Theatre Booking System

Final Report

Los Portales Theatre

A Booking System

https://portales-theatre.42web.io/

https://portales-theatre.42web.io/management/login.php

https://portales-theatre.42web.io/management/documentation/

Prototype hosted in free hosting, therefore there is not guarantee for 24/7 access to the website. If the website cannot be reached, please try again later.

Admin Credentials:

losportalestheatre@gmail.com

enmuteam1

Team Leader: Skyler Landes

Brian Elder, Pedro Damian Marta, and Preston Feagan

Eastern New Mexico University

5/11/2022

Summary of Changes:

- [Class Diagrams](#)

- [Gantt Diagram](#)

- [Data Dictionary](#)

- [Testing Summary](#)

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1. Software Requirements Specification

1.1 Introduction

1.1.1 Purpose

The purpose of this document is to explain in detail all the software requirements for the Theater Booking System version 1.0, with its scope being the whole system. All the classes, functions, and other system requirements are written into this document so the owner and the developer team can better understand what the system must achieve in terms of functionality and needs to meet the criteria that the owner requires for his booking system.

1.1.2 Product Scope

The theater "Los Portales" owned by Dr. Edgar Eduardo Ceh Varela requires a system to manage the sales for its different plays. The system must be designed to bring benefits to the theater by allowing it to make business through the internet by providing a system that can display the current and upcoming plays in an easy-to-use user-interface, so they are able to purchase tickets and select their desired seats if available. At the same time, the system must allow the theater admins to add, modify or delete plays as they require and the ability to assign prices to the different seats. This product brings a huge benefit to the theater by modernizing how they make their sales and schedule their plays, making life easier for both the administration and the customers themselves.

1.1.3 Glossary

Term	Definition
Owner	The owner of the theater requires a booking system. The client for this project.
Customer	The potential customers for the theatre that may use the booking system
Admin	The person logging into the management area to add plays and generate reports.

1.1.4 References

Ambakisye Kalinga, E. (2018). Software Engineering. African Virtual University.

Sommerville, I. (2011). Software Engineering. Boston: Pearson.

1.2 Overall Description

1.2.1 Product Perspective

The Theater Booking System for "Los Portales" is a new self-contained product.
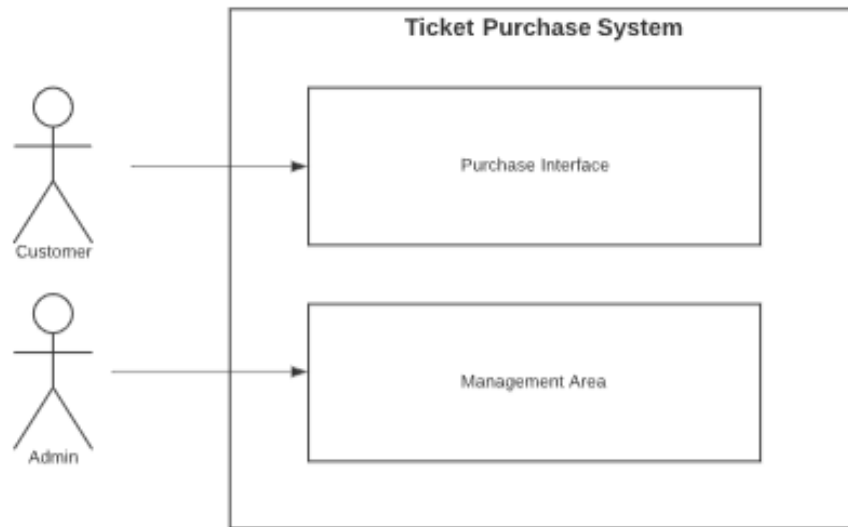
The Ticket Management System has two main interfaces with one user class for Customers and one class for Management. Customers will access the Purchase Interface to view seats and purchase tickets. The admin will access the Management Area to add, modify, delete plays, and generate reports about sales.

1.2.2 Product Functions

The product allows the Customer user to perform the following:

- Authentication (Register, sign in and sign off from their accounts)
- Homepage displaying upcoming plays for the customers
- Choose their seats from a graphical seating
- Shopping Cart where they can have their tickets while they browse the web
- Orders page where they can see their purchases
- Print Tickets functionality
- Checkout their tickets contained in the Shopping cart

The product will allow the Admin user to perform the following:

- Sign in into the management area

- Manage plays: create, publish, modify, and delete.
- Generate reports for sales in a specific play and date.

1.2.3 User Classes and Characteristics

1.2.3.1 UML Class Diagram:
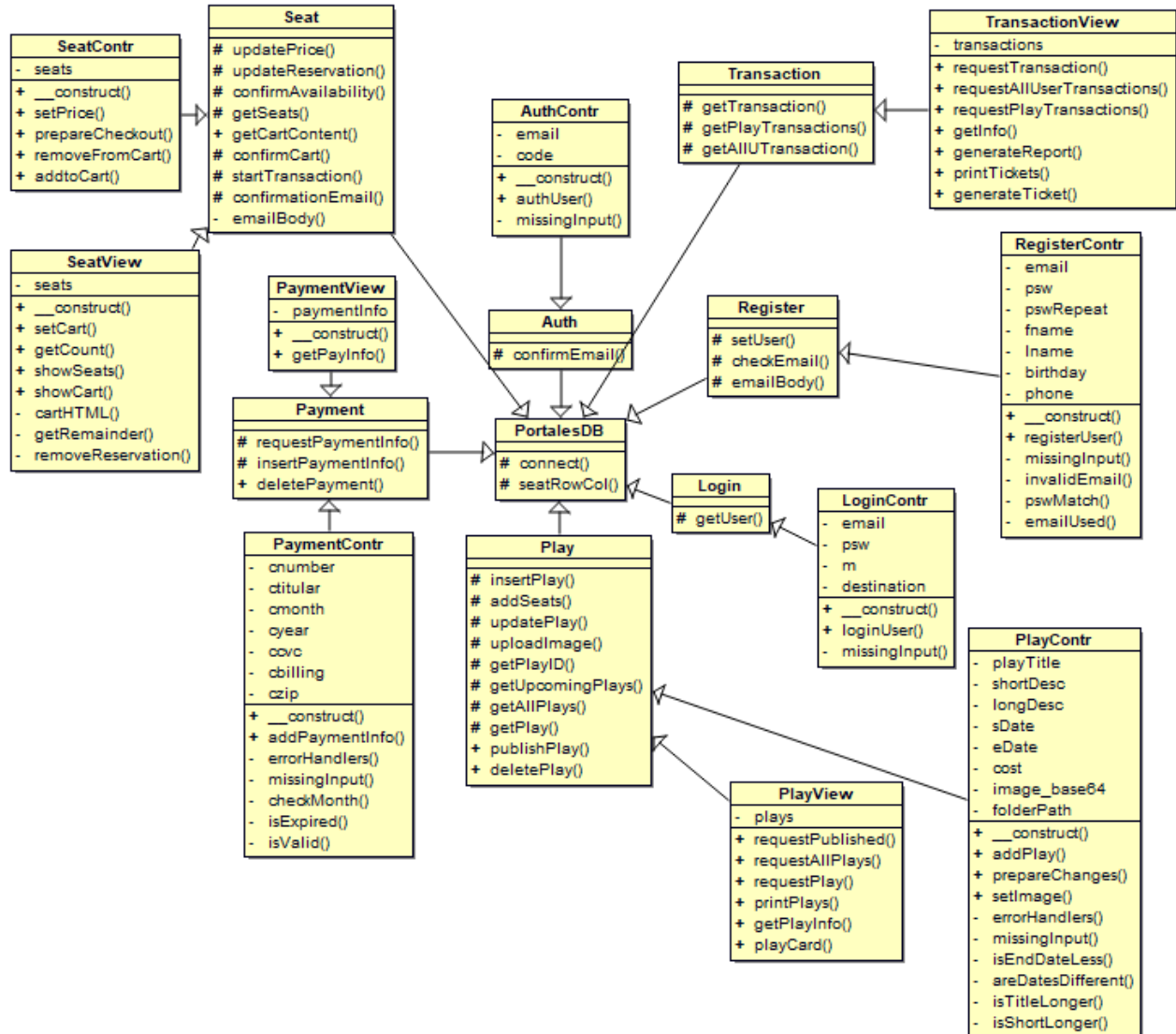
The Theatre Booking System is build using a Model–view–controller design pattern and utilizes the following model-control-view classes:

- The PortalesDB class is the parent class of all the model classes in the system, as it allows and handles the connection to the Los Portales database.
- The Login model-control classes handle all the functionality regarding the authentication of a customer user into the system.

- The Register model-control classes handle all the functionality regarding the registration of new customer users into the system
- The Auth model-control classes manage the functionality regarding the confirmation of email to allow access to customer users into the system
- The Play model-control-view classes manage the functionality regarding the plays in the system.
- The Seat model-control-view classes manage the functionality regarding every seat in the system.
- The Payment model-control-view classes manage the functionality regarding the payment information in the system
- The Transaction model-view classes manage the functionality regarding the transactions in the system.

1.2.4 Operating Environment

The operating environment would be the web browser as the booking system would be hosted online, so the customers can access it from their computers or mobile devices.

The recommended browsers are:

- *Google Chrome (desktop or android version)*
- *Mozilla Firefox*
- *Apple Safari (including iOS version)*
- *Microsoft Edge*
- *Opera*

1.3 External Interface Requirements

1.3.1 User Interfaces

The customer interface for the software shall be compatible with any browser such as Edge, Chrome, Safari, Mozilla/Firefox, Opera, by which user can access the seat purchasing application.

1.3.2 Hardware Interfaces

Since the application is web-based, the application must run over the internet; all the hardware share require to connect to the internet will be a hardware interface for the system. As, e.g., Modem, WAN - LAN, Ethernet Cross-Cable.

1.3.3 Software Interfaces

The web application shall communicate with the database to identify all the available seats to offer the customer and verify the customer.

The web application system shall communicate with the bill pay system to identify available payment methods, validate the payments, and process payment.

The web application system shall communicate with the external Tax system to calculate tax.

1.3.4 Communications Interfaces

The system would use HTTPS as standard to guarantee secure communication, so the customer sensitive information remains protected.

1.4 System Features

1.4.1 Use Case Diagram
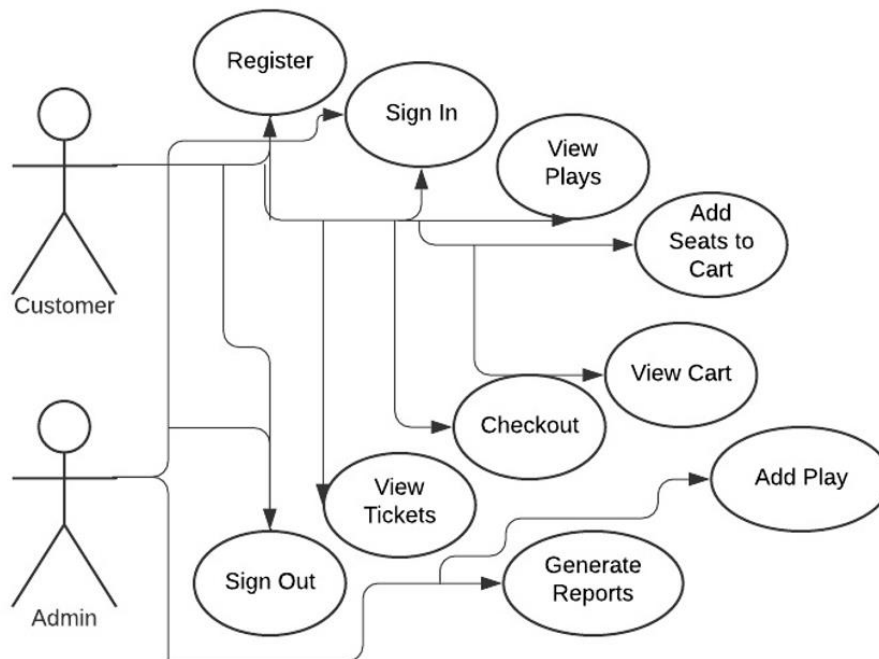
1.4.2 Sequential Diagrams

1.4.2.1 Customer Sign-In
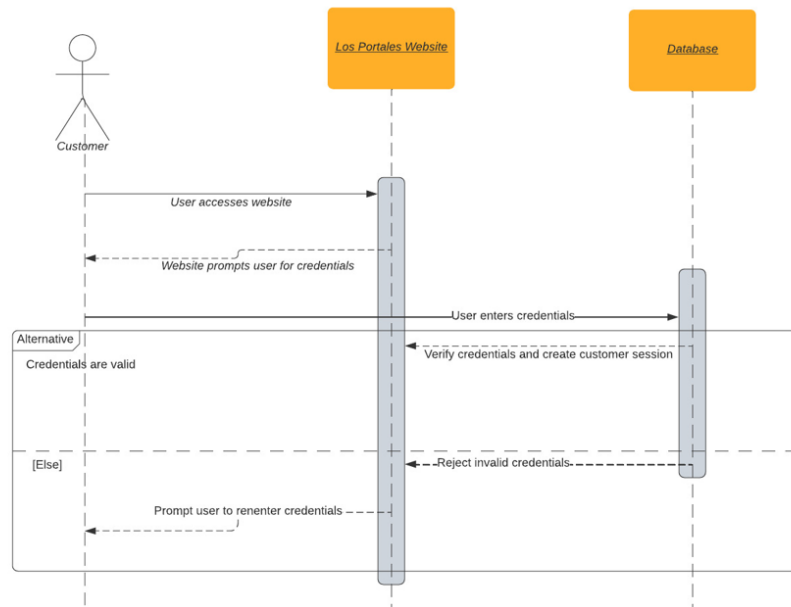
1.4.2.2 Admin Sign-In
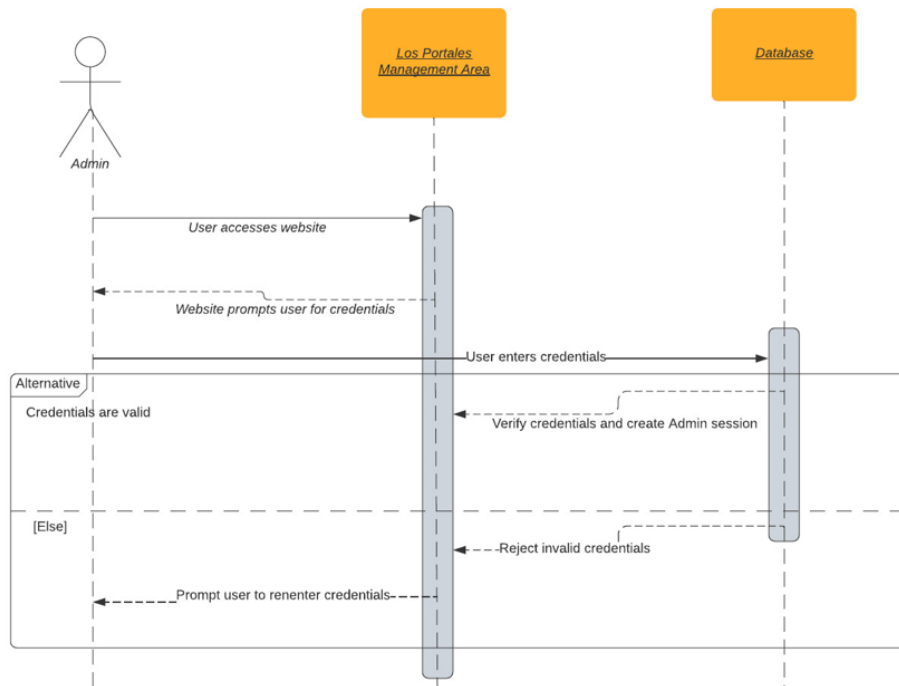
1.4.2.3 Add Play
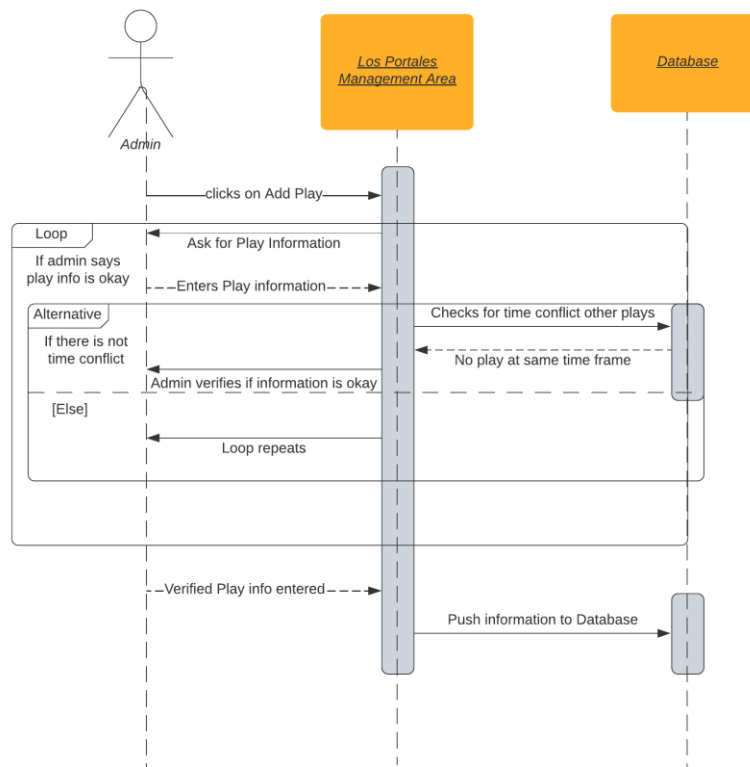
1.4.2.4 Checkout
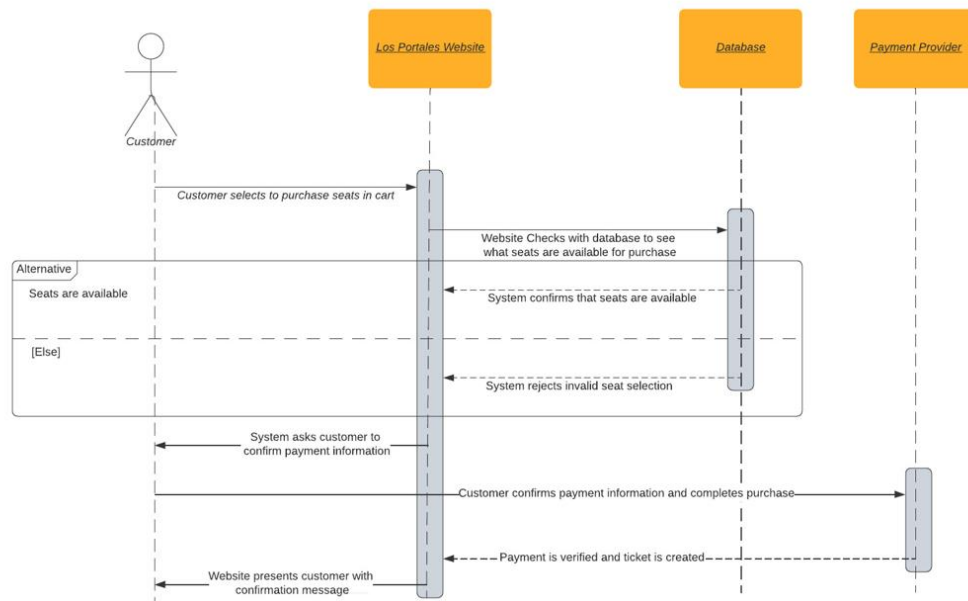
1.4.2.5 Select Seats
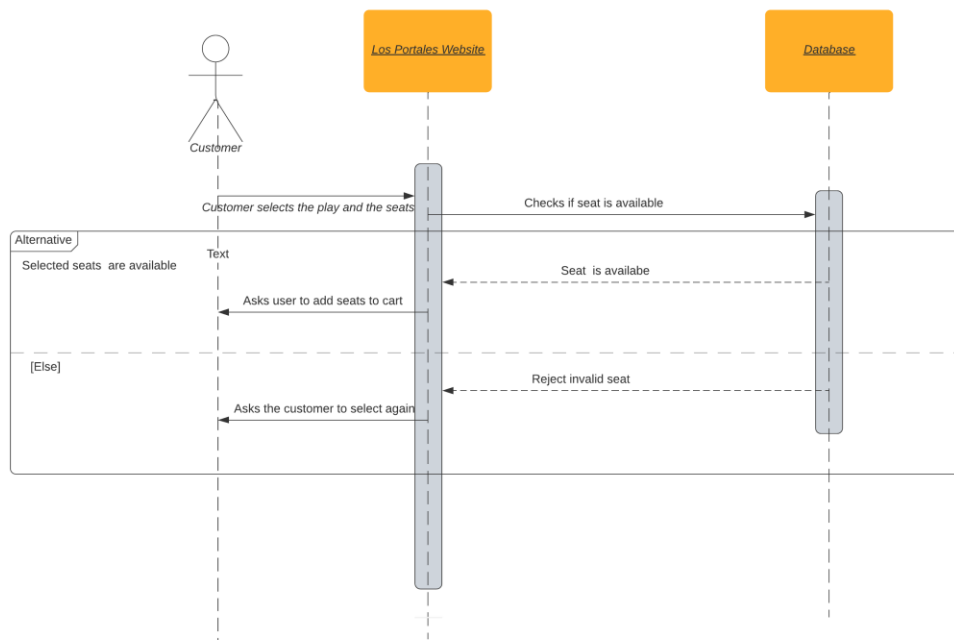
1.4.3 Registration/ Sign In/ Sign Out (Customer)

Description and Priority

The system requires a registration function for customers, so they can register into the system and log-in to their accounts to buy tickets.

Stimulus/Response Sequences

Stimulus: Customer clicks on register

Response: The system takes them to the registration page

Stimulus: Customer inputs their information and register to the system

Response: The system sends a confirmation email to their address

Stimulus: The user logins with their email and password

Response: The system grants them the ability to sign in with their newly created account.

Stimulus: Customer clicks on sign in

Response: The system takes them to the sign in page and asks for credentials

Stimulus: Customer enters their credentials and clicks on the sign in button

Response: The system logs them into the website.

Stimulus: Customer clicks on sign off

Response: The system logs them off from the website.

Functional Requirements

- o The system shall have a link to the register page at the homepage.

- o The system shall ask the user for its personal information such as name, age, password for their theater account, billing address, telephone and email address.

- o The system shall ask the user to confirm their password by asking for it twice

- o The system shall verify that the user password is safe and valid, as it must contain the following:

  - At least 8 characters

  - A mixture of both uppercase and lowercase letters

  - At least one number

  - Exclusion of any character that may compromise the system.

- o The system shall verify the e-mail is valid and is not already in the system.

- o The system shall send a confirmation e-mail so the user can confirm their e-email (tentative)

o The system shall allow customers to sign in into their accounts once they have confirmed their email.

o The system shall allow the customers to view plays, purchase tickets, and check their tickets once they are logged in.

o The system shall allow customers to sign off from their accounts if they wish to.

1.4.4 View Plays (Customer)

Description and Priority

The system requires an interface where the customer can view the seats that are available for a specific showing of a play.

Stimulus/Response Sequences

Stimulus: In the homepage the customer clicks the play carousel arrow to browse the upcoming plays.

Response: The carrousel starts to move

Stimulus: Customer clicks on a play

Response: The system shows more information about the selected play

Stimulus: Customer clicks on buy seats

Response: The system takes them to the graphical seat plan

Functional Requirements

o The system shall allow us to display all the available upcoming plays in the carrousel

o The system shall display in the graphical seat plan the free seats and the sold seats.

1.4.5 Add Seats to Cart (Customer)

Description and Priority

The system requires a function so the customer can add seats selected while viewing play availability to a purchase cart.

Stimulus/Response Sequences

Stimulus: Customer selects the available seats they wish to purchase

Response: The system highlights the customer's selection

Stimulus: Customer clicks the button the add selected seats to cart

Response: The system adds the selected seats to the customer's cart

Functional Requirements

- o The system shall allow the customer to select multiple seats for each play

- o The system shall allow the customer to only select seats that have not been sold

1.4.6 View Cart (Customer)

Description and Priority

The system requires a function for customers where they can view their cart and the tickets they have selected from the plays.

Stimulus/Response Sequences

Stimulus: Customer clicks on their cart

Response: The system takes them to the full view of all of their previously selected but unpurchased tickets

Functional Requirements

- o The system shall show the customer all of their selected tickets across multiple plays if needed.

- o The system shall show the customer the total cost for all their tickets

1.4.7 Checkout (Customer)

Description and Priority

The system requires a function for customers to purchase seats they have added to their cart.

Stimulus/Response Sequences

Stimulus: Customer clicks on checkout link while viewing their cart

Response: The system asks the customer to confirm the purchase they wish to make

Stimulus: Customer chooses to confirm their purchase

Response: The system verifies their payment information and issues tickets for the selected seats

Functional Requirements

- o The system shall validate the customer's payment before issuing tickets

1.4.8 View Tickets (Customer)

 Description and Priority

The system requires a function where the customer can view all of their previously purchased tickets and print copies if needed.

Stimulus/Response Sequences

Stimulus: Customer clicks a link to view their previous purchases

Response: The system takes them to a list of their previous purchases

Stimulus: Customer clicks to view a specific seat they have purchased

Response: The system presents them with a receipt for that purchase and an option to print a copy of their ticket

Stimulus: Customer clicks to print a copy of their ticket

Response: The system generates a page for the client to print

Functional Requirements

o   The system shall keep a record of all of the customer's previous purchases

o   The system shall allow the client to print their purchased tickets if they wish to

1.4.9 Sign-in/Sign-out (Admin)

Description and Priority

The system requires a sign in and sign out function for admin, so they can sign in and sign off from the management area.

Stimulus/Response Sequences

Stimulus: In the management area, the admin clicks on in sign in

Response: The system takes them into the sign in page for the admin

Stimulus: Admin enters their credentials and clicks the sign in button

Response: The system grants them access to the management area functions.

Stimulus: Admin clicks on the sign out button.

Response: The system logs them out from the management area.

Functional Requirements

o   The system shall only accept the special admin credentials to sign in into the management area

1.4.10 Generate Report (Admin)

Description and Priority

The system requires a function where the administrator can generate reports and view what seats have been sold for each play.

Stimulus/Response Sequences

Stimulus: Admin clicks on generate report in the management area

Response: A system pop-up appears asking for report criteria

Stimulus: Admin selects their criteria and clicks on generate report

Response: The report is displayed

Functional Requirements

o   The system shall allow the admin to generate reports based on specific play and date.

1.4.11 Add Play (Admin)

Description and Priority

The system requires a function where the administrator can generate reports and view what seats have been sold for each play.

Stimulus/Response Sequences

Stimulus: Admin chooses that they would like to add a play to the site

Response: The system asks the admin for the name, dates, times, and prices for the new play

Stimulus: Admin chooses that they would like to add a play to the site

Response: The system asks the admin for the name, dates, times, and prices for the new play

Stimulus: Admin enters all of the necessary information for the new play

Response: The system asks the admin to confirm the information that they have entered

Stimulus: Admin confirms the information is correct

Response: The system adds the play to the client interface for purchases

Functional Requirements

- o The system shall present the admin with a basic pricing plan for the seats in the theater

- o The system shall allow the admin to alter the pricing of any seat if they desire

- o The system shall confirm with the admin all of the information they have entered

1.5 Other Nonfunctional Requirements

1.5.1 Acceptable payment methods

- The system shall only accept payment from Visa and Mastercard credit/debit cards.

1.5.2 Security Requirements

1.5.2.1 Data
- The system shall use Secure Sockets Layer (SSL) technology to protect the transactions between the web site and its users.
- The system shall never store and leave any confidential information in any cookies.
- The customer's browser shall never display a customer's password as it should be hidden behind asterisks for security purposes.
- The system shall never display for security purposes the password of the clients in the back-end database.

2. Statement of Work

2.1 General Information

2.1.1 Introduction/Background

The theatre "Los Portales," owned by Dr. Edgar Eduardo Ceh Varela, is a theatre in Los Portales that sells tickets in person. They want to modernize their business practices by introducing a website where their customers can see the upcoming plays, select their preferred seats and purchase tickets wherever they are.

2.1.2 Objectives

The objective is to build a system that will assist the theatre in making sales through the internet by allowing theatre customers to buy a seat or multiple seats through a website using their credit or debit card. The system will help organize the prices for each seat depending on their location and as the owner wishes. Additionally, it will assist in keeping track of which seats are accessible or already sold by giving the admin the option to generate a report about how many seats have been sold for a specific play and date.

2.1.3 Scope of Work

By May 2022, the development team expects a fully functioning demo of the software to be delivered to the owner of "Los Portales" theatre as a web-based system.

2.2 Breakdown of the Project

2.2.1 Gantt Chart

| Project Start: | Mon, 2/7/2022 |
| Display Week: | 1 |

TASK	ASSIGNED TO	PROGRESS	START	END
Stage 1		100%	2/7/22	2/27/22
Discuss Program L.	Everybody	100%	2/7/22	2/9/22
Gantt diagram	Everybody	100%	2/18/22	2/26/22
Pert Diagram	Everybody	100%	2/26/22	2/27/22
CPD	Everybody	100%	2/27/22	2/27/22
Tentative cost	Everybody	100%	2/27/22	2/27/22
SRS	Everybody	100%	2/9/22	2/26/22
Use Case Diagrams	Everybody	100%	2/9/22	2/16/22
Class Diagrams	Everybody	100%	2/25/202	2/26/22
Sequence Diagrams	Everybody	100%	2/25/22	2/26/22
Upload PDFs to Github	Brian Elder	100%	2/26/22	2/27/22

| Project Start: | Mon, 2/7/2022 |
| Display Week: | 4 |

TASK	ASSIGNED TO	PROGRESS	START	END
Stage 2		100%	2/28/22	3/27/22
SDP	Everybody	100%	2/28/22	3/27/22
Setting up hosting	Pedro Marta	100%	2/28/22	2/28/22
Design Homepage	Pedro Marta	100%	3/2/22	3/9/22
Customers Authentification	Pedro Marta	100%	3/9/22	3/16/22
Component Diagrams	Everybody	100%	3/16/22	3/27/22
Update Diagrams	Everybody	100%	3/16/22	3/27/22
Upload PDF to Github	Preston	100%	3/27/22	3/27/22

Project Start: Mon, 2/7/2022

Display Week: 8

TASK	ASSIGNED TO	PROGRESS	START	END
Stage 3		100%	3/27/22	4/17/22
System Test Plan	Everybody	100%	3/28/22	4/17/22
Updated Diagrams	Everybody	100%	3/28/22	4/17/22
Design Management Area	Everybody	100%	3/28/22	3/30/22
Admin Authentification	Everybody	100%	3/30/22	4/1/22
Code add play	Pedro Marta	100%	4/1/22	4/15/22
Upload PDF to Github	Pedro Marta	100%	4/15/22	4/15/22

Project Start: Mon, 2/7/2022

Display Week: 11

TASK	ASSIGNED TO	PROGRESS	START	END
Stage 4		100%	4/17/22	5/11/22
Code modify play	Pedro Marta	100%	4/18/22	4/20/22
Code delete play	Pedro Marta	100%	4/20/22	4/22/22
Code graphical seat plan	Pedro Marta	100%	4/22/22	4/24/22
Code payment system	Pedro Marta	100%	4/24/22	4/26/22
Code shopping cart	Pedro Marta	100%	4/26/22	4/28/22
Code checkout	Pedro Marta	100%	4/28/22	4/30/22
Code check orders	Pedro Marta	100%	4/30/22	5/2/22
Code report function	Pedro Marta	100%	5/2/22	5/4/22
Execute Code	Everybody	100%	5/4/22	5/5/22
Testing code and beta	Everybody	100%	5/6/22	5/10/22
Brief users manual	Skyler Landess	100%	5/10/22	5/11/22
Source code	Pedro Marta	100%	4/17/22	5/10/22
Final Report	Everybody	100%	4/18/22	5/11/22
Present Project	Skyler Landess	100%	5/11/22	5/11/22

(1) Create Group		
Early Start: 0	Duration: 1	Early Finish: 1
Late Start: 0	Slack: 0	Late Finish: 1

(2) Choose Framework for App		
Early Start: 1	Duration: 2	Early Finish: 3
Late Start: 21	Slack: 20	Late Finish: 23

(3) Create Preliminary Documents SOW and SRS		
Early Start: 3	Duration: 20	Early Finish: 23
Late Start: 3	Slack: 0	Late Finish: 23

(4) Update Documents and Create SDP		
Early Start: 23	Duration: 9	Early Finish: 32
Late Start: 44	Slack: 21	Late Finish: 53

(5) Begin Design and Initial Coding of App		
Early Start: 23	Duration: 30	Early Finish: 53
Late Start: 23	Slack: 0	Late Finish: 53

(6) Create STP and Update Documents		
Early Start: 53	Duration: 20	Early Finish: 73
Late Start: 53	Slack: 0	Late Finish: 73

(7) Test Basic Functionality of App		
Early Start: 73	Duration: 4	Early Finish: 77
Late Start: 73	Slack: 0	Late Finish: 77

(9) Validate and Test APP		
Early Start: 84	Duration: 3	Early Finish: 87
Late Start: 84	Slack: 0	Late Finish: 87

(8) Implement Additional Discovered Features		
Early Start: 77	Duration: 7	Early Finish: 84
Late Start: 77	Slack: 0	Late Finish: 84

(10) Update paperwork		
Early Start: 87	Duration: 2	Early Finish: 89
Late Start: 87	Slack: 0	Late Finish: 89

(11) Present app to client		
Early Start: 89	Duration: 1	Early Finish: 90
Late Start: 89	Slack: 0	Late Finish: 90

2.2.2 PERT Diagram

2.2.3 Critical Path

① 1 → ② 2 → ③ 3 → ⑤ 5 → ⑥ 6 → ⑦ 7 → ⑧ 8 → ⑨ 9 → ⑩ 10 → ⑪ 11
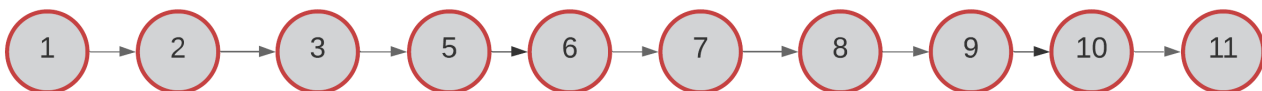
2.2.4 Tentative Cost

Component	Price
Coding	$41,546.86
Hosting	$15/month/$180/year
Total for First Year	$41,726.86

The functional requirements for this software are:
1. The user can register an account on the website; EI
2. The user can log in to their account; EI
3. The user can search through plays available; EQ
4. The admin can add plays; EI
5. The admin can delete plays; EI
6. The system must generate a report showing all tickets sold; ILF
7. The user can select seats for each play; EI
8. The user can purchase seats; EI
9. The user can view previous purchases; EQ
10. The website must maintain information for plays, users, seats, and tickets in separate databases; 4 ILF
11. The website must show available seats; EO
12. The system must verify the user's payment; EIF

6 EI X 4= 24

2 EQ X 4= 8

5 ILF X 10= 50

1 EO X 5 = 5

1 EIF X 7= 7

UFP=94

Adjustment Factor	Points
Data communications	4
Distributed data processing	3
Performance	4
Heavily used configuration	0
Transaction rate	4

Online data entry	5
End-user efficiency	4
Online update	5
Complex processing	1
Reusability	1
Installation ease	1
Operational ease	4
Multiple sites	0
Facilitate change	0

VAF=36

Language			QSM SLOC/FP Data		
	Avg	Median	Low	High	
ABAP (SAP) *	28	18	16	60	
ASP*	51	54	15	69	
Assembler *	119	98	25	320	
Brio +	14	14	13	16	
C *	97	99	39	333	
C++ *	50	53	25	80	
C# *	54	59	29	70	
COBOL *	61	55	23	297	
Cognos Impromptu Scripts +	47	42	30	100	
Cross System Products (CSP) +	20	18	10	38	
Cool:Gen/IEF *	32	24	10	82	
Datastage	71	65	31	157	
Excel *	209	191	131	315	
Focus *	43	45	45	45	
FoxPro	36	35	34	38	
HTML *	34	40	14	48	
J2EE *	46	49	15	67	
Java *	53	53	14	134	
JavaScript *	47	53	31	63	

UFP=94

TDI=36

VAF = (TDI * 0.01) +

0.65;(36*0.01)+0.65=1.01
AFP=UFP*VAF; 94*1.01=94.94
47* 94.94= **4,462.18 LOC**

b) Effort = E = a(KLOC)b (person/month); 11.54079379
c) Time = T = c(E)d (months); 6.33270952
d) Average Staff Size = P = E/T (persons); 1.8224101

e) Productivity = Pr = LOC / E (LOC/person_month); 386.6441179
f) Cost = C = (E x $$_person_month) + other_costs; 11.54079379 X $3600= $41,546.86

3. Software Design Document

3.1 Introduction

3.1.1 Purpose

This SDD document contains the details about the implementation of the requirement as defined in the Software Requirements Specification document, with all the necessary information required to define the architecture and system design for "Los Portales Theatre Booking System Project" to provide the development team guidance on the architecture of the system being developed.

3.1.2 Overview

The website built for Los Portales, LLC is done to facilitate the reservation and purchase of seats or tickets with a credit card while logged in to a customer authenticated secured connection.

3.1.3 Definitions and Acronyms

Customer: A user that Access the website as a client/customer of Los Portales Theatre. This person browses the website to see upcoming plays in the theatre and purchase tickets.

Guest: A customer user that has not registered or logged in yet.

Admin: A unique user that has access to the management area of the website, to add plays or amend existing ones in the system.

Customer area: The sub-system that the customer accesses.

Management area: The sub-system that the admin user accesses.

3.2 System Overview

Los Portales Booking System is a system created with the goal of supplying a web application to the customers for Los Portales, so they can view the upcoming plays playing in the theatre and give them access to the ability to buy from their own accounts in a safe manner, tickets for those plays. Thus, the theatre can provide sales services to customers from the comfort of their own homes. Additionally, the system is also designed so an admin can add, and schedule plays from the management area, with also the ability to generate reports.

3.3 Architecture Design

The architecture design of the system is divided into two sub-systems called Management Area and Customer Area that interact with a database independently.

The Management Area sub-system consists of the modules that a user with admin access can make use of to Add, Modify and Delete information on the table Plays in the database that contains information regarding the plays within the system. From this sub-system the admin can also generate reports regarding ticket sales.

The Customer Area is where the customer users access to view the upcoming Plays in the system. They can register an account here, login and purchase tickets after adding a Payment Method.

3.4 Data Design

3.4.1 Data Description

The data in the system is stored in a database that is accessed in their own ways by the two sub-systems, the Management Area and the Customer Area. Both sub-systems execute different tasks which involve inserting, updating, deleting and selecting data from the tables in the database.

3.4.2 Data Dictionary

3.4.2.1 Table structure for table admin

Column	Type	Null	Default
user_id	int(11)	No	
user_email	varchar(255)	No	
user_psw	varchar(255)	No	
active	tinyint(1)	No	0
activation_code	varchar(255)	Yes	NULL

3.4.2.2 Table structure for table customers

Column	Type	Null	Default
user_id	int(11)	No	
user_email	varchar(255)	No	
user_psw	varchar(255)	No	
user_fname	varchar(255)	No	
user_lname	varchar(255)	No	
user_birthday	date	No	
user_phone	varchar(20)	No	
active	tinyint(1)	No	0
activation_code	varchar(255)	No	

3.4.2.3 Table structure for table payment

Column	Type	Null	Default

user_id	int(11)	No	
cnumber	int(11)	No	
ctitular	varchar(255)	No	
cbilling	varchar(255)	No	
czip	int(5)	No	
cmonth	tinyint(2)	No	
cyear	tinyint(2)	No	
ccvc	tinyint(4)	No	

3.4.2.4 Table structure for table plays

Column	Type	Null	Default
play_id	int(11)	No	
play_title	varchar(37)	No	
long_desc	varchar(1500)	No	
short_desc	varchar(300)	No	
stime	datetime	No	
etime	datetime	No	
pURL	varchar(255)	No	
published	tinyint(1)	No	0

3.4.2.5 Table structure for table seats

Column	Type	Null	Default
ticket_id	int(11)	No	
play_id	int(11)	No	
seat_number	tinyint(2)	No	
cost	decimal(19,4)	No	
user_id	int(11)	No	0
status	tinyint(1)	No	0
reserved	datetime	Yes	NULL
transaction_id	int(11)	Yes	NULL

3.4.2.6 Table structure for table transactions

Column	Type	Null	Default
transaction_id	int(11)	No	
transaction_date	datetime	No	
user_id	int(11)	No	
order_total	decimal(19,4)	No	

3.4.2.7 Structure for view latestplay

Column	Type	Null	Default
play_id	int(11)	No	0
play_title	varchar(37)	No	
long_desc	varchar(1500)	No	
short_desc	varchar(300)	No	
stime	datetime	No	
etime	datetime	No	
pURL	varchar(255)	No	
published	tinyint(1)	No	0

3.4.2.8 Structure for view purchases

Column	Type	Null	Default
ticket_id	int(11)	No	0
transaction_id	int(11)	Yes	NULL
play_id	int(11)	No	
seat_number	tinyint(2)	No	
cost	decimal(19,4)	No	
user_id	int(11)	No	0
user_fname	varchar(255)	No	
user_lname	varchar(255)	No	
user_email	varchar(255)	No	
transaction_date	datetime	No	
play_title	varchar(37)	No	
long_desc	varchar(1500)	No	

stime	datetime	No
etime	datetime	No

3.4.2.9 Stand-in structure for view cart

| Column	Type	Null	Default
ticket_id	int(11)	No	0
play_id	int(11)	No	
seat_number	tinyint(2)	No	
cost	decimal(19,4)	No	
user_id	int(11)	No	0
status	tinyint(1)	No	0
reserved	datetime	Yes	NULL
play_title	varchar(37)	No	
long_desc	varchar(1500)	No	
stime	datetime	No	
etime	datetime	No	
pURL	varchar(255)	No	

3.5 Component Design
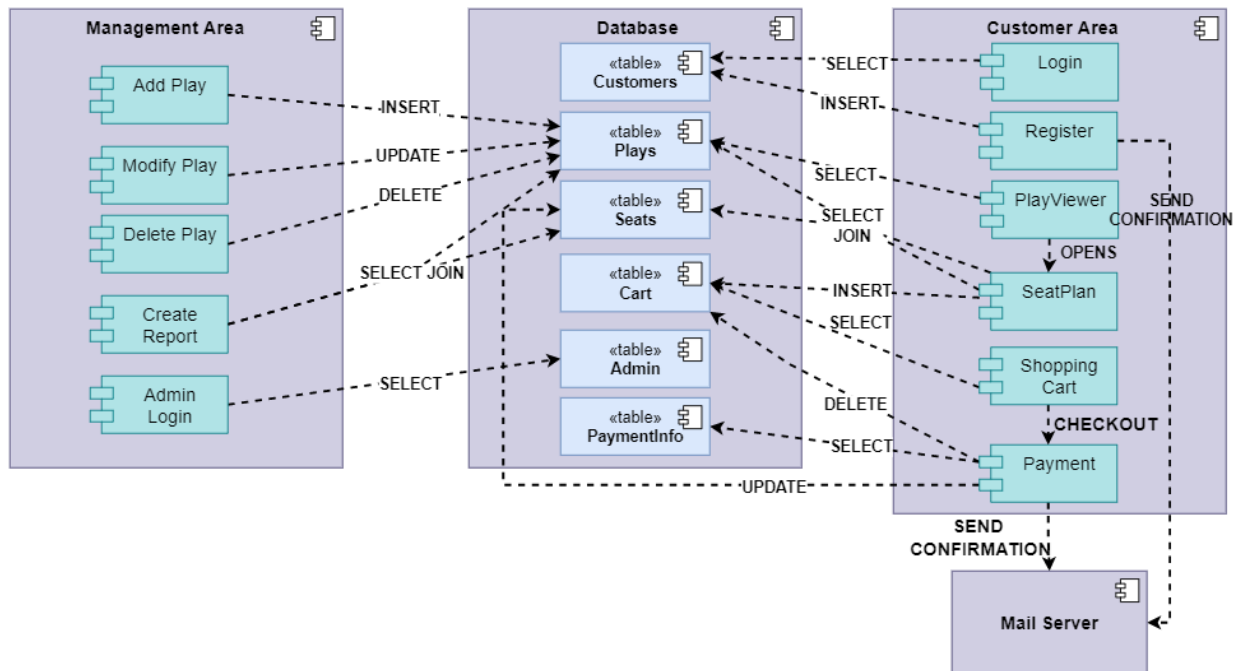
In the above component diagram **INSERT, UPDATE, AND DELETE** refer to the SQL **commands** used to query the database and its tables.

- **Add Play** inserts new information into the table **Plays** regarding upcoming plays.
- **Modify Play** updates information on the table **Plays**
- **Delete Play** deletes information on the table **Plays**
- **Create Report** based on the selected criteria, it selects and joins information from the tables **Plays** and **Seats** to generate a report.
- **Admin Login** selects user data from the table **Admin** to confirm and authenticate the admin into the session.
- **Login** selects user data from the table **Customers** to confirm and authenticate the customer into the session.
- **Register** inserts into the table **Customers** the information of the registered customer and sends a confirmation email through the **Mail Server**
- **PlayViewer** selects play data from the **Plays** table to display it into the system. From there, the customer can open the **SeatPlan.**
- **SeatPlan** selects and joins table **Plays** and **Seats** to display the seating plan to the customer. From there, the customer can insert seats to the **Cart** table for their **ShoppingCart**
- **ShoppingCart** selects data from the **Cart** table to display on the system the customer's shopping cart. Additionally, it can check out through **Payment.**
- **Payment** finishes the purchase by verifying the payment data that selects from the **PaymentInfo** table and when it finishes, it deletes the data on the table **Cart** to clean the **ShoppingCart**. Finally, it updates the **Seats** with the owner of that specific seat and through **Mail Server** it sends a purchase confirmation email with all the data from the purchase.

3.6 Human Interface Design

3.6.1 Overview of User Interface
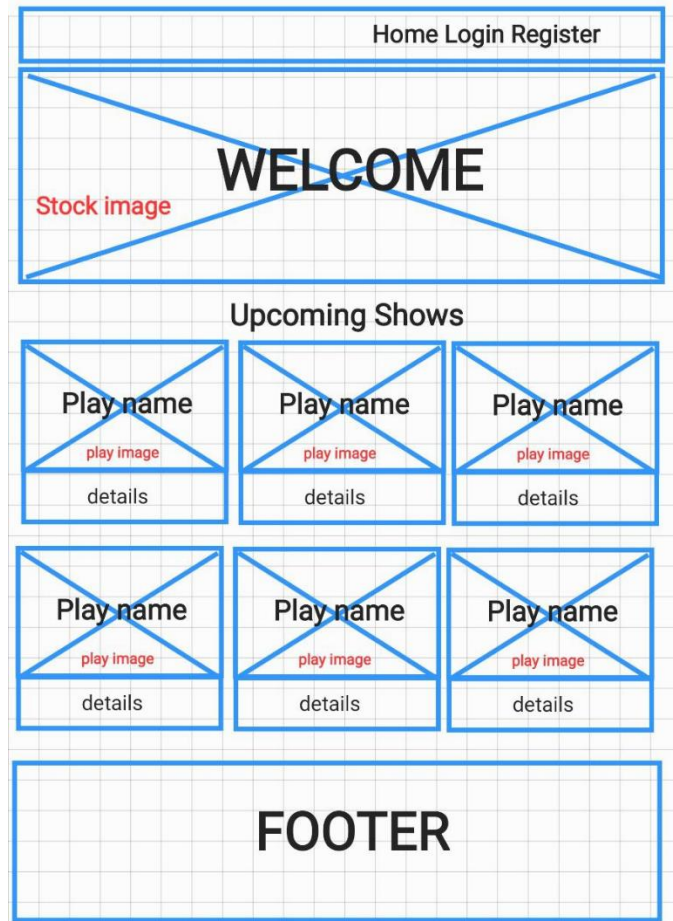
The default page for the website is the **homepage**, from where the customer can access all the functionalities and features of the system for **customers**. It receives the customer with an image displaying a message, personalized with the customer's name if they have logged into their account. Below that welcome message, the customer can see the upcoming plays in the system as boxes with basic information like the name of the play, the date of the play, and a small description; if the customer is as guess, a button called **"Log-in"** will be displayed in the box, and if they are logged in a **purchase** button instead.
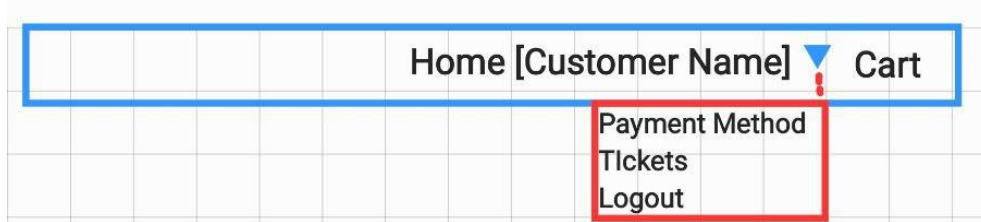
The navigation bar for customers will be displayed all the time on the top of the website in the customer area. Here, the customer can click on the **home** page, **login** page, or **registration** page. If logged into their account, the customers can access their **shopping cart** from this bar. In addition, a dropdown is created with the customer's name where they can access the **logout** button to terminate their session or the **Payment method** button to go to the **payment method** page and the **tickets** page. The login and registration buttons disappear once the customer is logged in as they are not necessary if the user is logged.
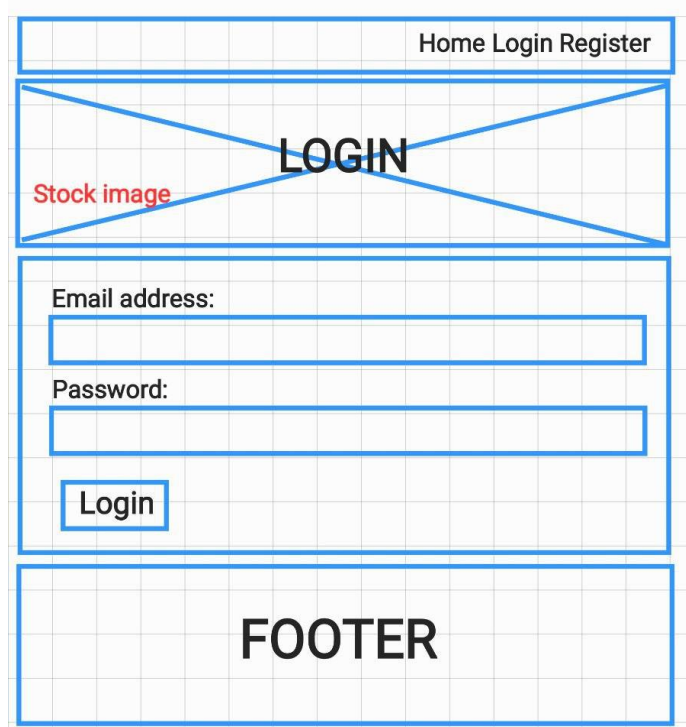

The **Payment Method** page lets the customer add or change their credit card information such as credit card number and data associated with that card, like the name of that card's titular and billing address.

The **Tickets** page has all the tickets purchased for the customer for upcoming plays, so they can print and get their tickets again if necessary.

Home Login Register

REGISTRATION

Stock image

Please fill in this form to create an account

Email address:

Password:

Confirm Password

First name:

Last name:

Date of birth:

Phone number:

FOOTER

The registration page allows the customer to register their own personal account after filling in the provided form correctly and confirming their account by clicking on the link received on the email they provided.

In the login page the customer is able to sign in into their account after confirming their account, by providing the correct email and password combination. This will start a session on the website, so they have access to exclusive features for registered and logged customers.
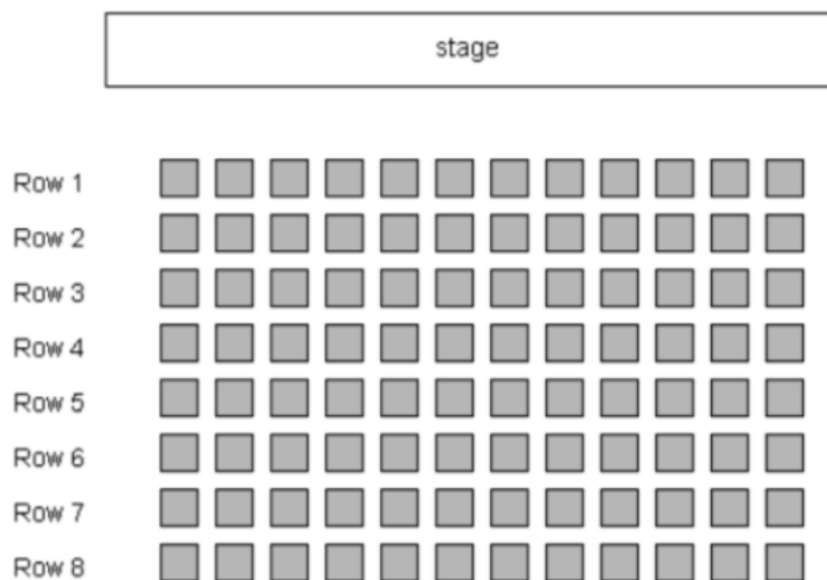
Graphic seating plan for a specific play is triggered when the customer clicks the **purchase** button. Here, the user can see the available and sold seats for the play they accessed, and they can add tickets to their shopping cart.

The **Shopping Cart** page is where the added tickets from the graphic plan go; there, the customer can see the total of their purchase and check out to receive their ticket.

4. System Testing Plan

4.1 Introduction

4.1.1 General Information

This document is the test plan for the Theatre Booking System developed to be implemented and used in Los Portales Theatre. It describes the testing strategy and approach that the testing team will use to verify that the system comprises two sub-systems. The Customer Area and the Management Area meet the established requirements before the developer team presents the system to the client.

4.1.2 Objectives

This document aims to:

- Identify the system information and components that need to be tested
- Provide an overview of testing strategies to be employed.
- List the resources that are needed for testing.
- Provide an overall effort estimate for testing.
- Identify deliverables for testing

4.2 Functional Scope

4.2.1 Scope for Customer Area

1. Registration
2. Login
3. Look at upcoming plays
4. Look at available seats for a play
5. Add seats to shopping cart
6. Add payment method
7. Checkout and pay for items in the cart
8. Check Orders (Purchased tickets)

4.2.2 Scope for Management Area

1. Login
2. Add Plays
3. Modify cost of seats
4. Modify Play details
5. Delete Play
6. Generate Report

4.3 Overall Strategy and Approach

4.3.1 Testing Strategy

The development team will test all identified functionalities within scope (as classified in Sections 2.1 and 2.2). The development team will evaluate all new and modified functionalities throughout system testing.

4.3.2 System Testing Entrance Criteria

The system has different modules and functions that are tested individually if the development of said module is completed. In contrast, their other modules depend on others to work correctly; therefore, the dependencies must undergo testing before starting these.

Management Area	
Function	**Depends on**
Login	Having the user data in the database
Add Plays	Login
Modify cost of seats	Add Plays
Modify Play details	Add Plays
Delete Play	Add Plays
Generate Report	Checkout and pay for items in the cart

Customer Area	
Function	**Depends on**
Registration	N/A
Login	Registration
Look at upcoming plays	Add Plays
Add payment method	Look at upcoming plays
Look at available seats for a play	N/A
Add seats to shopping cart	Look at available seats
Checkout and pay for items in the cart	Add seats to shopping and Payment Method
Check Orders (Purchased Tickets)	Checkout and pay for items in the cart

4.3.3 Testing Times

4.3.3.1 Usability Testing

The usability testing refers to the interface and the content presentation of the system through the website. It is accurate and provides general usability for the user, ensuring that it is comfortable to

use and provides the user with the proper access and navigation capabilities to go through all the system's functions. The system can be accessed through the web on different devices and browsers. Dev teams will ensure usability must be tested through the various available environments

4.3.3.2 Functional Testing
The objective of this test is to ensure that each element of the component meets the functional requirements required for the Los Portales Booking System, as outlined by the client in the project description document, so the system accomplishes and meets the criteria set by the owner of the business and works as expected and does not present any significant errors or issues.

4.3.4 Suspension Criteria and Resumption Requirements

4.3.4.1 Suspension Criteria
The suspension criteria are deeply related to the testing criteria. If one module is a dependency of another one and critical incidents are found during testing, the testing for the following modules cannot begin and needs to be suspended.

4.3.4.2 Resumption Requirements
Resumption of testing will be possible when the functionality that caused the suspension of testing has been retested successfully.

4.3.5 Execution Plan

Scope ID	Req Description	Test ID	Test Case Description
2.1.1: Registration	Register With Application	TC-01	Attempt to Register with Valid Information
		TC-02	Attempt to Register with Invalid Information
		TC-03	Attempt to register using extremes in the inputs
2.1.2/2.2.1: Sign In/Sign Out	Sign In/Sign Out of Application	TC-04	Attempt to Sign in with Valid Information
		TC-05	Attempt to Sign in with Invalid Information
		TC-06	Attempt to Sign Out and check if access changed
2.1.3: View Plays	Correct Seating Information for Selected Play	TC-07	View Plays with Different Seating Availability Combinations
2.1.5: Add Seats to Cart	Allow Selection of Multiple Seats	TC-08	Attempt to Select Multiple Seats at One Time in the shopping cart.
	Only Allow Selection of Available Seats	TC-09	Attempt to Select Invalid Seats

	Show Seats for Multiple Plays if Selected	TC-10	Place Tickets from Multiple Plays in Cart
2.1.7: Checkout	Validate Customer's Payment	TC-11	Attempt to Checkout with Valid Information
		TC-12	Attempt to Checkout with Invalid Information
2.1.8: View Tickets	Show Printable History of Customer's Purchases	TC-13	View and Print Tickets from Multiple Accounts
2.2.6: Generate Report	Admin can generate sales reports for plays	TC-14	Attempt to Generate Reports for Different Plays
2.2.2: Add Play	Admin Can Add Plays and Select Seat Prices	TC-15	Attempt to Add Plays with Varying Pricing Plans
2.2.3/2.2.4: Modify Plays	Admin Can Modify Prices of Seats	TC-16	Attempt to Modify Seat Prices for Multiple Plays
2.2.5: Delete Plays	Admin Can Delete Plays	TC-17	Attempt to Delete Plays from System

4.4 Environment

The Los Portales Booking System is hosted online and can be accessed through a web browser. Thus, to guarantee the proper functionality of the system in different environments, the Booking System is going to be tested using a desktop, laptop, and mobile devices in the following browsers:

- Google Chrome
- Mozilla Firefox
- Apple Safari
- Microsoft Edge
- Opera

4.5 Test Schedule

Management Area	
Function	**Dates**
Login	04/18/2022
Add Plays	04/19/2022
Modify cost of seats	04/20/2022
Modify Play details	04/20/2022
Delete Play	04/22/2022
Generate Report	05/04/2022

Customer Area	
Function	**Dates**
Registration	04/18/2022
Login	04/18/2022
Look at upcoming plays	04/19/2022
Add payment method	04/24/2022
Look at available seats for a play	04/26/2022
Add seats to shopping cart	04/28/2022
Checkout and pay for items in the cart	04/30/2022
Check Orders (Purchased Tickets)	05/2/2022

In addition to the developers' testing, the website will have a beta test from **05/09/2022** to **05/10/2022**, where users will be able to register to the system and try all the different functions on the system.

4.6 Assumptions

- Any errors and incidents shall be documented in the testing report

- The developers shall correct all the incidents and errors appearing in the system during the testing before publishing new revisions.

- Any corrections made to the system regarding testing shall be documented in the testing report.

4.7 Risks and Contingencies

Risk: Turnaround.

Description: It is possible the development may not have enough time to execute all tests.

Probability: Low. The development team has accounted for numerous contingencies when devising the testing plan. It will likely only happen with a knock-on effect of multiple defects and unforeseen delays.

Contingency: Development team will accelerate the testing schedule and dedicate more time to covering.

Risk: Scope Change

Description: The Development team may add additional requirements, or existing conditions may change at a late stage.

Probability: Low. The development team has attempted to ensure that all foreseeable additions or changes can be accounted for promptly within the framework.

Contingency: Development team will attempt to add and test new requirements based on a triage evaluation, with critical additions being handled first and less crucial additions being handled as time allows.

5. Testing Summary

5.1 Beta Testing

5.1.1 Beta Testing Background

As planned in the testing plan, the Los Portales Theatre Developer team started a beta test for the customer area of the website. This beta testing was run from 5/9/2022 to 5/10/2022.

5.1.2 Results:

5.1.2.1 Participant #1: César Rosales

Age: 29

Nationality: Venezuelan

Contact Email: icesarrosales@icloud.com **Internet Browser:** Safari (iPhone)

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
1. Registration	You were able to register on the website	Yes	
2. Sign In/Sign Out	You were able to sign-in and sign-off from the website	Yes	
3. View Plays	You were able to browse see upcoming plays in the homepage	Yes	
4. Payment Information	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
5. Add Seats to Cart		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
6. Checkout	You were able to see your tickets in your shopping cart	Yes	
	You were able to delete items from your shopping cart	Yes	

	You were able to check out	Yes
	You were able to print your tickets from the alert message	Yes
	You received a confirmation email for your purchase	Yes
	You were able to access to tickets from the hyperlink in your email	Yes
7. **View Orders**	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes
	You were able to print tickets using the dropdown in the orders page	Yes

Participant #2: Ricardo Palma

Age: 28

Nationality: Chilean

Contact Email: rpalma@fakeemail.com **Internet Browser:** Brave

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
2. Registration	You were able to register on the website	Yes	
3. Sign In/Sign Out	You were able to sign-in and sign-off from the website	Yes	
4. View Plays	You were able to browse see upcoming plays in the homepage	Yes	
5. Payment Information	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
6. Add Seats to Cart		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
7. Checkout	You were able to see your tickets in your shopping cart	NO	However, there is an error, as the seats I selected for the play "Hamlet" are no the same as the ones it show in the cart
	You were able to delete items from your shopping cart	Yes	
	You were able to check out	Yes	
	You were able to print your tickets from the alert message	Yes	
	You received a confirmation email for your purchase	Yes	
	You were able to access to tickets from the hyperlink in your email	Yes	
8. View Orders	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes	
	You were able to print tickets using the dropdown in the orders page	Yes	

5.1.2.2 Participant #3: Manuel Melendez

Age: 25

Nationality: US/México

Contact Email: mrmelendezl96@gmail.com **Internet Browser:** Chrome

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
3. **Registration**	You were able to register on the website	Yes	
4. **Sign In/Sign Out**	You were able to sign-in and sign-off from the website	Yes	
5. **View Plays**	You were able to browse see upcoming plays in the homepage	Yes	
6. **Payment Information**	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
7. **Add Seats to Cart**		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
8. **Checkout**	You were able to see your tickets in your shopping cart	Yes	
	You were able to delete items from your shopping cart	Yes	
	You were able to check out	Yes	
	You were able to print your tickets from the alert message	Yes	
	You received a confirmation email for your purchase	Yes	
	You were able to access to tickets from the hyperlink in your email	Yes	
9. **View Orders**	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes	
	You were able to print tickets using the dropdown in the orders page	Yes	

5.1.2.3 Participant #4: José Cano
Age: 25

Nationality: Mexican American

Contact Email: josecano_drg@hotmail.com **Internet Browser:** Opera

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
4. Registration	You were able to register on the website	Yes	
5. Sign In/Sign Out	You were able to sign-in and sign-off from the website	Yes	
6. View Plays	You were able to browse see upcoming plays in the homepage	Yes	
7. Payment Information	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
8. Add Seats to Cart		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
9. Checkout	You were able to see your tickets in your shopping cart	Yes	
	You were able to delete items from your shopping cart	Yes	
	You were able to check out	Yes	
	You were able to print your tickets from the alert message	Yes	
	You received a confirmation email for your purchase	Yes	
	You were able to access to tickets from the hyperlink in your email	Yes	
10. View Orders	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes	
	You were able to print tickets using the dropdown in the orders page	Yes	

5.1.2.4 Participant #5: Brian Elder

Age: 34

Nationality: American

Contact Email: elderbm87@gmail.com **Internet Browser:** Chrome

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
5. Registration	You were able to register on the website	Yes	
6. Sign In/Sign Out	You were able to sign-in and sign-off from the website	Yes	
7. View Plays	You were able to browse see upcoming plays in the homepage	Yes	
8. Payment Information	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
9. Add Seats to Cart		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
10. Checkout	You were able to see your tickets in your shopping cart	Yes	
	You were able to delete items from your shopping cart	Yes	
	You were able to check out	Yes	
	You were able to print your tickets from the alert message	Yes	
	You received a confirmation email for your purchase	Yes	
	You were able to access to tickets from the hyperlink in your email	Yes	
11. View Orders	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes	
	You were able to print tickets using the dropdown in the orders page	Yes	

5.1.2.5 Participant #6: Holly Elder

Age: 34

Nationality: American

Contact Email: hbelder1@gmail.com **Internet Browser:** Firefox

Function	Description	Yes/No	Comments or any errors you encountered. Error may appear in the url when you submit a form, so try there
6. Registration	You were able to register on the website	Yes	
7. Sign In/Sign Out	You were able to sign-in and sign-off from the website	Yes	
8. View Plays	You were able to browse see upcoming plays in the homepage	Yes	
9. Payment Information	By clicking your name in the navigation bar you can access your payment method	Yes	
	You were able to successfully add a payment method to the system	Yes	
	You were able to delete your payment method	Yes	
10. Add Seats to Cart		Yes	
	If you click at purchase, you can see the available seats	Yes	
	You were able to select one or multiple seats	Yes	
	You were only able to add green seats to your cart	Yes	
11. Checkout	You were able to see your tickets in your shopping cart	Yes	
	You were able to delete items from your shopping cart	Yes	
	You were able to check out	Yes	
	You were able to print your tickets from the alert message	Yes	
	You received a confirmation email for your purchase	Yes	
	You were able to access to tickets from the hyperlink in your email	Yes	
12. View Orders	You were able to see your latest orders by clicking at your name and selecting "Orders"	Yes	
	You were able to print tickets using the dropdown in the orders page	Yes	

5.1.3 Testing Summary

In the beta testing six participants were asked to test Los Portales Theatre Booking System in the living environment at http://portales-theatre.42web.io/. Some of them were asked to use a specific browser to have feedback from different environments

5.1.4 Errors Report

Participant #2 found a bug in his shopping cart. After being contacted, he described the error in major detailed.

Basically, when he was trying to add seats from a play called "Hamlet" the seat numbers that were displaying in his shopping cart were not the same as the ones he selected.

5.1.5 Actions taken

1. The Brave browser that the beta tester uses was not of the recommended browsers that the developer team had on mind while developing the website. However, as a modern browser that has stayed updated to the industry standards, there was not apparent reason for the browser to be the origin of the bug.
2. After doing some testing, the developer team found that the browser was not the cause, but the play itself "Hamlet".
3. Checking the database "Seats", the developer team found that for some reason, the seats of the play were inserted in inverted order. Namely, in descending order from 96 to 1 instead of 1 to 96 as it should be
4. The graphic plan assumes that the seats are already sorted, so it was treating seat 96 as seat 1, 95 as seat 2, and so on.
5. The solution to the problem was to modify the query that request and selects the data from the seats table:

FROM:

```sql
SELECT * FROM seats WHERE play_id=?;
```

TO:

```sql
SELECT * FROM seats WHERE play_id=? ORDER BY seat_number ASC;
```

6. The changed was intended to make sure that regardless of the insertion order of the seats while generating new seats for a play, that the data was selected from the database with the desired ascending order from 1 to 96.
7. After the hot-fix was applied, Participant #2 reported it was working as it should.

5.1.6 Environments tested

- Google Chrome
- Firefox
- Opera
- Safari (mobile IOS)
- Brave

5.1.7 Environment inconsistencies or errors

As stated previously, an error was reported for Participant #2, but it was found later that the origin of the issue was not the browser.

Therefore, none of the participants reported any issues or inconsistencies while using their selected or preferred browser.

5.2 Management Testing

5.2.1 Test performed

Every member of the Los Portales Developer Team executed and performed one of the following tests scenarios:

TC-14: Generate Report	Admin can generate sales reports for plays	Attempt to Generate Reports for Different Plays **ALL TESTS PASSED**
TC-15: Add Play	Admin Can Add Plays and Select Seat Prices	Attempt to Add Plays with varying information. Using extremes for inputs or special characters. **BUG FOUND**
TC-16: Modify Plays	Admin can modify play information	Attempt to modify every one of the Play's field and change a new image to another. **BUG FOUND**
TC-16: Modify Prices	Admin can modify the price for different seats	Attempt to modify the pricing for available seats, which the system should allow. Attempt to modify price for reserved or purchased seats, which the system should not allow **ALL TESTS PASSED**
TC-17: Delete Plays	Admin Can Delete Plays	Attempt to Delete Plays from the System **ALL TESTS PASSED**

5.2.2 Errors Report

- TC-15: Skyler Landess found an error regarding the information in the plays. He used the & as part of a play in the following warning appeared when display errors was on in the php configuration:

Warning

: DOMDocument::createElement(): unterminated entity reference Billy the Kid in

/home/vol1_5/epizy.com/epiz_31180792/htdocs/classes/play-view.class.php

on line

317

The error/issue did not guarantee to stop testing as it didn't affected other components besides the play view and more than an issue was a warning and a visual glitch where the content after the & did not show in the play card.

- TC-16: A bug was found by Pedro Damian Marta regarding the input values in the modify play functionality. When the play title or the short description had special characters or commas like "or ', these were affecting the html code. Therefore, these quotes did not appear in the form which may cause the user to save changes as it is and change the title or description of the play without the admin wishing to do so.

5.2.3 Actions taken

- For both issues the same solution was implanted. The use of the php method called htmlspecialchars() which receives a string and converts to html special characters, so special characters such as commas or & do not affect the functionality of HTML code.

6. Code Reusability

6.1 Bootstrap

https://getbootstrap.com/docs/5.0/getting-started/introduction/

Bootstrap 5 was utilized to aid with the design of the website. Bootstrap is a popular CSS framework for developing responsible and mobile-first websites.

The only code reused was the framework itself, but the design of the website itself or the graphic seating plan was by the team utilizing the tools and CSS classes that bootstrap offers.

6.2 qrcode.js

https://davidshimjs.github.io/qrcodejs/

QRCode.js is javascript library for making QRCode. QRCode.js supports Cross-browser with HTML5 Canvas and table tag in DOM. QRCode.js has no dependencies.

The code was totally reused, using the basic qr code generation functionality to generate QR codes for the printPlays.php in the system, so the customers can have valid QR codes in their tickets that upon scan they return the ticket id associated with the seat for that specific play.

6.3 Cropper.js

https://fengyuanchen.github.io/cropperjs/

A library for a JavaScript image cropper.