

**CS 3354: Software Engineering**  
**Final Project Deliverable II**

Movie Theater Ticketing System

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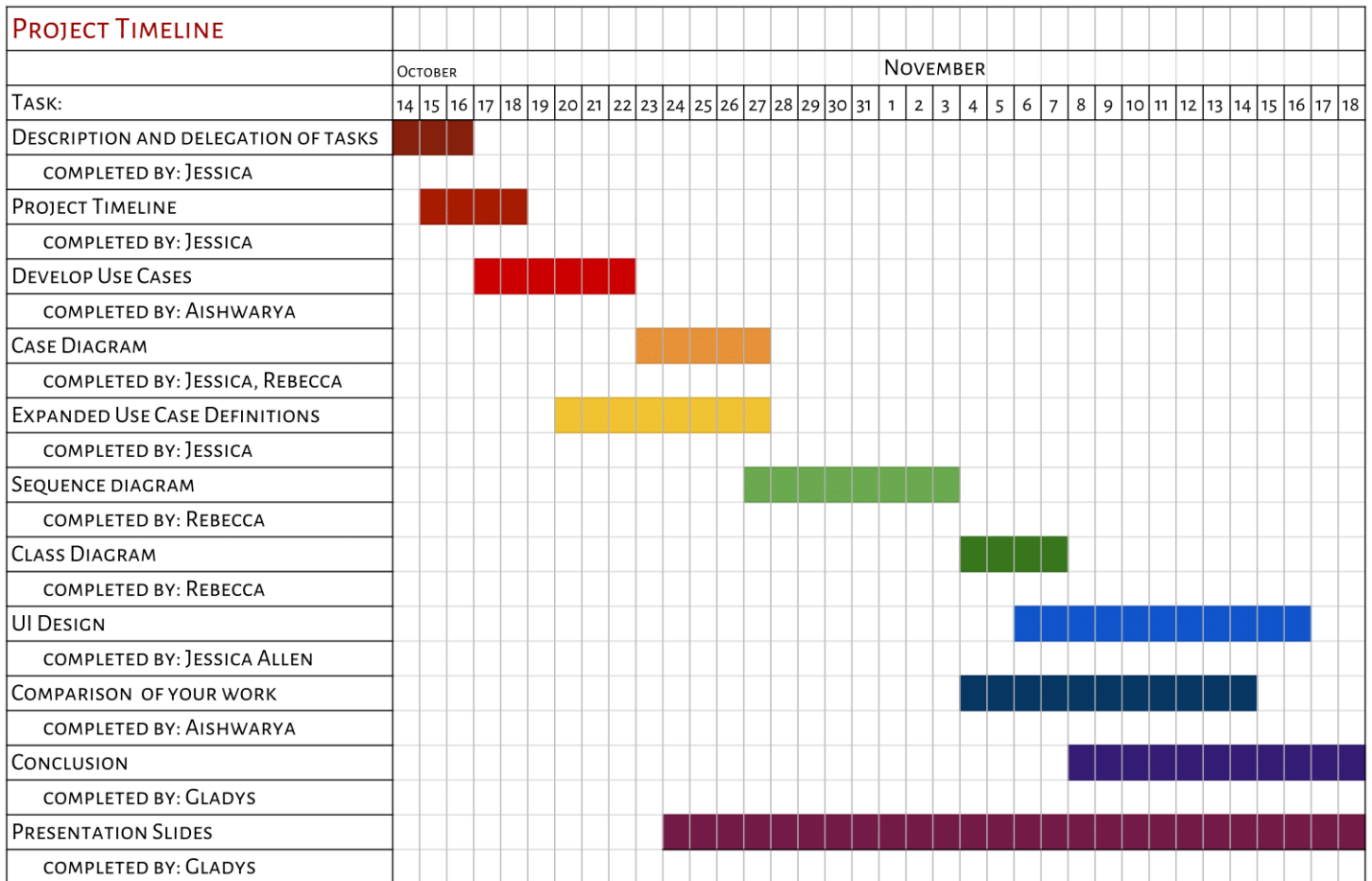
## 1. Description and Delegation of Tasks

Tasks	Assigned to:
Edited final project draft description (proofread based on professor feedback)	Jessica Allen, Gladys Adjei, Aishwarya Tirumani, Rebecca LaDeau
What software process was used and why?	Jessica Allen
<b>Effort, Timeline, and Cost Estimation</b>	
Details of duration and cost estimations for project	Rebecca LaDeau, Aishwarya Tirumani
What effort estimation method was adopted? Why?	Rebecca LaDeau
Estimated cost of hardware products	Aishwarya Tirumani
Estimated cost of software products	Aishwarya Tirumani
Estimated cost of personnel	Aishwarya Tirumani
Timeline plot for project including individual tasks and duration	Rebecca Ladeau
<b>Software Requirements Specification</b>	
Functional and Nonfunctional Requirements	Jessica Allen, Gladys Adjei, Aishwarya Tirumani, Rebecca LaDeau
Requirement Allocation	Gladys Adjei
Architectural design - Block diagram	Jessica Allen
Architectural style - N-tier	Gladys Adjei
<b>Deliverable 2</b>	
Description and delegation of tasks	Jessica Allen

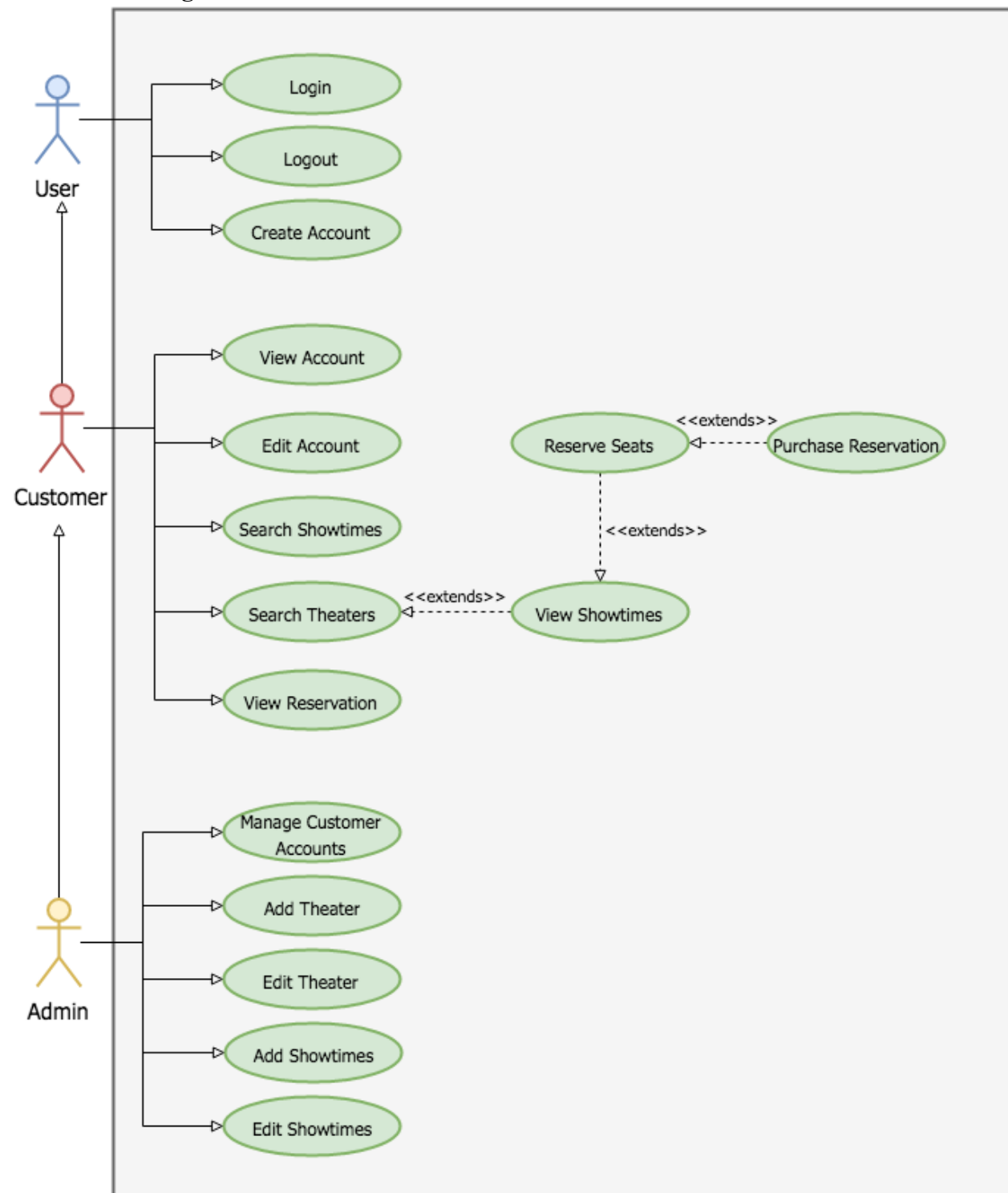
Project Timeline -Step in design and development of project report	Jessica Allen
Develop Use Cases	Gladys Adjei, Aishwarya Tirumani, Rebecca LaDeau, Jessica Allen
Extended Use Cases	Jessica Allen, Rebecca LaDeau
Case Diagram	Jessica Allen, Rebecca LaDeau
Sequence Diagram	Rebecca LaDeau
Class Diagram	Rebecca LaDeau
UI Design	Jessica Allen
Comparison of your work with other designs	Aishwarya Tirumani
Conclusion	Gladys Adjei
Presentation Slides	Gladys Adjei
Edited final project submission	Aishwarya Tirumani, Gladys Adjei, Rebecca LaDeau, Jessica Allen

## 2. Project Timeline

Project timeline is displayed below.



### 3. Use Case Diagram



#### 4. Expanded Use Case Definitions 1-16

##### UC01. Create Account

Precondition: The User is currently on the homepage of the MTS website and possesses the information necessary for account creation.	
Actor: User	System: MTS
	0. System displays MTS welcome page.
1. TUCBW the User clicks the “Sign Up” link on the homepage.	2. System displays an Account Creation form requesting the following information: first/last name, address, phone number, and email address.
3. The User enters the information and clicks the Continue button.	4a. If: email address valid, system displays a successful sign-up message and sends a verification email to User.  4b. Else: system displays an unsuccessful sign-up message and displays button to go back and enter changes to information.
5. TUCEW the User sees the successful verification message.	
Postcondition: The User’s account is immediately active in the system.	

##### UC02. View Account

Precondition: The customer has already created an account and is currently logged in.	
Actor: Customer	System: MTS
	0. The system displays MTS welcome page.
1. TUCBW the customer clicks the “View Account” button the toolbar.	2. The system displays the user’s account information details.
3. TUCEW the customer sees their account information.	
Postcondition: None.	

### UC03: Edit Account

Precondition: The customer has already created an account and is currently logged in.	
Actor: Customer	System: MTS
	0. The system displays MTS welcome page.
1. TUCBW the customer clicks the “Edit Account” button located on left sidebar.	2. The system displays the User’s account details in an editable form.
3. The customer makes desired alterations to account information and clicks the “Update” button.	4. The system displays a success message and sends a confirmation email to User.
5. TUCEW the customer sees the confirmation message and clicks “OK” to acknowledge message.	
Postcondition: The customer’s account is immediately updated in the system.	

### UC04: Log-in

Precondition: The User has already made an account and is on the MTS welcome page.	
Actor: User	System: MTS
	0. The MTS displays the Web welcome page.
1. TUCBW The User clicks the “Login” button on the toolbar.	2. The system displays a login form requesting the following information: username and password.
3. The User enters their username and password and clicks the “Login” button.	4a. If: username/password match, the system displays a successful login message and redirects to welcome page.  4b. Else: system displays incorrect username/password combination message and displays form to enter info again.
5. TUCEW the User sees the successful login message.	
Postcondition: The User has immediate access to all functions related to their account type.	



### UC05: Logout

Precondition: The User is already logged into their account.	
Actor: User	System: MTS
	0. The system displays any page of the MTS.
1. TUCBW The User clicks the “Logout” button at the bottom of the screen.	2. The system logs the user out of MTS and displays successful logout message.
3. TUCEW The User sees the successful logout message.	
Postcondition: The User immediately loses access to account-related functions.	

### UC06: Search Movie Showtimes

Precondition: The User is currently on the welcome page of MTS Weblication.	
Actor: User	System: MTS
	0. The system displays the welcome page.
1. TUCBW the user clicks the “Search Showtimes” button on welcome page.	2. The system displays a form requesting the movie title, the user’s zip code, and desired mile radius.
3. The user enters the required information and clicks the “Search” button.	4. The system displays a list of showtimes for the specific movie at theaters within the distance restraint.
5. TUCEW the users views the list of available showtimes.	
Postcondition: None	

### UC07: Search Theaters

Precondition: The User has already created an account and is currently logged in.	
Actor: User	System: MTS

	0. The system displays the MTS “Welcome” page.
1. TUCBW The User clicks the “Find Theaters” button on the toolbar.	2. The system displays form requesting the desired zip code and mile radius.
3. The User enters their zip code and desired radius and clicks the “Search” button.	4. The system displays a list of theaters located within user’s given radius.
5. TUCEW The User sees the list of theaters.	
Postcondition: The User has access to optional, additional information for each theater, such as showtimes, prices, etc.	

#### UC08. View Showtimes

Precondition: The user has searched for theaters and is currently viewing a list of available theaters within their area.	
Actor: User	System: MTS
	0. The system displays a list of movie theaters within the user’s specified distance.
1. The user clicks the “View Showtimes” button located next to each movie theater listed.	2. The system displays a list of showtimes for the selected theater.
3. The user views the list of showtimes.	
Postcondition: The list of showtimes should update when page is refreshed to reflect changes in availability.	

#### UC09. Reserve Seat

Precondition: Customer has viewed and selected a showtime from a list of theaters that they would like to reserve	
Actor: Customer	System: MTS
	0. The system displays available movie showtimes.
1. The customer clicks the “Reserve Seat”	2. The system displays a seating chart of the

button next to a desired showtime.	selected showtime.
3. The customer selects a seat, or seats, which they desire to be reserved.	4a. If the seat is available, the system displays “Seat available”  4b. Else the system displays “Seat not available” and allows Customer to re-select a seat.
5.TUCCW UC10. Purchase Reservation	
Postcondition: If a seat is successfully chosen, it is immediately unavailable for others to reserve.	

#### UC10. Purchase Reservation

Precondition: Customer has previously selected a seat to reserve.	
Actor: Customer	System: MTS
	0. The system displays the seat reservation page.
1. The customer clicks the “Purchase” button at the bottom of the page.	2. The system displays the payment screen
3. The customer enters payment information such as address and card number, as well as the type of ticket that is to be purchased (Student, Senior, Military, etc.), and clicks “Submit”	4. The system displays a confirmation page
5.The customer reviews the payment information and clicks “Confirm Payment.”	6. The system displays a final confirmation page and alerts the customer an email receipt has been sent.
7. The customer sees the “Successful Payment” confirmation message.	
Postcondition: The payment transaction is completed immediately and the ticket reservation is available for view.	

### UC11: View Ticket Reservation

Precondition: The User is currently logged in and is on the welcome page of MTS website and has previously selected and purchased a movie ticket.	
Actor: Customer	System: MTS
	0. The system displays the welcome page.
1. The user clicks the “View Reservations” button on the side toolbar.	2. The system displays a list of all past ticket purchases made by the customer.
3. The user views the list of ticket reservations.	
Postcondition: None?	

### UC12: Add Movie Theater

Precondition: The Administrator is currently on the welcome page of MTS website and has the permissions necessary to add new movie theaters to the system.	
Actor: Administrator	System: MTS
	0. The system displays the welcome page.
1. The admin clicks the “Add Theater” button on the side toolbar.	2. The system displays a form requesting theater information: name, description, address, hours of operation, showtimes.
3. The admin enters the required information and clicks the “Create” button.	4. The system displays a success message and alerts the admin that the theater has been added to the system.
5. The admin sees the success message.	
Postcondition: The newly created movie theater is immediately available and searchable in the system.	

### UC13: Edit Movie Theater

Precondition: The Admin is currently signed in and on the welcome page of MTS Website.	
Actor: Admin	System: MTS

	0. The system displays the welcome page.
1. The admin clicks the “Edit Theaters” button on welcome page.	2. The system displays a form requesting the name or id of the theater.
3. The admin enters the required information and clicks the “Search” button.	4. The system displays the requested theater with information in an editable form.
5. The admin enters the desired changes to the theater information.	6. The system displays a success message and alerts the admin that the theater has been edited.
Postcondition: The modified theater information is immediately updated and available in the system.	

#### UC14: Add Movie Showtime

Precondition: The User is currently logged in and on the welcome page of MTS Website.	
Actor: User	System: MTS
	0. The system displays the welcome page.
1. The user clicks the “Add Showtimes” button on toolbar.	2. The system displays a form requesting the theater id and movie id.
3. The user enters the required information and clicks the “Search” button.	4. The system displays the showtimes for the requested theater.
5. The admin adds the desired showtimes to the list of current and future showings.	6. The system displays a success message and alerts the admin that a confirmation email has been sent to their email account.
7. The admin sees that the showtimes were added successfully.	
Postcondition:	

#### UC15: Edit Movie Showtime

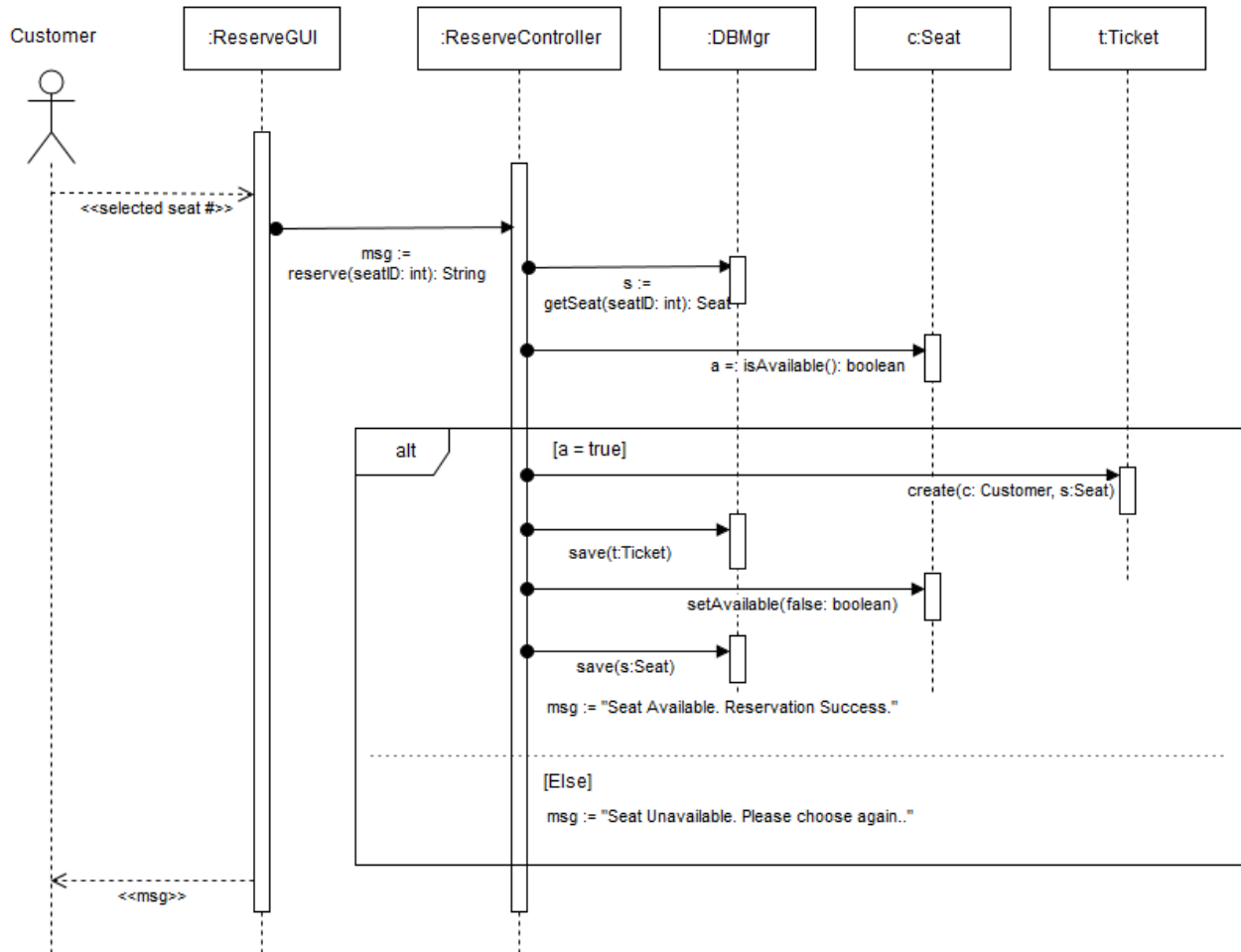
Precondition: The Admin is currently logged in and on the welcome page of MTS website.	
Actor: Admin	System: MTS

	0. The system displays the welcome page.
1. The admin clicks the “Edit Movie Showtimes” button on welcome page.	2. The system displays a form requesting the theater id.
3. The user enters the required information and clicks the “Search” button.	4. The system displays the showtimes for the given theater with options to edit and delete.
5. The admin makes the desired changes and clicks the “Save” button.	6. The system displays a confirmation message and alerts the admin that a confirmation email has been sent to their account.
7. The admin views the confirmation message.	
Postcondition: The modified showtimes are immediately updated in the system.	

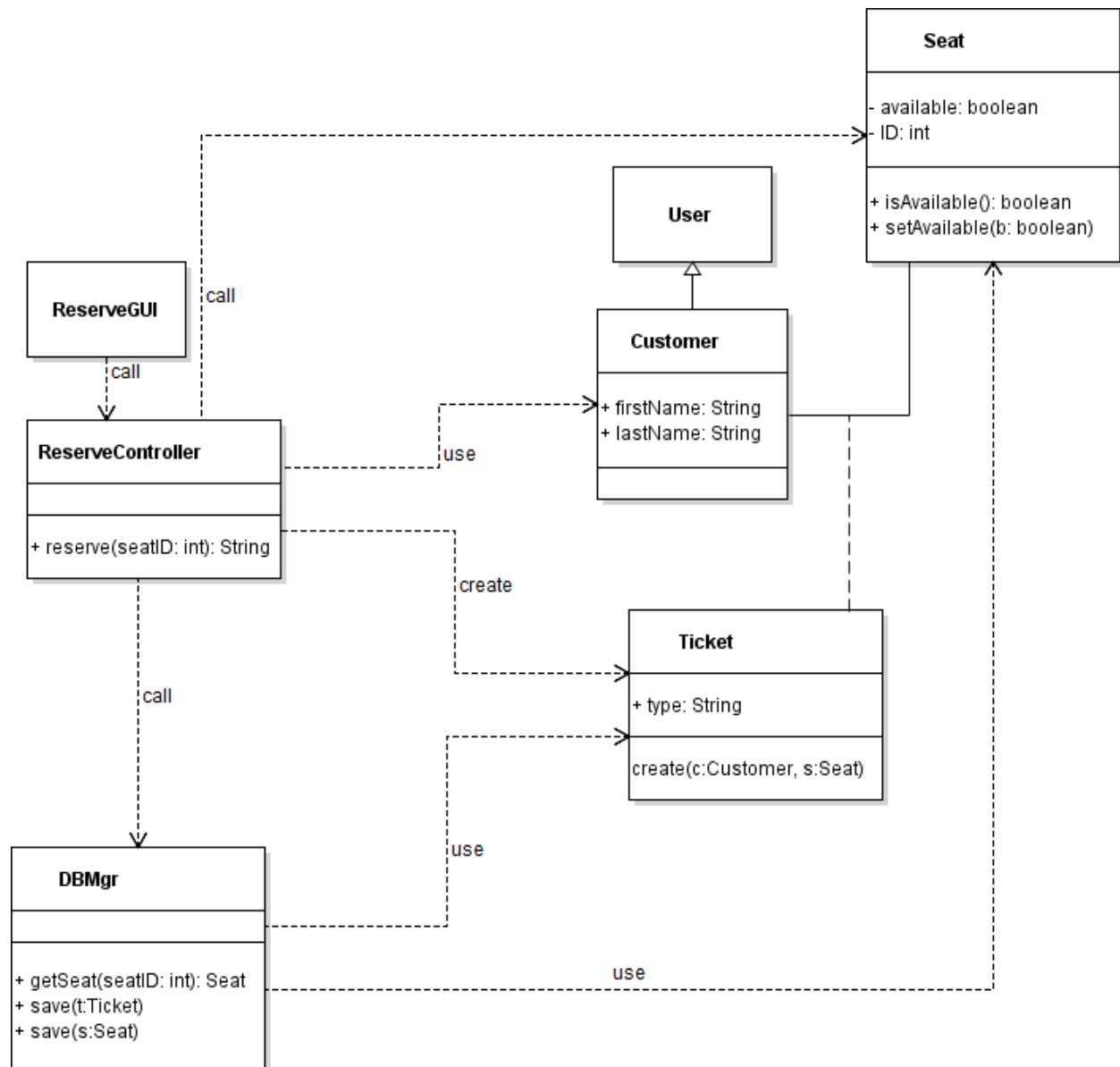
#### UC16: Manage Customer Account

Precondition: The Admin is currently logged in and on the welcome page of MTS Website.	
Actor: Admin	System: MTS
	0. The system displays the welcome page.
1. The user clicks the “Manage Accounts” button on welcome page toolbar.	2. The system displays a search page asking for account name or account number.
3. The user enters the required information and clicks the “Search” button.	4. The system displays the user’s account and its information in an editable form.
5. The admin views and modifies the user’s account and clicks the “Save” button at the bottom of the screen.	6. The system displays a confirmation message and alerts the admin that a confirmation email has been sent to the admin’s account.
7. The admin views the confirmation message.	
Postcondition: The modifications made to the user’s account are immediately updated in the system and viewable by the user.	

## 5. Sequence Diagram



## 6. Design Class Diagram





## 7. User Interface Design

Image 1: MTS Welcome Page

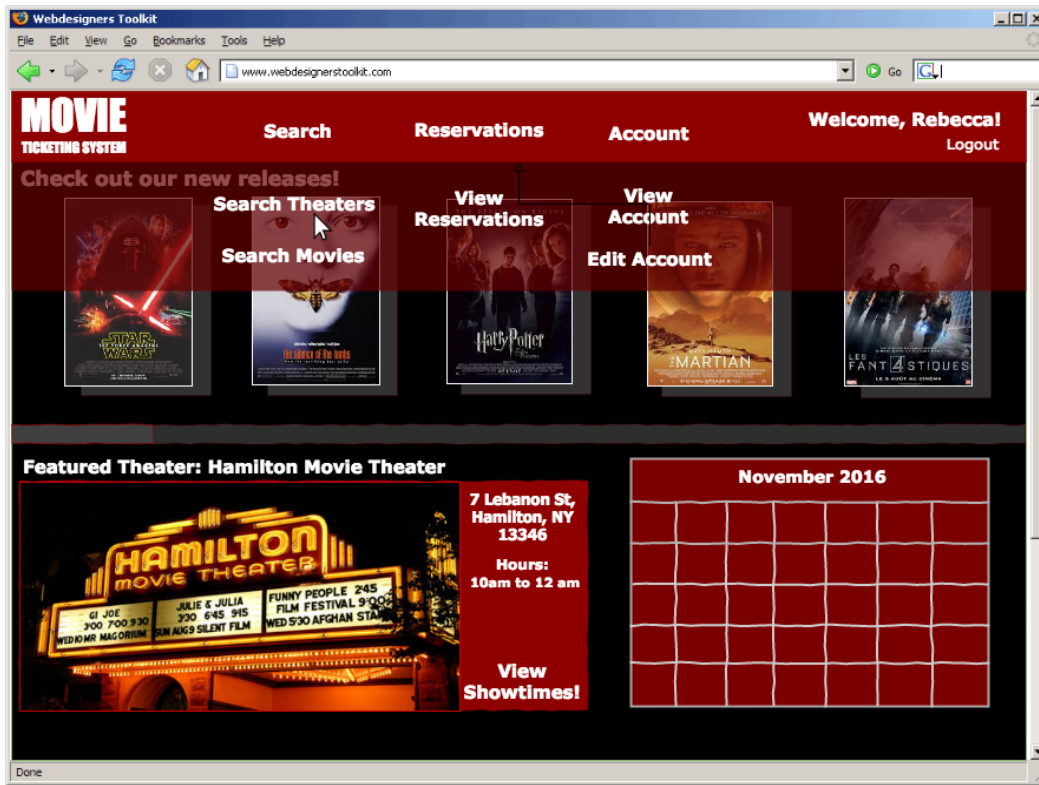


Image 2: MTS Search Theaters Page

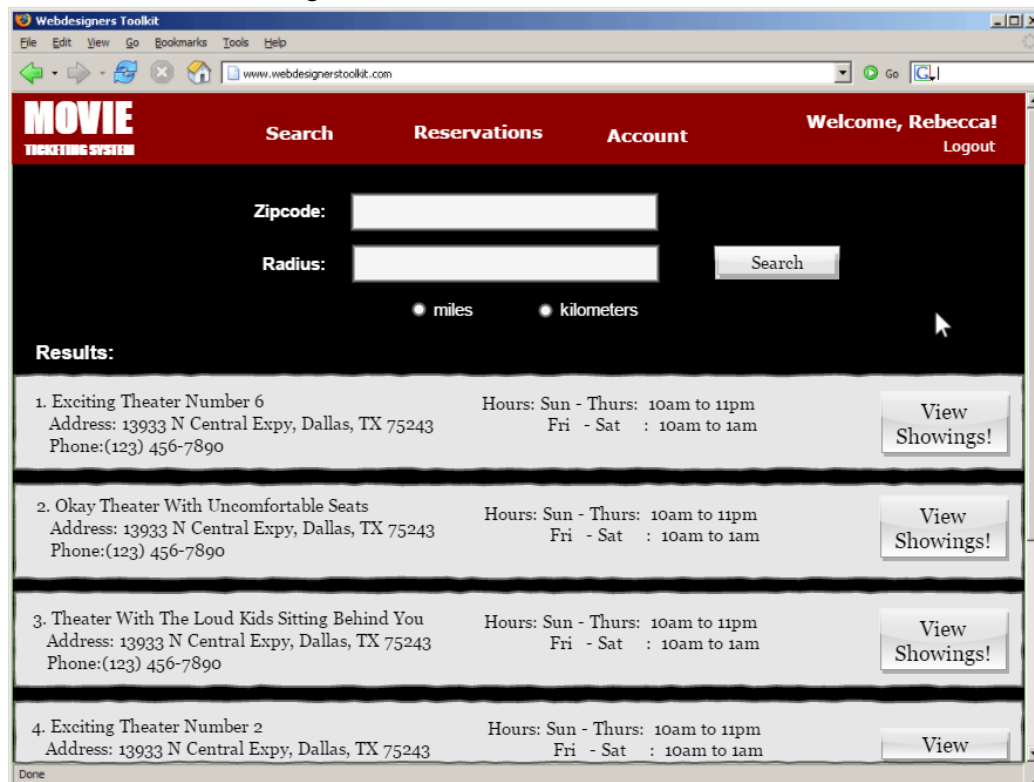


Image 3: MTS View Showings Page

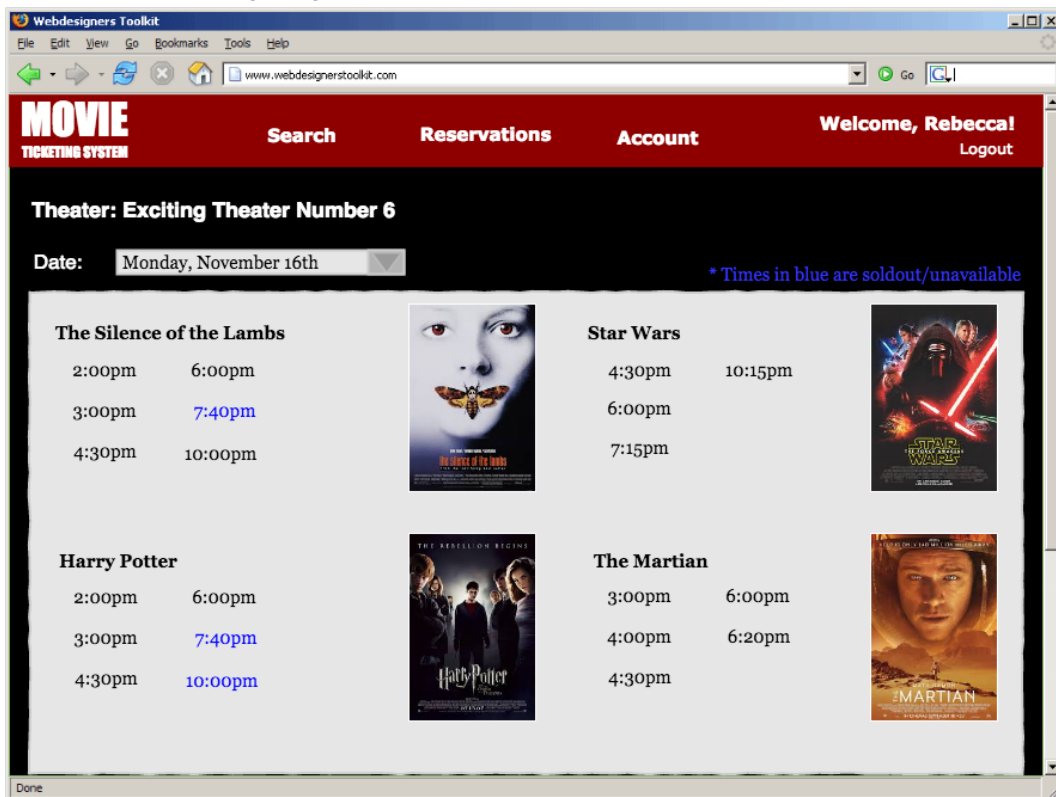


Image 4: MTS Select Tickets Page

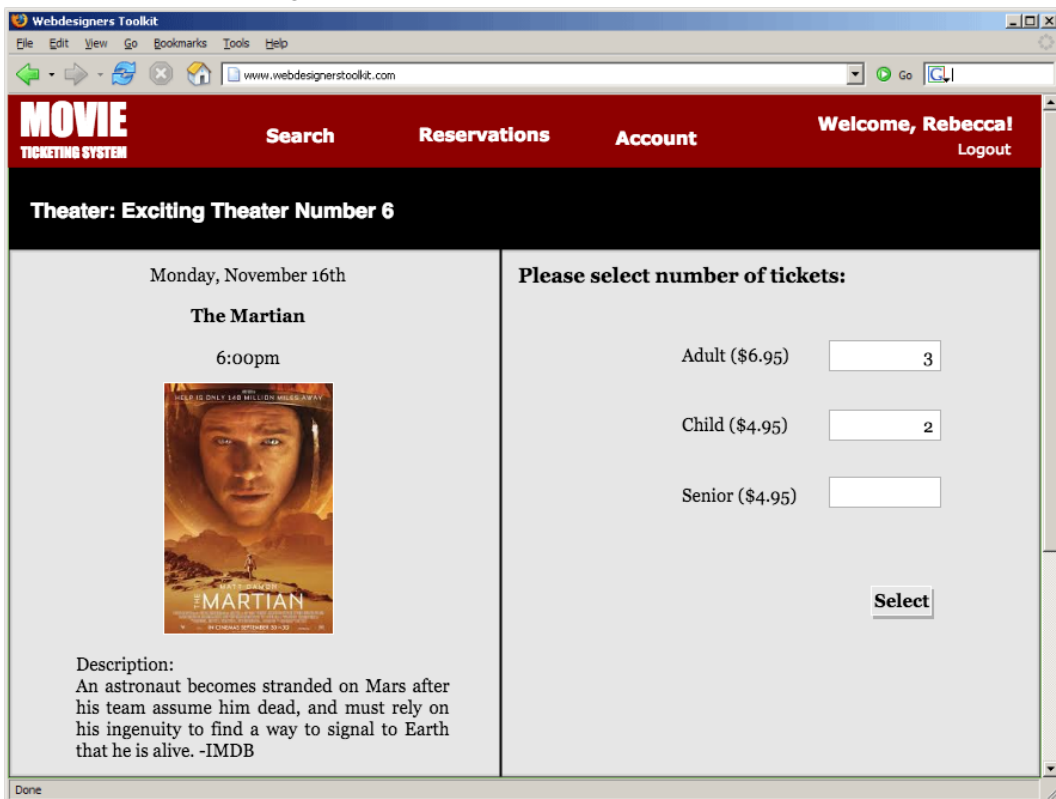


Image 5: MTS Select Seats Page

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**MOVIE**  
TICKETING SYSTEM

Search Reservations Account

Welcome, Rebecca!  
Logout

**Theater: Exciting Theater Number 6**

Monday, November 16th

**The Martian**

6:00pm

Description:  
An astronaut becomes stranded on Mars after his team assume him dead, and must rely on his ingenuity to find a way to signal to Earth that he is alive. -IMDB

**Please select your seats:**

Unavailable ☐ Available ☐ Your seats ☐

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A														
B														
C														
D														
E														
F														
G														
H														

Adult (\$6.95)  Total:

Child (\$4.95)

Senior (\$4.95)

**Check-Out**

Done

Image 6: MTS Check-Out Page

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**MOVIE**  
TICKETING SYSTEM

Search Reservations Account

Welcome, Rebecca!  
Logout

**Check-Out**

Name on Card:

Credit Card Number:  Security Code:

Expiration Date  
Select Month  Select Year

**Billing Address**

First Name:  Last Name:

Address:

State:  City:

Zipcode:

**Check-Out**

**Your Order**

Adult (\$6.95)

Child (\$4.95)

Senior (\$4.95)

Total:

Done

## 8. Comparison of Designs

The developed movie theater ticketing system has similar and different features compared with other systems such as Fandango and Atom Tickets which contribute to the overall design. Theater and account information, user accounts, the search process and view showings are common features among movie ticketing system. Although, these are common each system could adapt their own method that distinguishes them from each other. Our movie ticketing system allows the users to make an online reservation like Fandango and Atom Tickets. Also, our ticketing system allows the user to view the past, present and future movie schedules including the dates and timings like Fandango which has a list of all the movies based on the date selected. In addition, the synopsis and the ratings of the movie are provided once the movie is selected for the user to learn more about the movie before reserving the ticket. Another similar feature is allowing the user to login to their account before any transaction occurs. Fandango allows the user to login however, it has an option to join the VIP club which has partner rewards and inside perks that our system does not offer [1]. In addition, Atom Tickets allows the user to continue as a guest and does not require the user to create an account [2]. Our system requires the user to create an account to proceed with the transaction or provide an email to confirm the order at checkout. The search process includes the user to enter the city and state to find nearby theaters in our system. Then the user selects their nearby theater from the list and chooses the show times for the selected movie or all show times in the list. In addition to this Fandango offers the user can enter their zip code or a movie name in the search bar unlike our system. For Atom Tickets, the user must only input the city or zip code there are no more options for the search process. To view the showings in our system the user will be able to see available showings for the next two weeks. The movie rating like G,PG, duration of movie, movie genre, theatre and room(s) at which the particular movie is being shown will be displayed near the movie. Also, expired movie times from previous days and unavailable showtimes will be blocked from transactions. Fandango has the same design where it blocks the user from selecting an expired show time while Atom Tickets does not even display the expired times.

The reservation, seating and payment all has commonalities with slight differences among each system as well. Our ticketing system allows the user to choose from three ticket types: adult, senior, and child at different prices. Fandango and Atom Tickets have the exact reservation types. Fandango allows preferred seating reservation along with disabled seats with a bird view and only allows the user to select the amount of tickets being purchased like our system while Atom Tickets does not have that option. Similar to our ticketing system Fandango and Atom Tickets payment method is visa, MasterCard, American Express, Discover, or gift card that is of the selected theatre. Our system has a four-minute window that holds the seat while Fandango has seven minutes and Atom Tickets does not have such time limits. All the systems have a confirmation message and send an email with the payment information.

## 9. Conclusion

After the completion of the first deliverable, our team agreed to make a few minute changes to the generated requirements of the system. We initially had a system functionality where the administrator is allowed to edit or delete user accounts. However, in the process of working on the second deliverable, we deemed it best to not include this functionality since it was not a major component of the system. Even without this requirement, the system could still accomplish its purpose. We also decided to reword another requirement from allowing “user to query for nearby theatre” to allowing “user to search for showtimes by theater or movie”. We thought about how a user would search for movie showtimes, and concluded that one user might want to view showtimes at a particular theater, while another user might want to view showtimes at any surrounding theater. Instead of limiting a user to only one capability, we wanted to include both,

Overall, we feel our completed project would be suitable for a real world application. Our system provides a strong basis as a Theater Ticketing System and would allow for added features and growth if implemented. Originally, we had wanted to make a system targeted towards becoming a mobile app. Instead, we decided to make this system for the web. Since most of the functionalities would remain the same, only a change in user interface would be needed to extend this system to an app. We collaborated as a team to decide on functionalities we thought would be most practical for a user of the system. To do this, we used our own personal experiences where other systems were more lacking to decide on major requirements. We feel accomplished in what we have created and how our experience with this project will aid us in the future.

## 10. References

1 "Movie Tickets Movie Times", *Fandango*, 2016. [Online]. Available: <http://www.fandango.com/>. [Accessed: 14- Nov- 2016].

2 "Atom ~ Movies, Showtimes, Buy Tickets & More", *Atomtickets.com*, 2016. [Online]. Available: <https://www.atomtickets.com/>. [Accessed: 14- Nov- 2016].

## 11. Presentation Slides

For presentation slides, please see attached file.