WebsiteUI tasks will be completed by Thomas Comeau along with the Booking and System tasks.