Final project report

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1. Overview

1.1. What the system is (summary)

The application represents a solution for bringing the booking tickets system in the online environment, providing more customers to various Orchestras around the world.

1.2. Who will use it

The regular user that is representing the ticket buyer and will attend to the orchestra event. Administrator that will add Orchestras events, manage the ticket prices, and can contact the users.

1.3. What problem is it solving (Objectives)

The objective of the application is that to encourage more peoples to spend their free time at the local orchestras, making the booking system more efficient and in handy for the most of the users to make profit because in the online environment a larger mass of peoples is reached.

Another objective is to become partners with various Philharmonics around the world

2. Scope of Work

2.1. What the system is (details)

The web application serves to drive more traffic to the public Philharmonic market by convincing more people to book their tickets online, from the comfort of their homes.

The app is using an authentication system filters the Presentation tier counting on the role of the customer, there may be 3 roles: Admin, User and Guest and provides different access type to the database. For example, the user can only see the retrieved data from the database but the Admin may modify the data from the database using the C.R.U.D actions. The user can book a specific seat at an Orchestra event and see detailed information about the desired event like: price, location, artists, instruments, seat number, artists titles and more.

The admin can manage the database but also can also interact with the user through the contact page and solve some encountered issues by the user.

A Guest is considered a person that is not registered and can surf over the website freely but cant make proper booking or to access the past orchestra's events that he/she attended, only a logged user can see the orchestra history page.

2.2. Deliverables

- system requirements document
- database diagram
- activity diagram
- Kanban flow diagram
- class diagram
- frontend UI
- backend files
- used tools documentation

3.   Used Tools

GitHub – will be used for version control and keep track of the new features, providing a safer and efficient approach of the project.

Main reasons for choosing GitHub:

- Development teams from different places can work together to secure the world's software supply chain

- Get alerts about your code's vulnerabilities

- Code review

- Build, test, deploy and run CI/CD automated the way you want your workflow

- Many integrations option

Visual Studio Community 2019 - will be the IDE of the project in which the development will take place, is a really efficient and user-friendly IDE that is covering the most programming languages specially from Microsoft.

Main reasons for choosing Visual studio 2019:

- Accurate Coding. With Visual Studio IDE, users are provided live coding assistance regardless of the programming language they are utilizing.
- Quick Debugging.

- Rigorous Testing.

- Team Collaboration.

- Customization Options.

Bootstrap – is a strong tool when it is about the interface, providing beautiful and well design structures and mock-ups.

Main reasons for choosing Bootstrap:

- Use readymade blocks of code

- An extensive list of components

- Customizable options

Draw.io – is an online tool that is letting the user to create different types of diagrams with a lot of features and properties in order to get a pleasant outcome with a great readability.

Microsoft SQL Server Management Studio - A central feature of SSMS is the Object Explorer, which allows the user to browse, select, and act upon any of the objects within the server. Known for its efficient management of the database and fast connection and queries directly from the program or linked application.

4. Diagrams

The application has 3 main roles: User, Admin and Guest with specific rights in the app. I represented the attribution of each role with a use case diagram made with the tool draw.io.
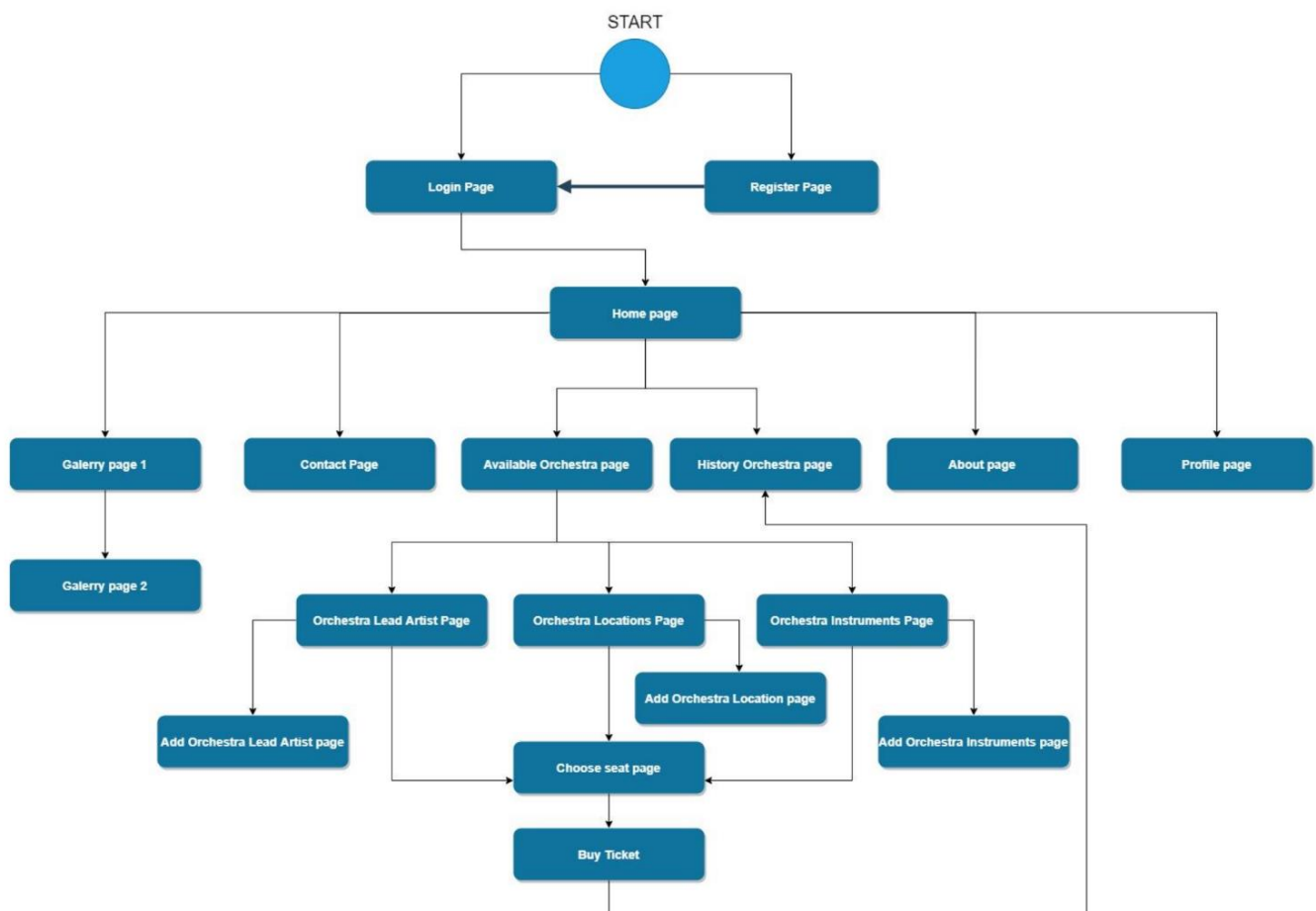
- **Use case diagram:**
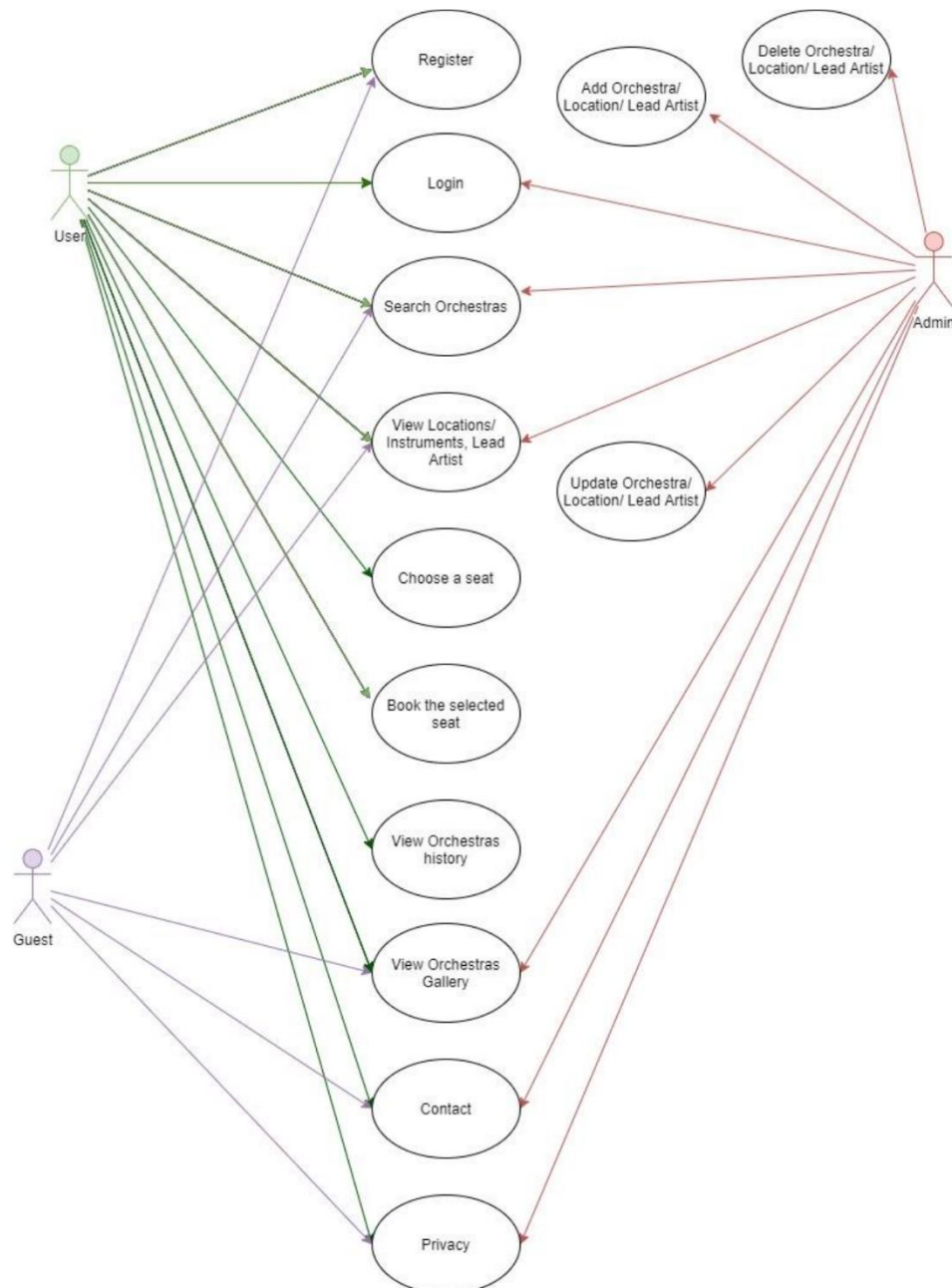
Also, the databases related to the application I represented it through the Access model diagram to be easier for the implementation.
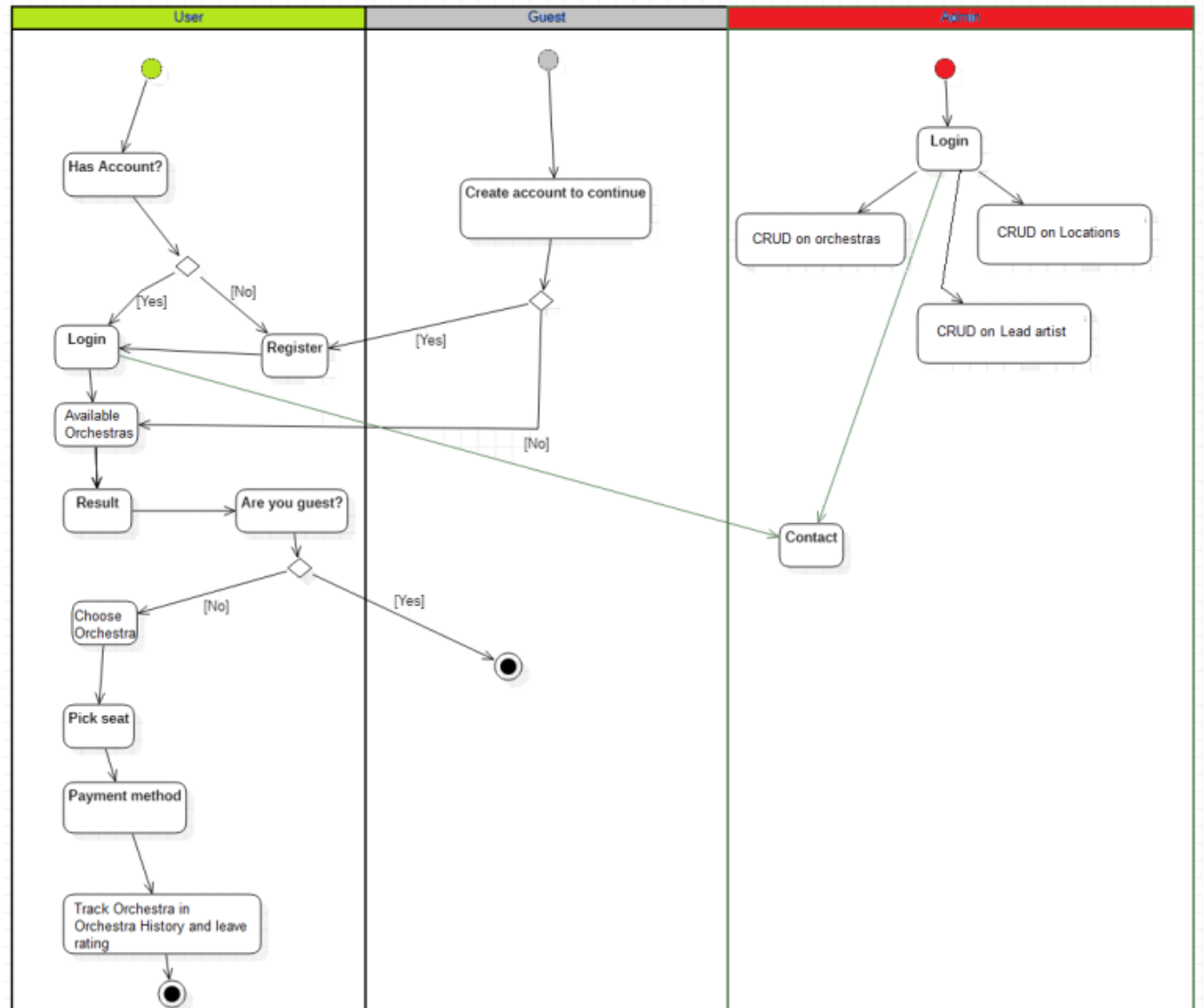
- **Access models diagram**
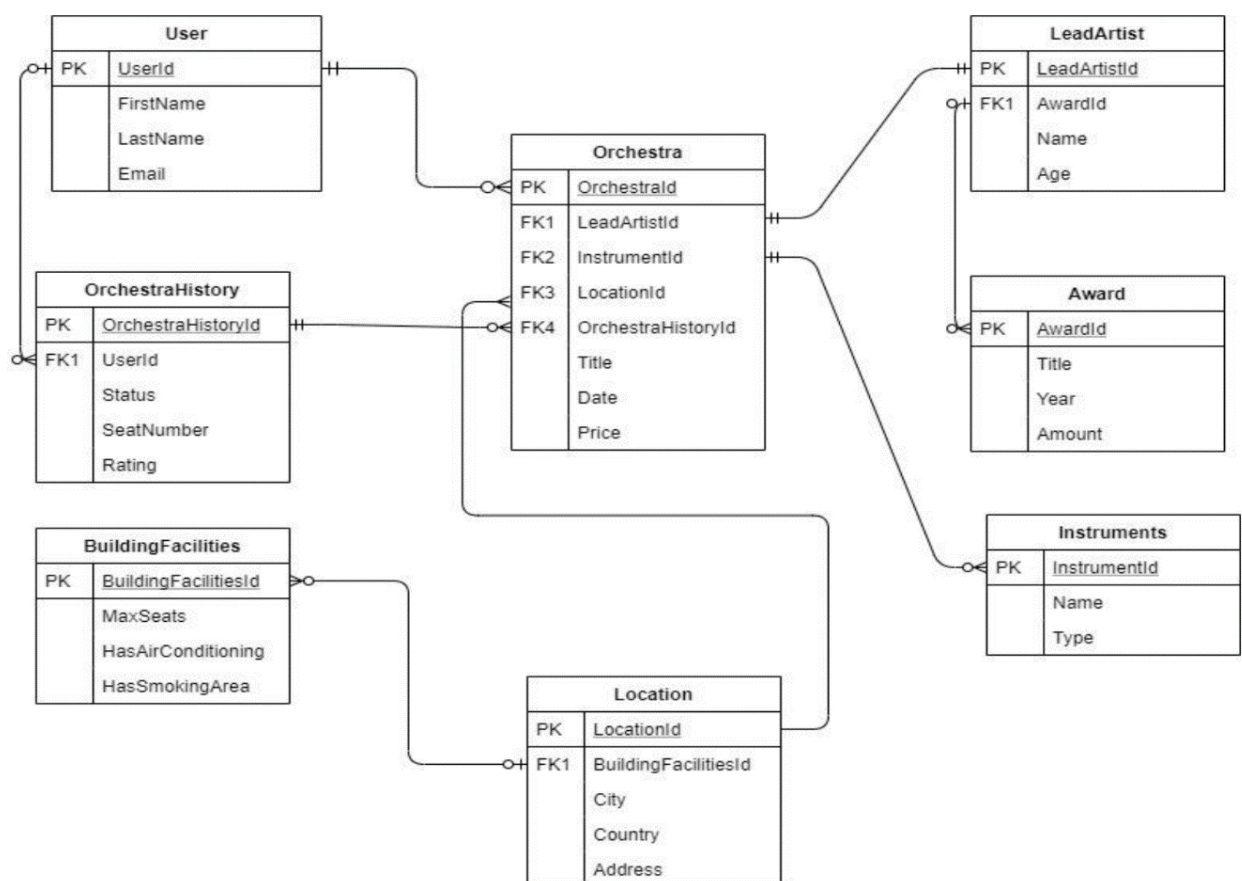
And for the front-end workflow I draw the Presentation page diagram in order to keep in mind of the pages and linked between them more efficiently.

- **Presentation pages diagram**

- **Interaction overview diagram:**

5.   System architecture and layers

The layered architecture pattern manages the system into 3 main layers with related functionality for every layer. These layers are represented by the Presentation layer that represents the computer program, which the users interact with an application and contains the Shared UI code, used to represent information to the user.

Business logic Tier is principally working as a connection between Data Access Tier and Presentation Tier. All the knowledge passes through the Business Logic Tier before passing to the presentation Tier. Business Tier is that, the sum of Business Logic Layer, Data Access Layer and Value Object and also other components accustomed to be added at the business logic.

The business logic uses the Repository pattern that permits better further modifications and an excellent application maintenance over time because the functionalities are modular, using interfaces to create the implementation more efficient.
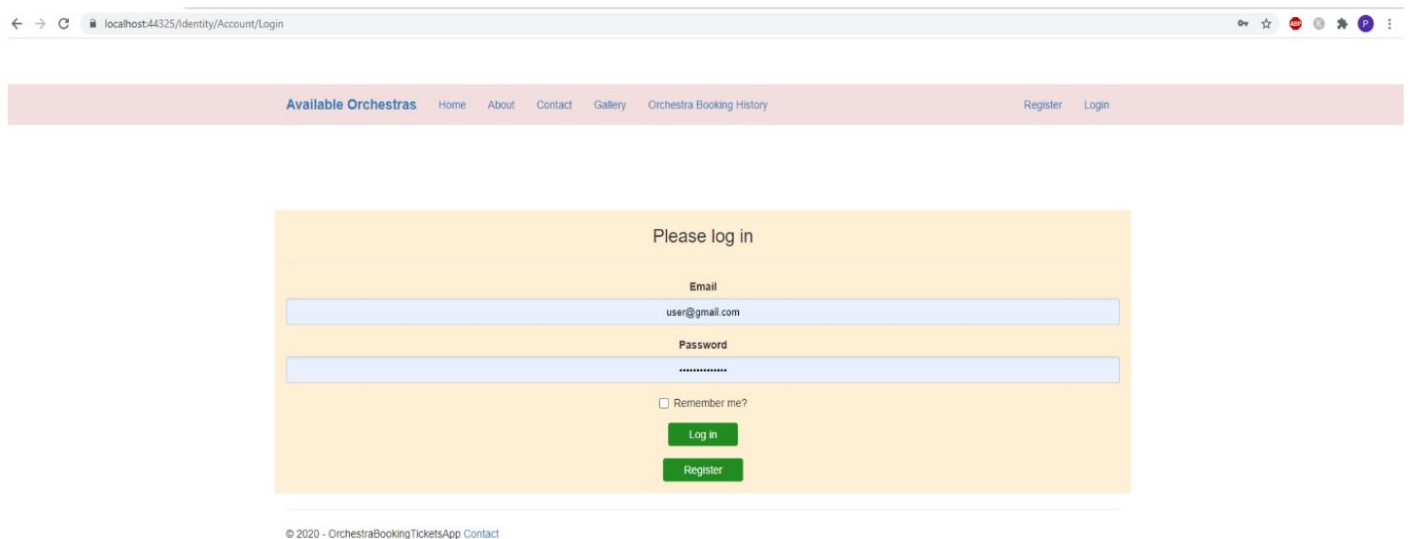
All the tiers can be seen in the below diagram:
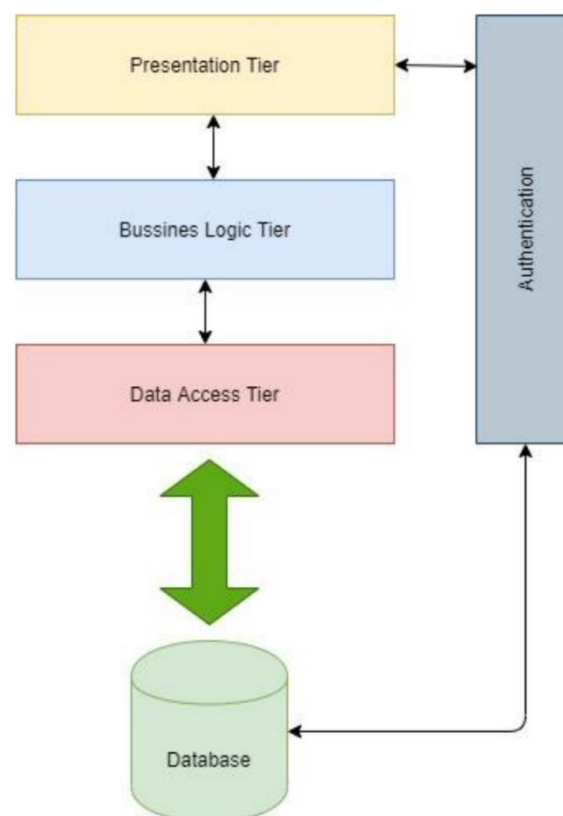
6.   Implemented functionalities illustrated with screenshots

I implemented a login and register system that allows the customer to create only a user account. The admin accounts are created automatically when the database is seeded, and a customer is considered as guest when he/she is not authenticated and has restrictions on the website.
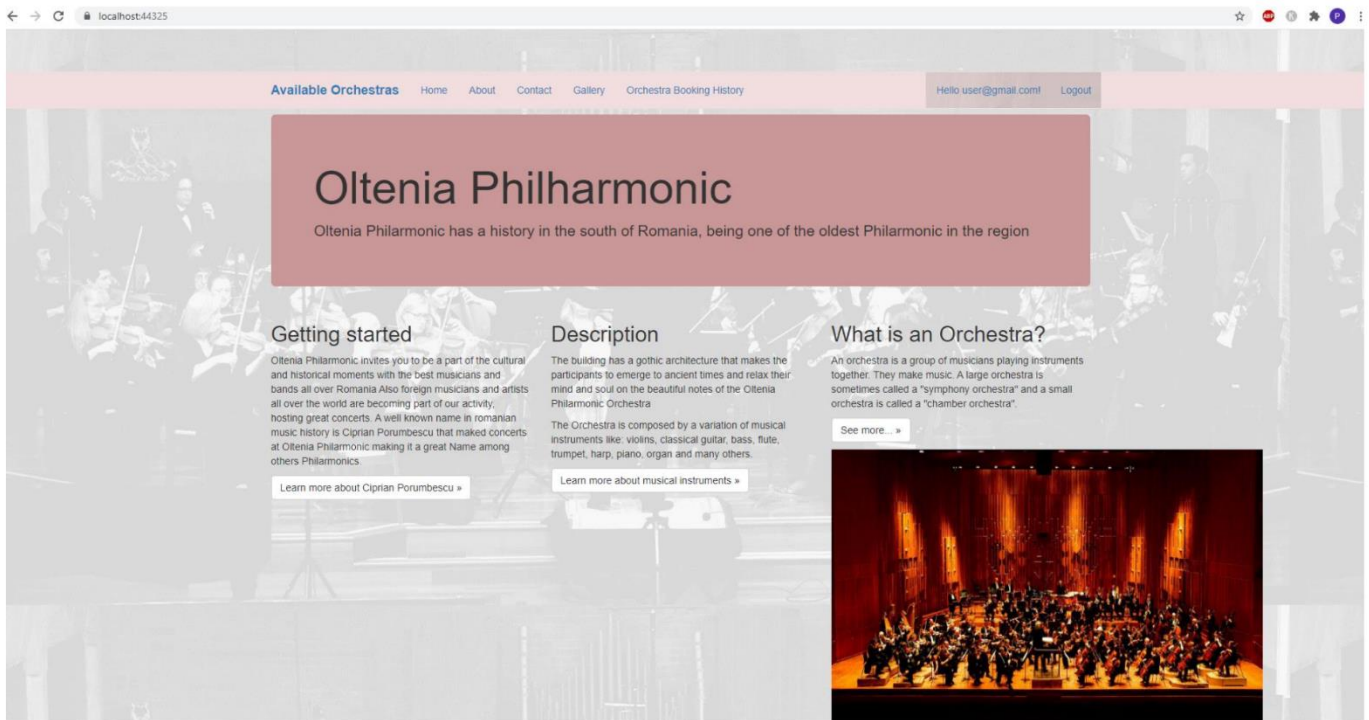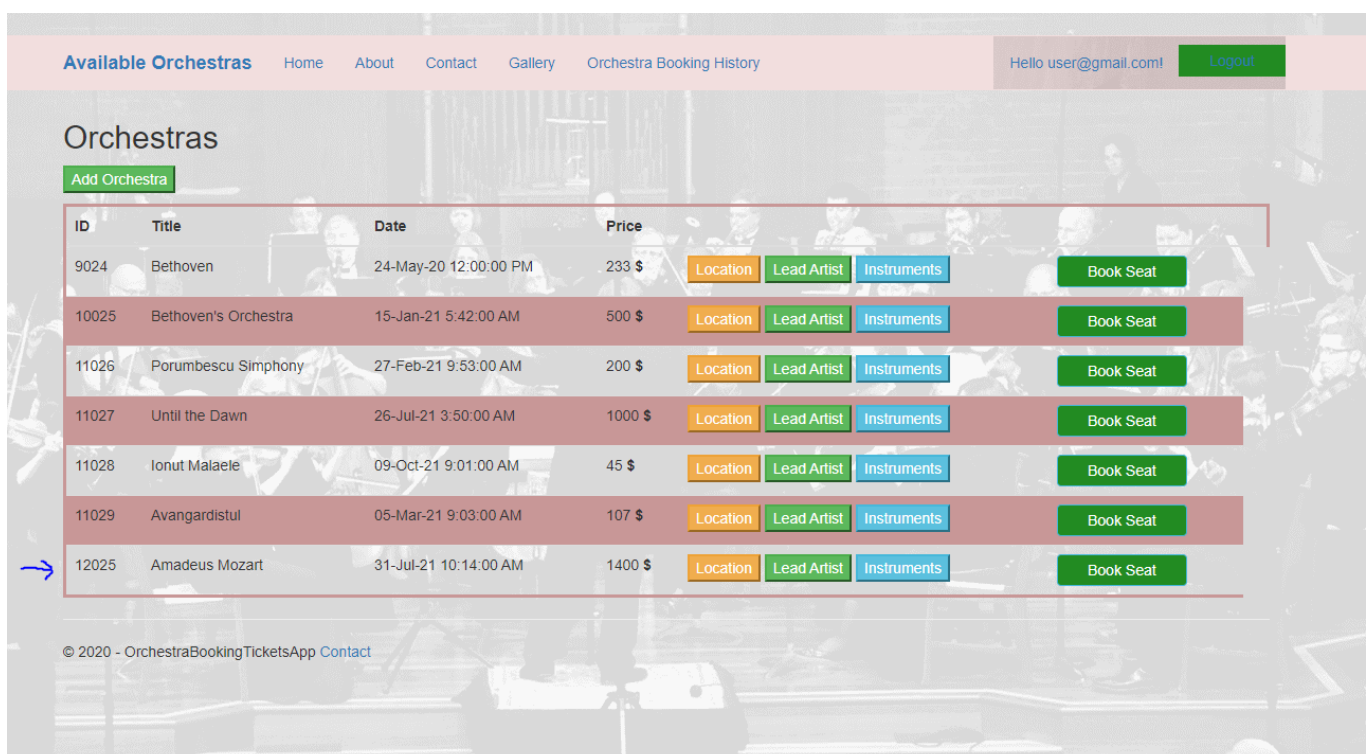
- **User**

A pop up will appear that will notify the user that the login was successfully.
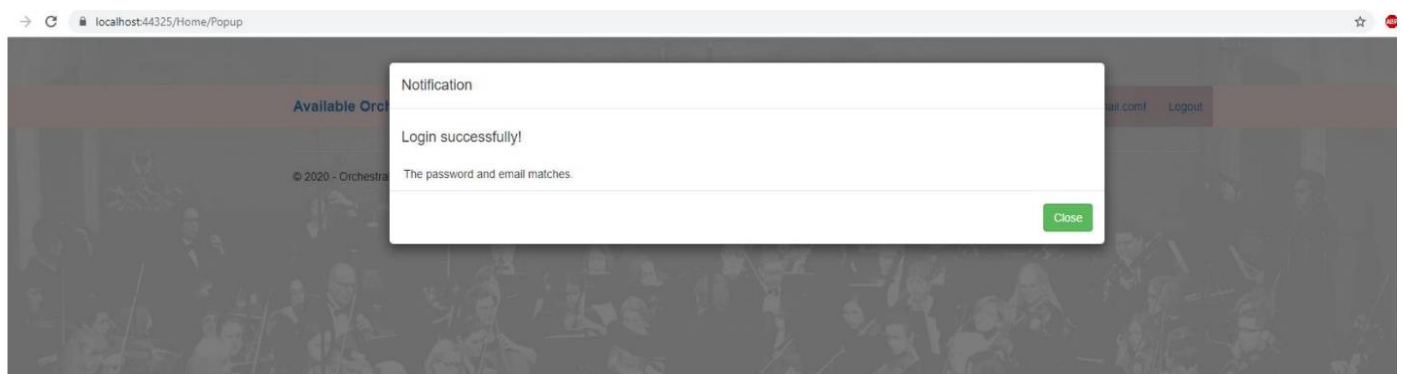
The user is logged in the account and can explore the homepage:

If the user presses the "Available Orchestras" tab a page like this will appear:

- He can see all the available orchestras until now and can see detailed information about a specific orchestra by clicking the three buttons:

- "Locations" – to see the actual location where the orchestra event will take place

This is an example of the location for the "Amadeus Mozart" Orchestra.

Available Orchestras   Home   About   Contact   Gallery   Orchestra Booking History   Hello user@gmail.com!   Logout

Orchestra location

Create New

City	Country	Address	
Craiova	Romania	Bd Nicolae	Create New

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- "Lead Artist" - to see the lead artist of that specific orchestra

Available Orchestras   Home   About   Contact   Gallery   Orchestra Booking History   Hello user@gmail.com!   Logout

The lead artist in the Orchestra

Create New

Name	Age	Orchestra Title
Matei	56	Amadeus Mozzart

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- "Instruments" – there can be multiple instruments that compose the orchestra

Available Orchestras   Home   About   Contact   Gallery   Orchestra Booking History   Hello user@gmail.com!   Logout

Instruments in the orchestra

Name	Type
Drums	Percsion
Violin	Strings
Bass	Chords
Piano	Chrords

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Let's make a new booking for a user account, for instance let's stay with the "Amadeus Mozart" orchestra event and press "Book seat":

Then the user is asked to choose the seat number in the building, if he/she selected a wrong seat, the cancel button is resetting the pick. When a seat is chosen, it turns green. Let's choose seat number 23:

After the booking was made successfully, the user can see the fresh book and also other bookings he made in the "Orchestra Booking History" page:

- We can see that on the seat 23 is still in progress, because the event is in the future, when the PC current date and time will be in the past regarding the Orchestra event date, then the status will change automatically in "Completed", as we can see in some others past events in the history.

- The user can also give a rating to an event scoring from 1 – 5 that will remain even after the page was refreshed.

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- The user can also access the Contact page and send an email to the admin filling the following form:

The country dropdown menu has all the countries in the world and also all the states within the selected country, because it is used an external library that contains this data.
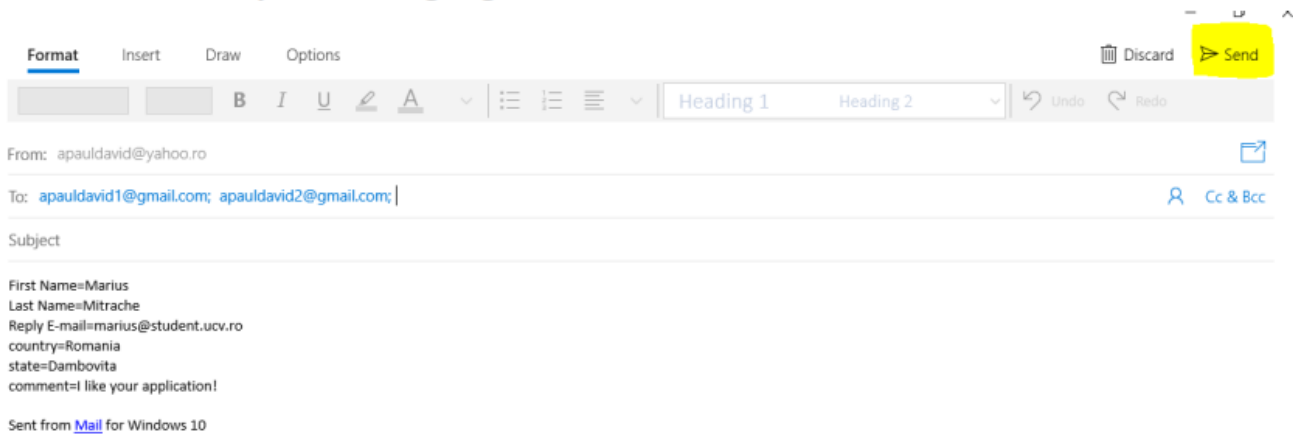
The user can press 3 buttons:

"Send"- the form will be submitted and an email will automatically be filled with all the data provided in this form, so the user must only hit again send and the admin will receive its message.
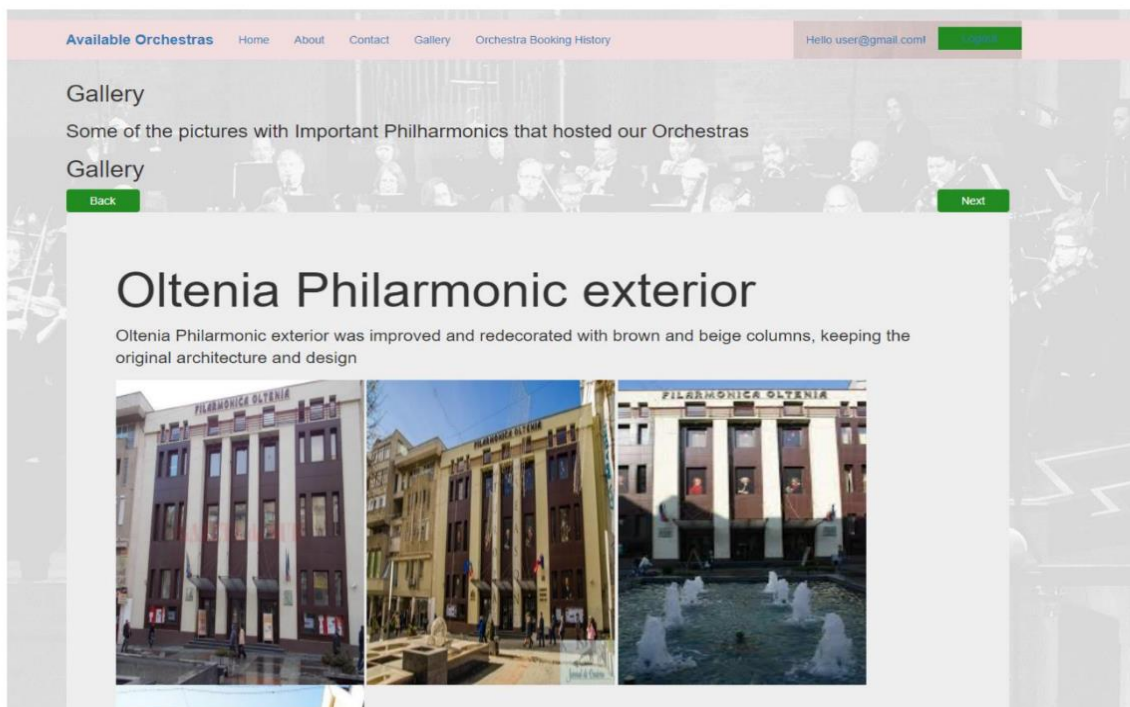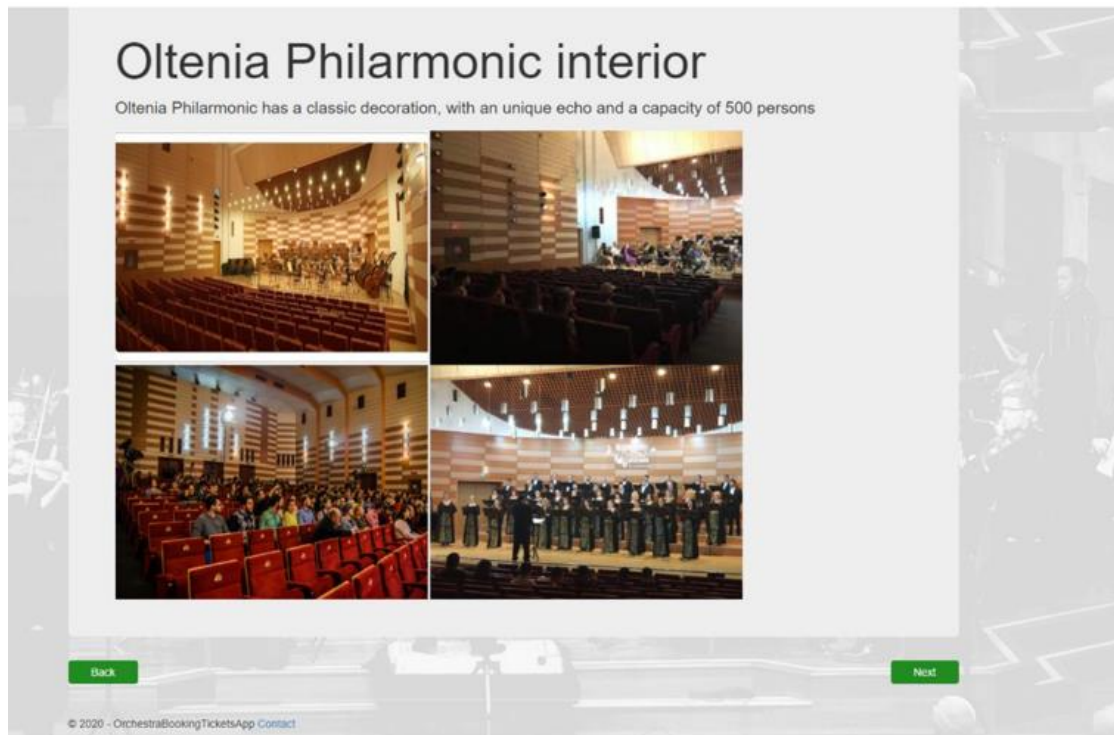

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After pressing send the following email will be generated outside the app, so the user must only hit that highlighted send button.
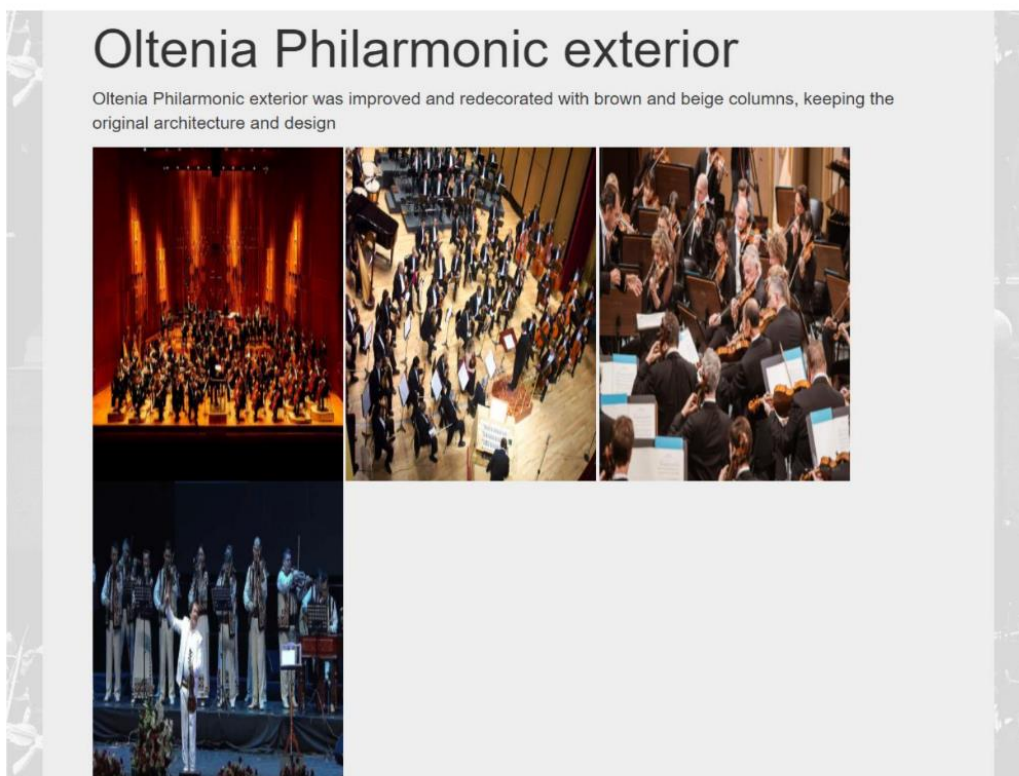

- The user can access the Orchestra Gallery of the website and enjoy beautiful pictures of the past orchestra event:

There are 2 pages, so if the user hit "Next" the second page of photos will appear:

Oltenia Philarmonic interior

Oltenia Philarmonic has a classic decoration, with an unique echo and a capacity of 500 persons

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- Another page that the user can access is the About page where he/she will read about the Privacy Policy and how its data are collected or used.

Available Orchestras   Home   About   Contact   Gallery   Orchestra Booking History   Hello user@gmail.com!   Logout

Privacy Policy

What personal information do we collect from the people that visit our blog, website or app?

When ordering or registering on our site, as appropriate, you may be asked to enter your name, email address, mailing address, credit card information or other details so that we can provide our services to you.

When do we collect information?

We collect information from you when you register on our site, place an order, subscribe to a newsletter, fill out a form or enter information on our site.

How do we use your information?

We may use such information in the following ways: To personalize your experience on our site and to allow us to deliver the type of content and product offerings in which you are most interested. To improve our website in order to better serve you. To allow us to better service you in responding to your customer service requests. To administer a contest, promotion, survey or other site feature.

Do we use "cookies"?

Yes. Cookies are small files that a site or its service provider transfers to your computer's hard drive through your Web browser (if you allow) that enables the site's or service provider's systems to recognize your browser and capture and remember certain information. For instance, we use cookies to help us remember and process the items in your shopping cart. They are also used to help us understand your preferences based on previous or current site activity, which enables us to provide you with improved services. We also use cookies to help us compile aggregate data about site traffic and site interaction so that we can offer better site experiences and tools in the future. We use cookies to: Help remember and process the items in the shopping cart. Understand and save user's preferences for future visits. Compile aggregate data about site traffic and site interactions in order to offer better site experiences and tools in the future. We may also use trusted third party services that track this information on our behalf. If you disable cookies off, some features will be disabled. It will turn off some of the features that make your site experience more efficient and some of our services will not function properly.

How can you opt out, remove or modify information you have provided to us?

You can request to have your information removed by clicking on the Contact Us/Live Chat button on this or the home page. Please note that we may maintain information about an individual sales transaction in order to complete that transaction and for record keeping purposes. Disclosure Of Your Personal Information We will retain your personal information only for as long as is necessary for the purposes set out in this Privacy Policy. We will retain and use your information to the extent necessary to comply with our legal obligations (for example, if we are required to retain your data to comply with applicable laws), resolve disputes, and enforce our legal agreements and policies.

- **Admin**

- The admin accounts are seeded when the database is created, so are predefined in the system.

- The admin role is to add, delete Orchestra events, instruments, lead artists, and locations for some specific Orchestra ID, and in some cases update some specific entries like the Users password or credentials if something is wrong or the rules are violated.

- After the login was made successfully for an admin account, he/she can add an orchestra event by pressing the 'Add Orchestra' button that is visible **only** for the user can't have this feature, same for the 'Delete' button:

The form will appear like this:

The orchestra is added to the Orchestra events table:

The admin must add a location for the new created Orchestra:

A single Orchestra event can have multiple locations because can be interpreted as a tour:

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And also, for the Lead Artist:

And there can be multiple instruments at the specific orchestra:

Another main feature of the admin role is that he can see all the created users accounts and apply CRUD on them:

Edit:

| Available Orchestras | Home | About | Contact | Gallery | Users | | Hello admin1@gmail.com! | Logout |

Edit
User

Email
ionAvram@yahoo.com

FirstName
Ion

LastName
Avram

Password
P@ssword123

Save

Back to List

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Details:

| Available Orchestras | Home | About | Contact | Gallery | Users | | Hello admin1@gmail.com! | Logout |

Details
User

Email	ionAvram@yahoo.com
FirstName	Ion
LastName	Avram
Password	P@ssword123

Edit | Back to List

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Delete:

Will delete permanently the user account and he/she will not be able to log in again.

- The admin features are **only** available for the *admin* role; a new registered account will be in a *user* role.

- **Guest**

- A person is considered to be in the guest role when is not authenticated.

- the guest has limited restrictions, he/she can't make an actual booking and see the history orchestra events

- the guest can only surf freely the site and see information about all the orchestra events locations, lead artist, instruments

- the guest can check the site gallery and contact the admin through the Contact page

- if he/she is trying to access an authenticated user feature, the application will redirect him to the login page to authenticate first

- For instance, let's say if the guest is pressing the 'Book seat' button, then the following page will appear:

Available Orchestras   Home   About   Contact   Gallery   Register   Login

Please log in

Email

The Email field is required.

Password

The Password field is required.

☐ Remember me?

Log in

Register

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7.   Conclusion

In conclusion it was really challenging to implement this website application and I tried to structure the source code and the documentation in such manner that can be open close, meaning that the software is open for extensions but closed for modifications.

The tools used for developing the application were really helpful and made the development and designing process much intuitive with draw.io platform that was a great tool for the diagrams, and also easy to control the versions using GitHub. All the changes could be seen very easy in the pending changes section of the team explorer tab from visual studio IDE.

Implementing this web app, I learned a lot about ASP.net and also how to send properly parameters to the controller from the front end and vice versa. It was really great to understand the full flow and design every feature.

In the future, I want to study other design patterns because are really helpful.