



Tourism Software System

CS335 – Software Engineering

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Introduction

This is our end of year project for CS335 (Software Engineering), which will be based on a software system about Tourism. We choose Tourism because as it is one of the most important financial sectors of every world economy and found it to be an interesting topic. After the lockdown caused by the worldwide Covid-19 pandemic, I would predict that families and friends would want to go on holidays, away from their homes, abroad or not. This is a good way to show the process of booking holidays online from the perspective of the user.

What is the goal?

Our goal for this project is to show the booking process from both a Client(s) and a Developer(s) point of view. Clients will be providing useful descriptions and basic English logics to help Developers get a better understanding of what they are being asked to produce. The Developers come back with helpful and critical information such as UML Diagrams, User Interfaces, and basic coding examples to help the clients to have better understanding of what is presented to them.

User Stories – Problem Scenarios

1. As a Customer, I want to book a flight so I can go on holiday, but I do not know which airline to book with.
2. As a Customer, I want to book a hotel so that I have a place to stay during my holiday, but I am unfamiliar with hotels in the area.
3. As a Customer, I want to find the best possible bundle/deals so that I can save more money.
4. As a Customer, I want to find tours around the area in advance of going so that I have activities to do during the holiday.
5. As a Travel Agent, I need to find flights and hotels so that I can present offers to customers.
6. As a Travel Agent, I need to have the ability to book/cancel so that I can update the airline/hotel database.
7. As an Admin, I need to hold a local database so that I can identify who are members and guests.
8. As a Customer, I want to use my credit card so that I can pay for the bookings.
9. As an Admin, I need to be able to create more flight/rooms so that customers have more variety
10. As an Admin, I need to be able to delete flights/rooms once they are fully booked.
11. As a Customer, I want to have the ability to cancel my booking.
12. As a Customer, I want to have access to my 'Cart' before payment.
13. As a Customer, I want to consult with the Travel Agent.

Use Case Diagram

What is a Use Case Diagram?

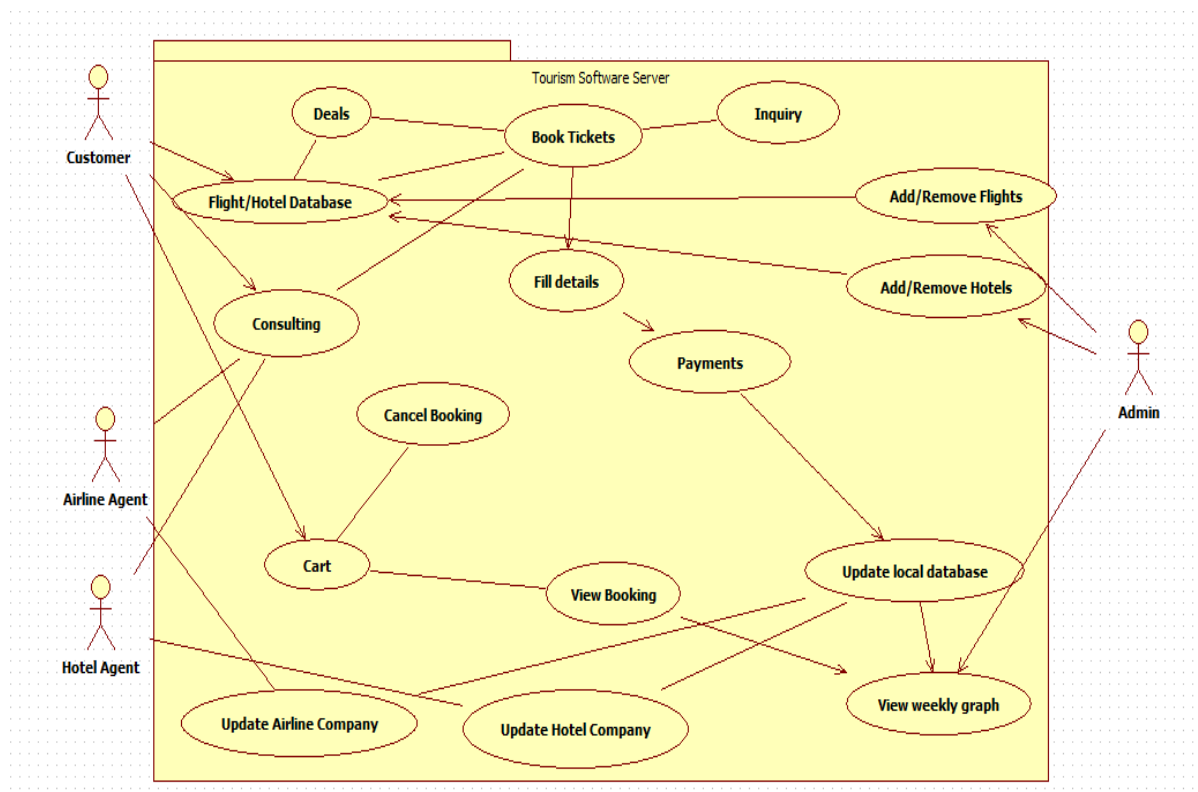
Use Case Diagrams contain Actors, Use-Cases, and their Relationships to help better understand/visualize the structure of the model of the software system. One Use Case accepts in a distinct functionality of a system. Actors are representative of Users, Clients, and Admins. Relationships are the connection between individual Use Cases and/or Actors.

Why use Use Case Diagrams?

Use Case diagrams are used to gather the requirements of a system including internal and external influences. Use Case diagrams can also be used to get a view of the outside of a system and shows the synergy among the requirements the actors.

How we made the Use Case Diagram

The Use Case has 4 actors: Customers, Admin, Airline Agents, Hotel Agents. Which are connected to different use cases. For example, Customers and the Airline and Hotel Agents are connected to consulting so that they can help Customers with choosing the right booking. The Admin Actor connects to adding and removing Hotel and Flight from the database.



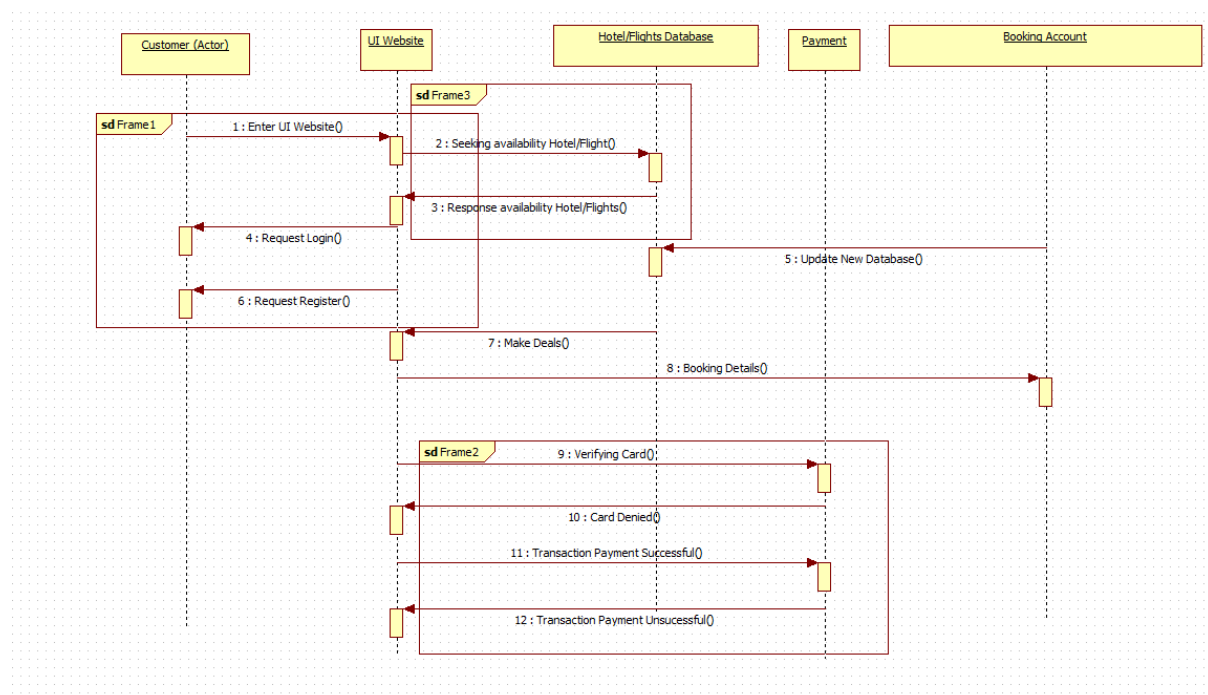
Sequence Diagrams

What are Sequence Diagrams?

Sequence diagrams describe the interactions between classes in terms of an exchange of messages over time. Sequence diagrams also help anticipate and correct the steps of each class of the system. This will find any loophole in the system and any alternate methods.

How we made the Sequence Diagram

The Sequence Diagram has 4 objects: the UI Website, Hotel/Flights Database, Payments, and Booking Account with a Customer actor. We made 3 frames within the diagram, frame 1 is about the Customer entering the website and logging on, frame 2 was about verifying the Customers card, and frame 3 is seeking the availability of hotel/flights.



Class Diagrams

What is a Class Diagram?

The UML Class diagram is a graphical notation used to construct and visualize object-oriented systems. They are described in several structure types: classes, attributes, operations (methods) and the relationship between the classes.

Class

The class is the backbone of the diagram, a bunch of classes that make up the diagram. We use the class to create the objects and is described by attributes and operations.

Attributes

Attributes are the descriptive features of a specific class. For example, a person has eyes, ears, mouth, and nose. Those are the face parts (attributes) of the person (class).

Operations (Methods)

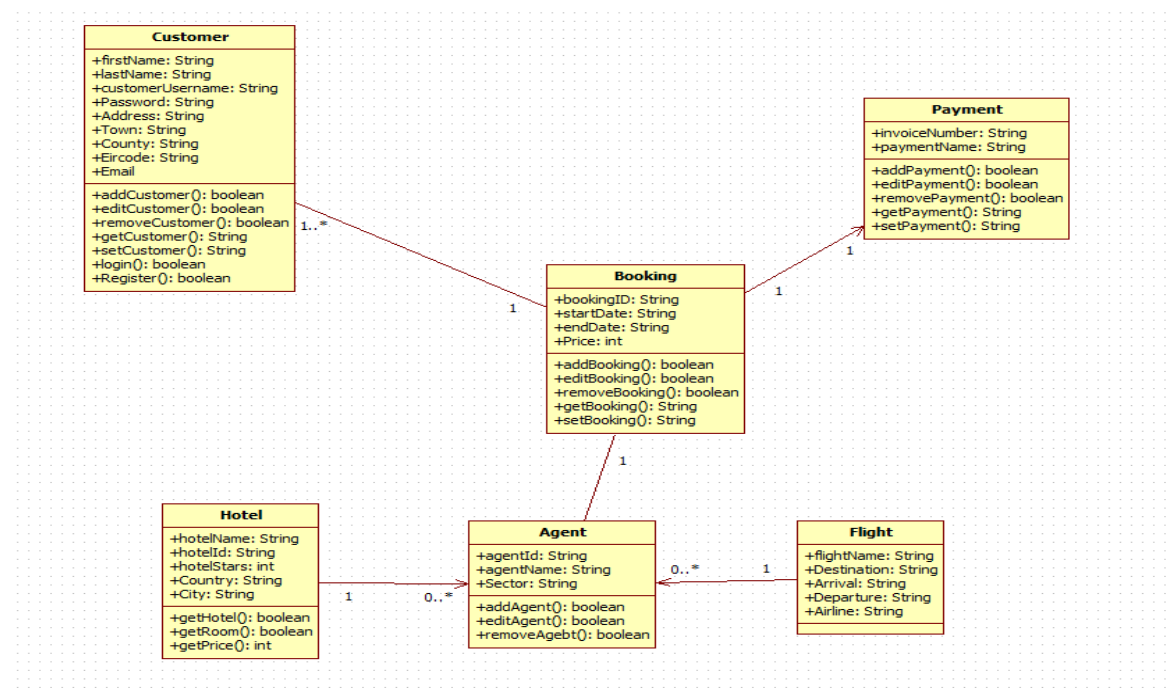
Operations are the duties carried out by the class. For example, a player class can have operations that can add a player, remove a player, or print the player's stats.

Relationships

Relationships are the connectors of all classes in a diagram. Each class communicates with one other class or multiple classes.

How we made the Class Diagram.

On creating the class diagram, we have designed 6 classes that best describes this project. Customer, Payment, Booking, Hotel, Agent, and Flight. Hotel and Flight are inheritance of Agent. I decided the make the Booking the main object



Component Diagram

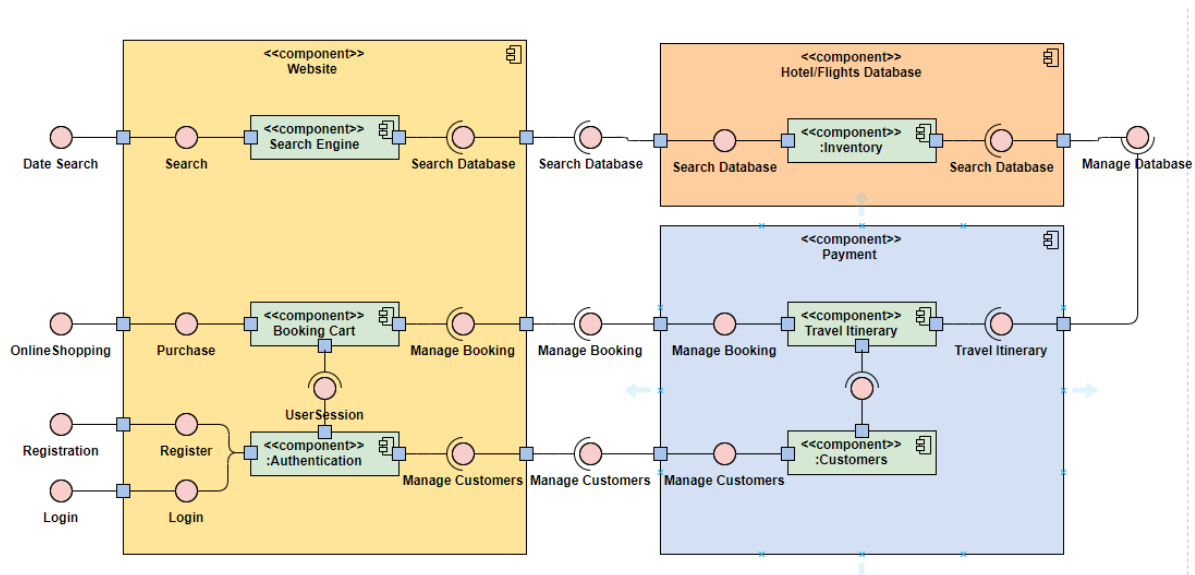
What are Component Diagrams?

A component/architecture diagram is a graphical representation of a set of concepts, that are part of an architecture, including their principles, elements, and components.

How we made the Component Diagram

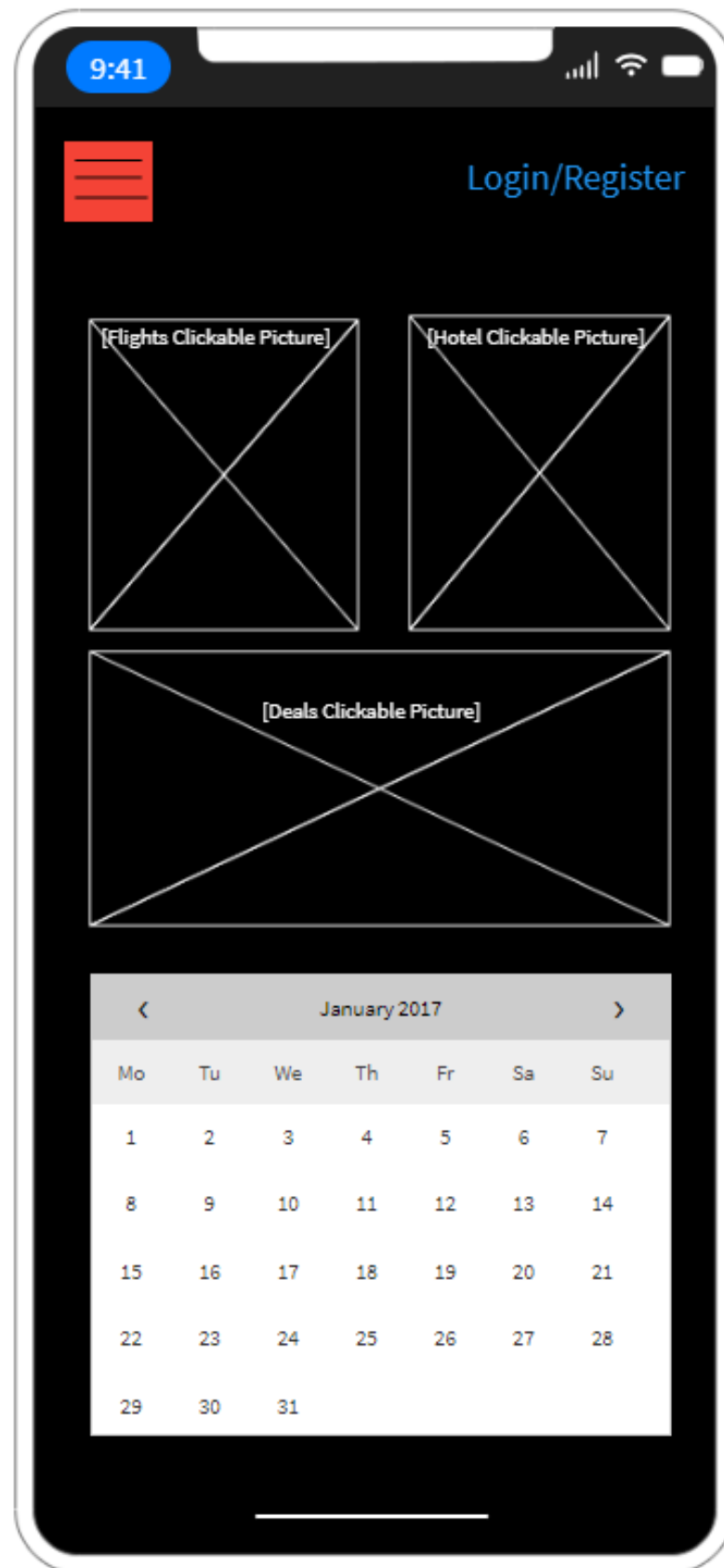
For making the component diagram we made 3 components, components for the Website, Hotel/Flight Database, and Payment. At the start of the component the user has 4 provided interfaces: Date Search, Online Shopping, Registration, and Login which all have ports going into the Website component. I made 3 stereotype texts in the Website component called Search Engine, Booking Cart, Authentication. These will be distributed among the other components. I made 1 stereotype text in the Hotel/Flight Database component called Inventory.

I have attached the link on where I created the component diagram. [LINK](#)

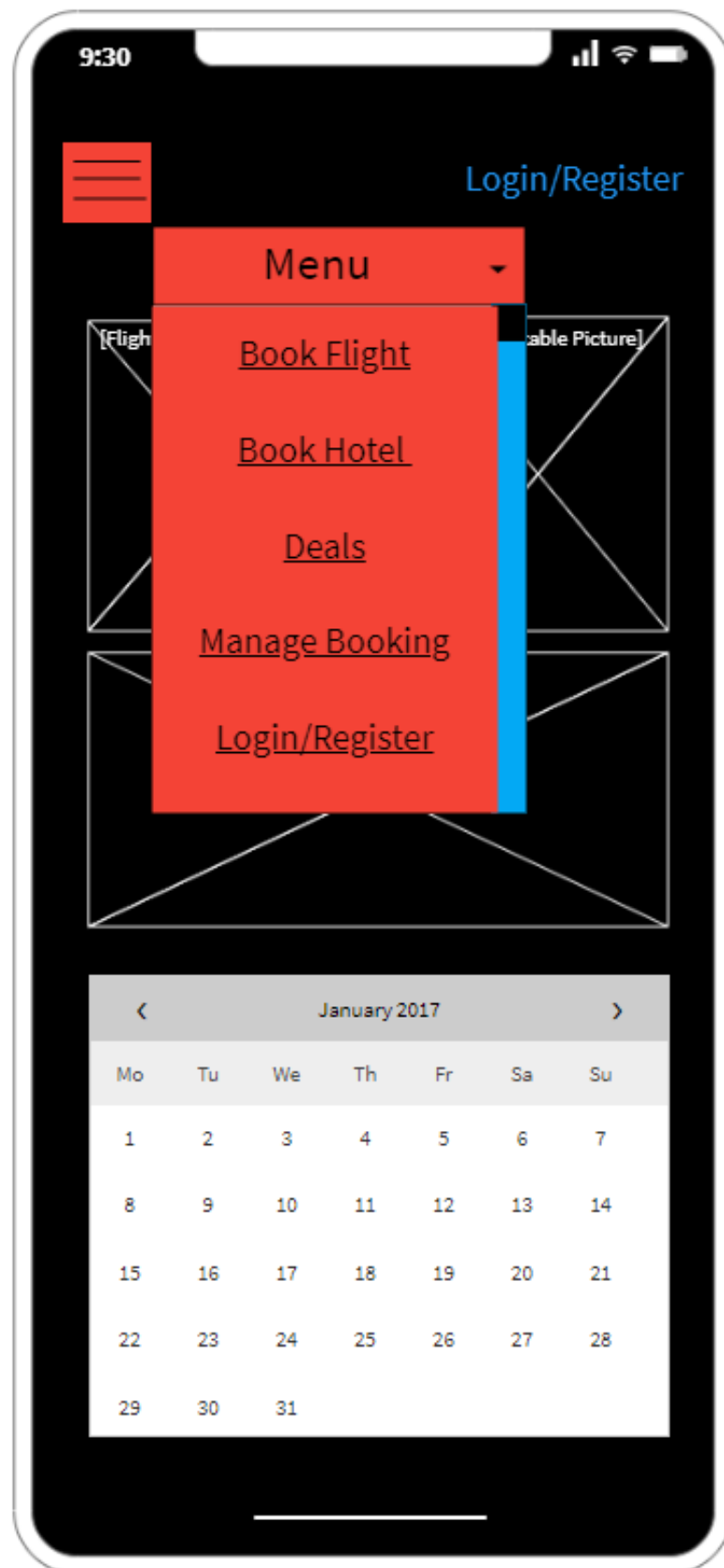


User Interface

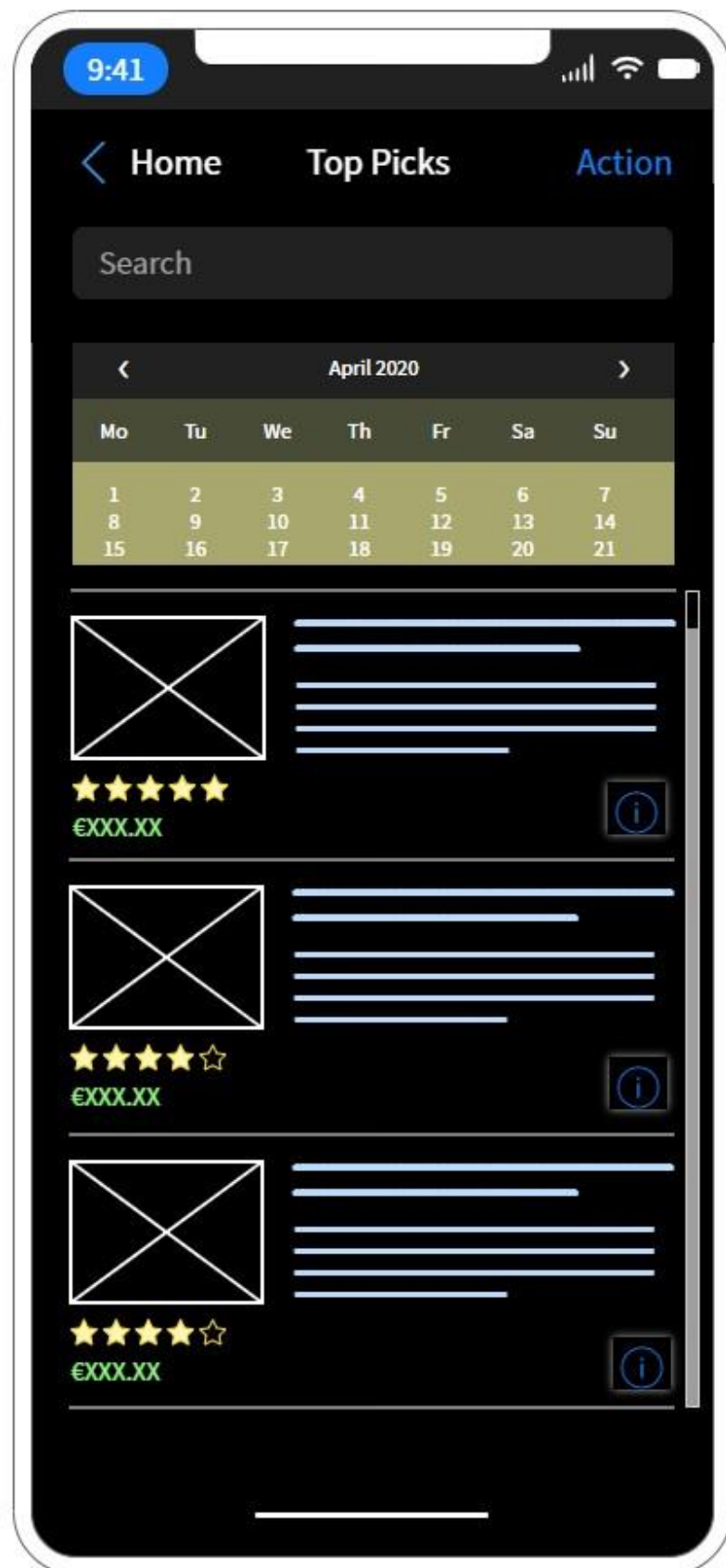
LIST



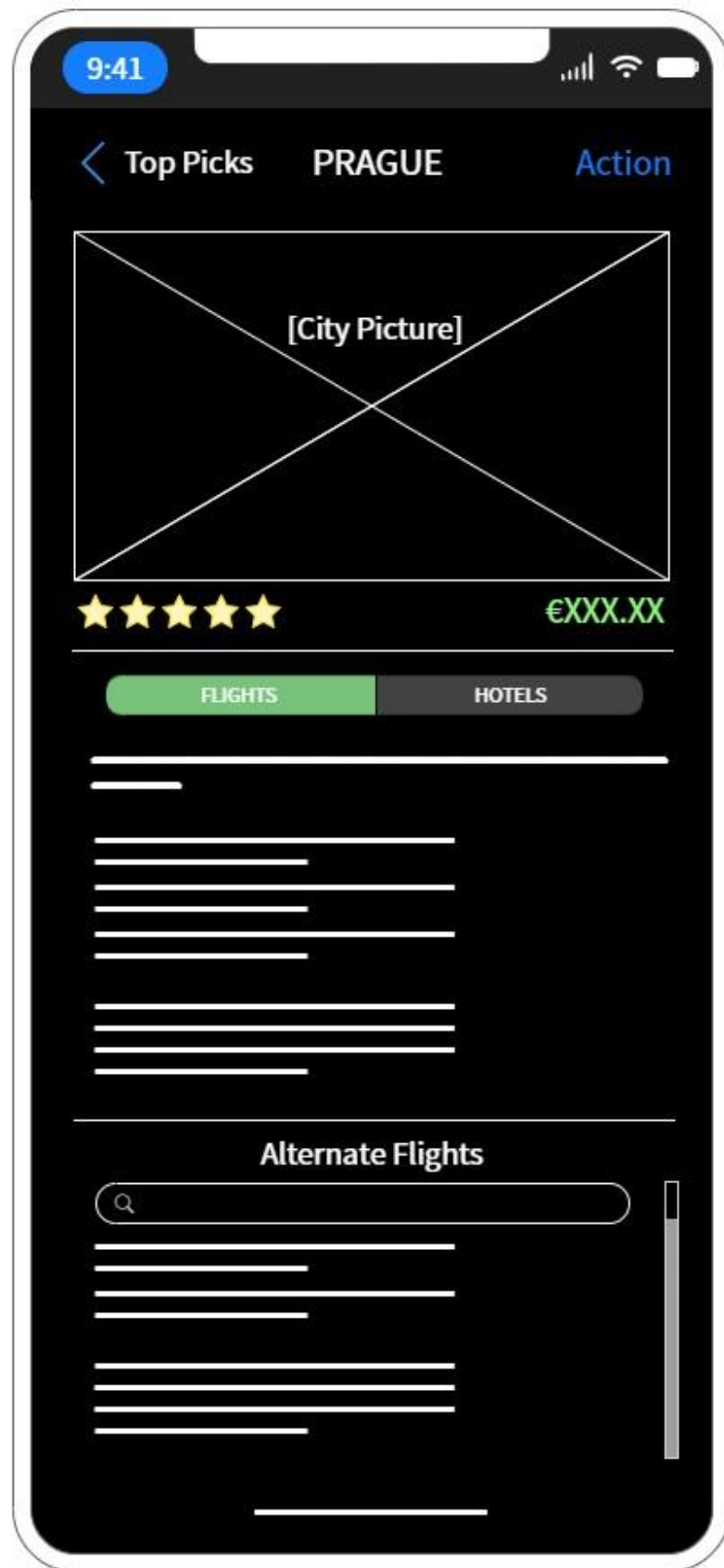
SUB-LIST



NESTED LIST



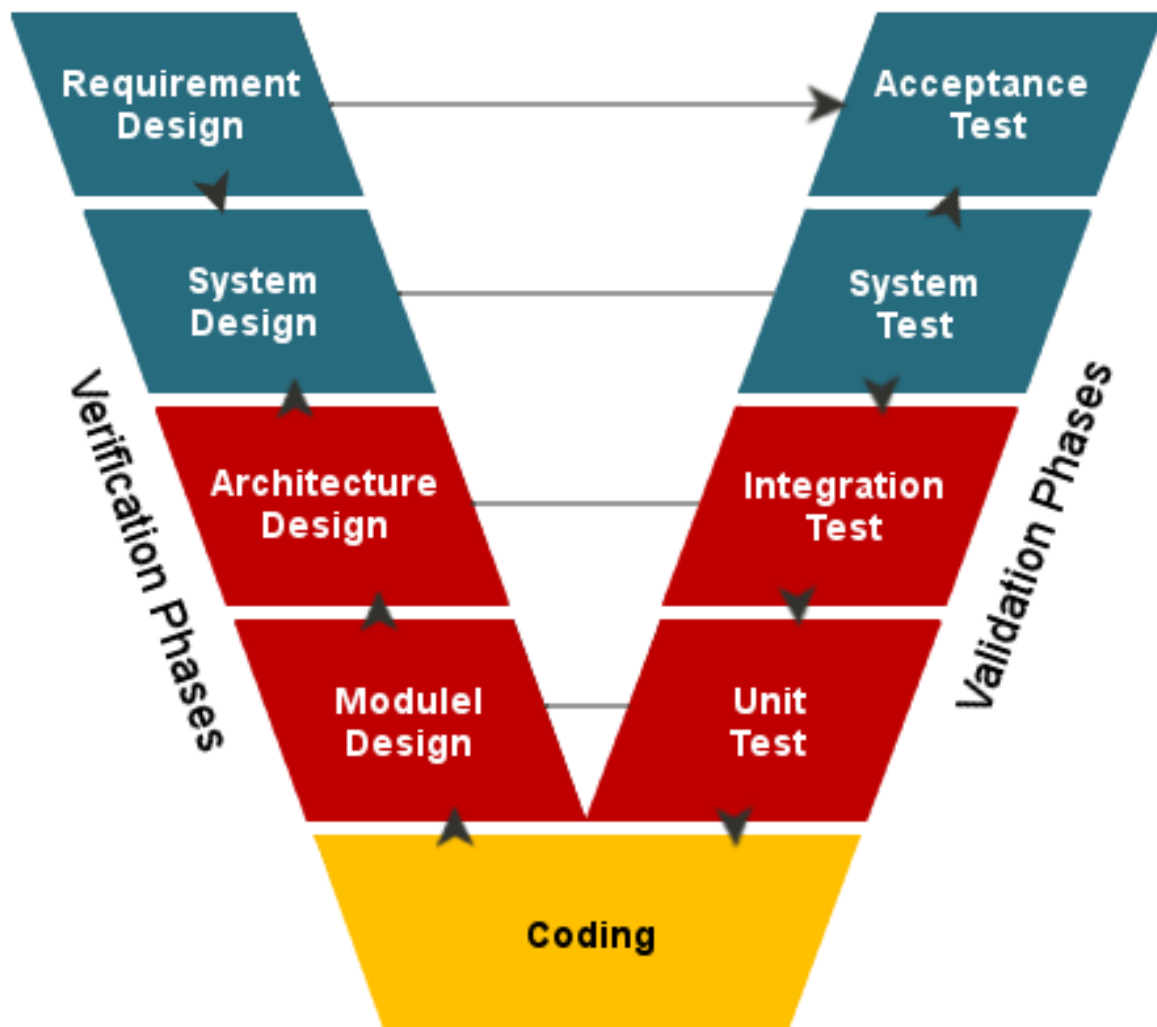
CONTENT



System Testing

The V-model testing process (shown below) is an almost fool-proof process to validate the user requirements. This is because it tests the program during its development stages and therefore can catch errors or inconsistencies before they become too complicated to resolve at a later stage.

Validating User Requirements would only exercise the “Validation Phases” side of the model, which includes Unit Testing, Integration Testing and System Testing.



Conclusion

In conclusion, we found this very informative and gained a great understanding of the process and steps of UML diagrams and their creations. Creating a Holiday Booking website gave us many challenges to overcome such as finding Customer functions for the user stories or creating more objects in the class diagram. We purposely left them out so the software system could have the ability to grow and have more updated features in the future.

We left a StarUML file within the folder to show evidence of our work.

Contributions

Carl

- Introduction
- User Stories
- Use Case Diagram
- Component Diagram
- Sequence Diagram

Nathan

- User Stories/Problem Scenarios
- UI Interface Diagrams
- Class Diagram
- System Testing

Reference

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(13/05/2020)