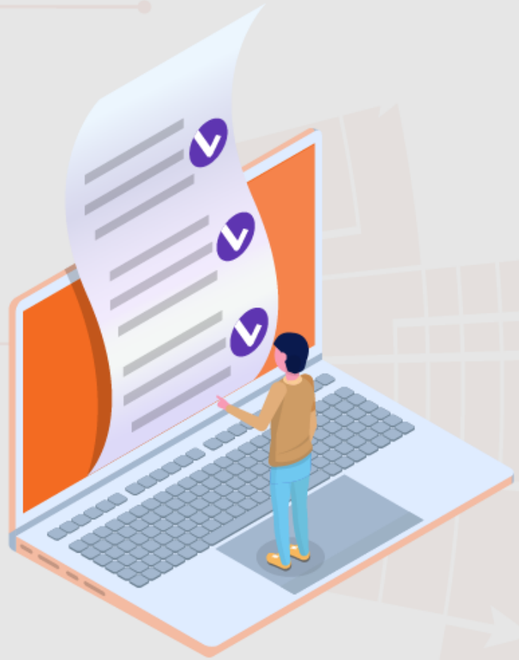
Caltech Coding Bootcamp

Program Capstone

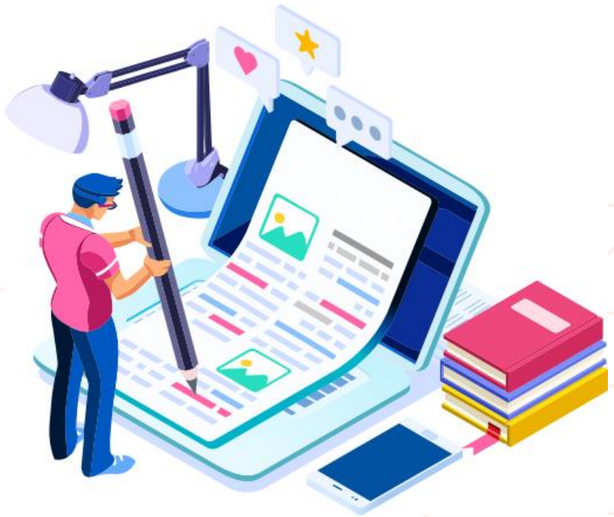
Domain: Food Delivery

Objectives

To build a dynamic and responsive food delivery app to display food items, filter based on user preferences, manage orders, and user details.

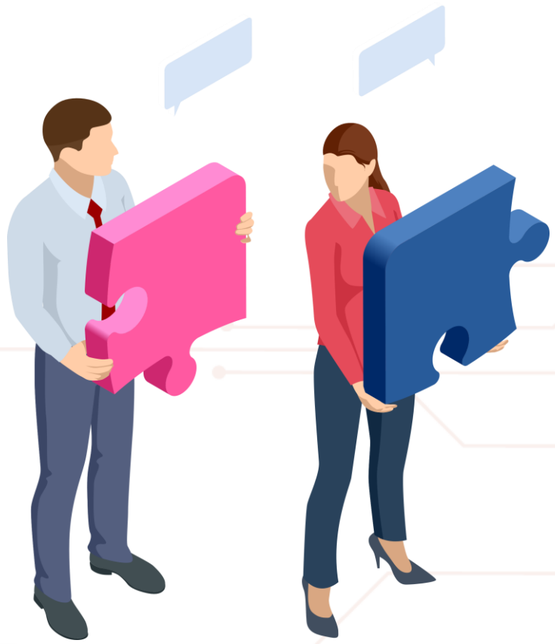


Prerequisites



- Angular
- Java
- MySQL
- SpringBoot
- Jenkins
- Docker
- AWS
- Git and GitHub

Problem Statement and Motivation



Problem Statement:

In this project, you should be able to develop a front-end web app using Angular and a Java backend using Spring Boot, configure the applications using Docker containers, deploy the project on AWS using CI CD Pipeline

Real-World Scenario:

You are a Full Stack Developer at Foodie Inc., and your company is developing an online platform where users can place an order to buy the food online.

The company is aggregating various restaurants of a city with their famous dishes which is supposed to be stored on a central system.

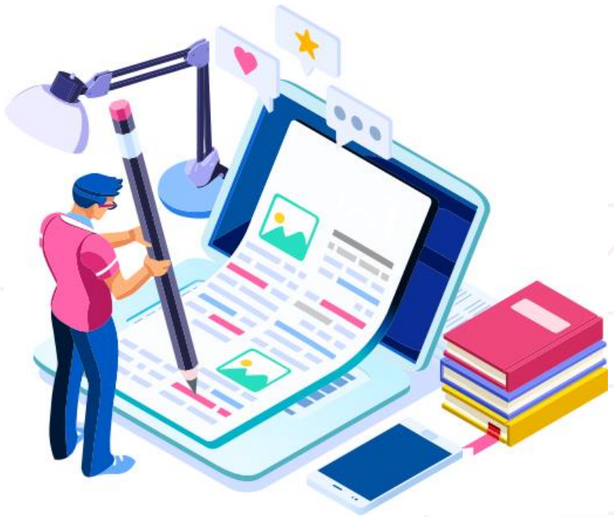
You're asked to build a proof of concept using Angular for the Front End and Java for the Backend using MySQL or MongoDB as a database. Your solution should run on the AWS EC2 Instance, where applications will be containerized using the Docker. You should implement Jenkins pipeline for easing the development operations.

Industry Relevance

Skills used in the project and their usage in the industry are given below:

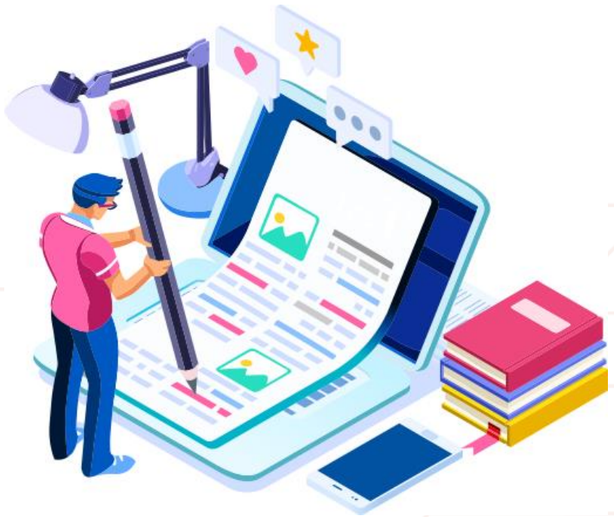
- **Angular** - Platform for building mobile and desktop web applications
- **Java and SpringBoot** - Leading technology to develop backend
- **Docker** - Deliver Software as Containers
- **AWS** - Host and Deploy your Apps in World's leading Cloud Platform
- **Jenkins** - Use Jenkins to build CI CD Pipelines

Task (Activities)



1. Develop the Front End with Angular for the Admin to add Restaurants and Dishes from the Interface with authentication for the Admin User.
2. Develop an End User Web Application listing the Restaurant and the dishes using Angular.
3. Define the structure of a database and create necessary tables using SQL in MySQL Database or MongoDB as per your preference.
4. Develop a Java Backend using Spring Boot containing various microservices.

Task (Activities)



5. Perform the Front-End and Back-End communication using HTTP ClientDefine Jenkinsfile for both Angular and Java Projects for the automated builds.
6. Define Dockerfile for both Angular and Java Projects to develop images and run them as containers.
7. Develop a CI CD Pipeline in Jenkins for both Angular and Java Backend Projects.
8. Using AWS Launch EC2 Instances and configure other required ServicesDeploy the Projects on EC2 Instance

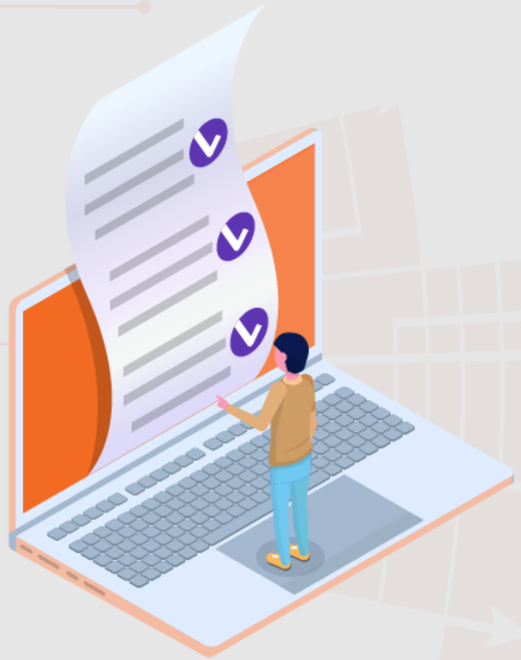
Project Reference

- **Task 1:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 2:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 3:** SQL CRUD Commands, Primary and Foreign Key Relationship
- **Task 4:** Spring Boot Web Dependency, RestController, RequestMapping, Post and Get Requests
- **Task 5:** Angular HTTP Client Library, HTTP Request Response, JSON
- **Task 6:** Jenkinsfile stages and step declarations
- **Task 7:** Dockerfile and commands to assemble an image
- **Task 8:** Jenkins Pipeline Project Creation with git SCM
- **Task 9:** AWS, EC2, SSH/CloudShell Connection, Tool COnfiguration
- **Task 10:** Jenkins Pipeline Build

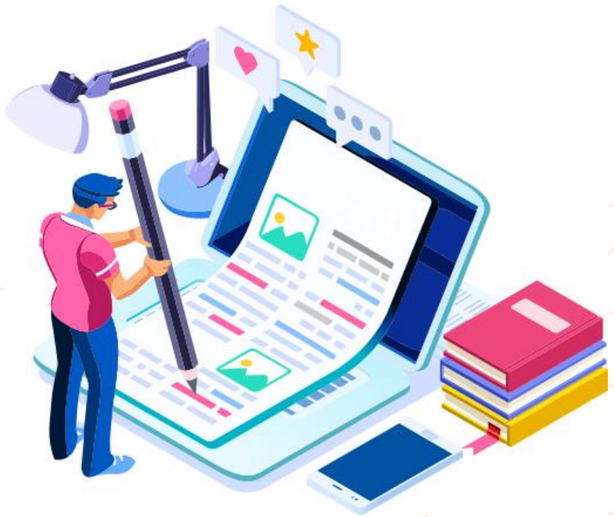
Domain: Entertainment

Objectives

To create a dynamic and responsive web application for booking movie tickets online for different genres and languages.

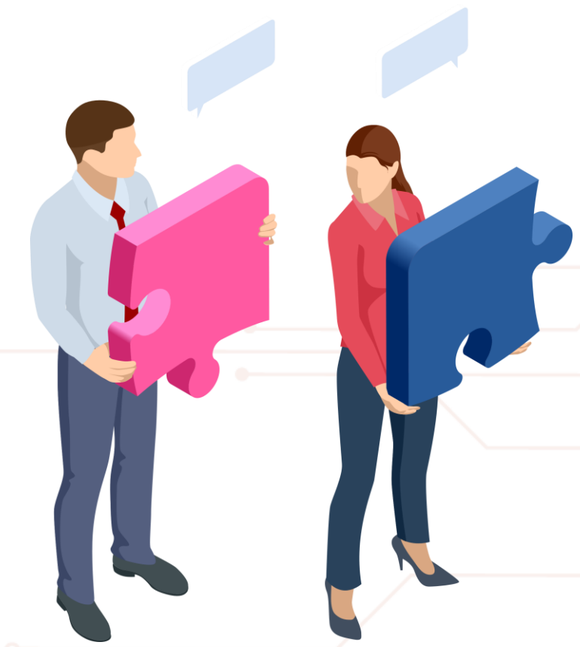


Prerequisites



- Angular
- Java
- MySQL
- SpringBoot
- Jenkins
- Docker
- AWS
- Git and GitHub

Problem Statement and Motivation



Problem Statement:

In this project, you should be able to develop a front-end web app using Angular and a Java backend using Spring Boot, configure the applications using Docker containers, deploy the project on AWS using CI CD Pipeline

Real-World Scenario:

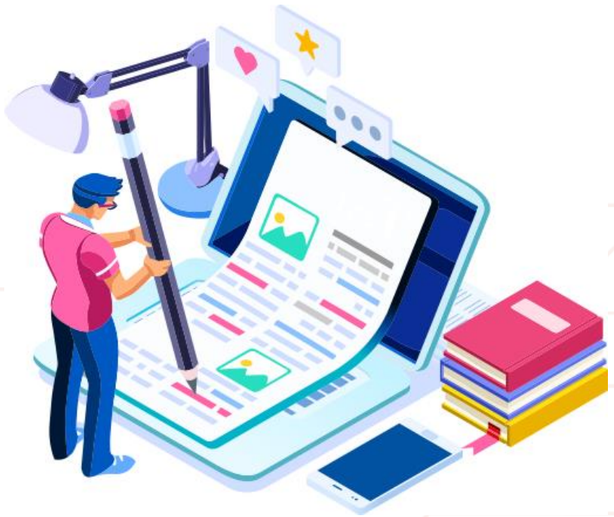
NMS Cinemas is a chain of single screen theatres that screen movie shows of different genres and languages at very genuine prices. They found out that the online booking of movie tickets from apps, such as BookMyShow and Paytm were gaining more profit by eliminating middlemen from the equation. As a result, the team decided to hire a Full Stack developer to develop an online movie ticket booking web application with a rich and user-friendly interface.

Industry Relevance

Skills used in the project and their usage in the industry are given below:

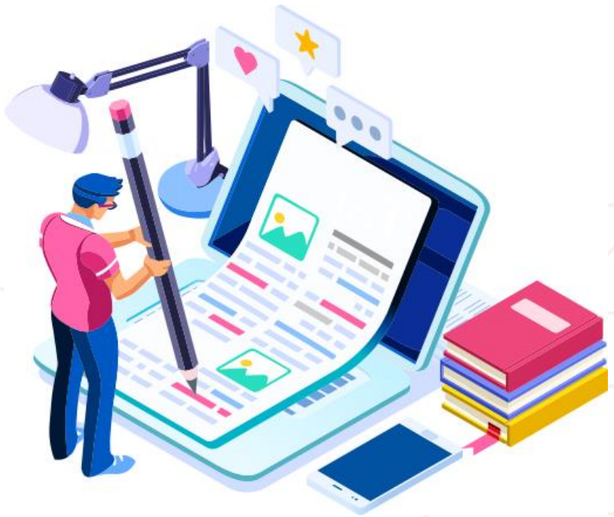
- **Angular** - Platform for building mobile and desktop web applications
- **Java and SpringBoot** - Leading technology to develop backend
- **Docker** - Deliver Software as Containers
- **AWS** - Host and Deploy your Apps in World's leading Cloud Platform
- **Jenkins** - Use Jenkins to build CI CD Pipelines

Task (Activities)



1. Develop the Front End with Angular for the Admin to add Movies and theatres from the Interface with authentication for the Admin User.
2. Develop an End User Web Application listing the Movies and the corresponding theatres using Angular.
3. Define the structure of a database and create necessary tables using SQL in MySQL Database or MongoDB as per your preference.
4. Develop a Java Backend using Spring Boot containing various microservices for various functionalities like login, register, ticket booking, pre-booking, filters, and upcoming movie details.

Task (Activities)



5. Perform the Front-End and Back-End communication using HTTP ClientDefine Jenkinsfile for both Angular and Java Projects for the automated builds.
6. Define Dockerfile for both Angular and Java Projects to develop images and run them as containers.
7. Develop a CI CD Pipeline in Jenkins for both Angular and Java Backend Projects.
8. Using AWS Launch EC2 Instances and configure other required ServicesDeploy the Projects on EC2 Instance

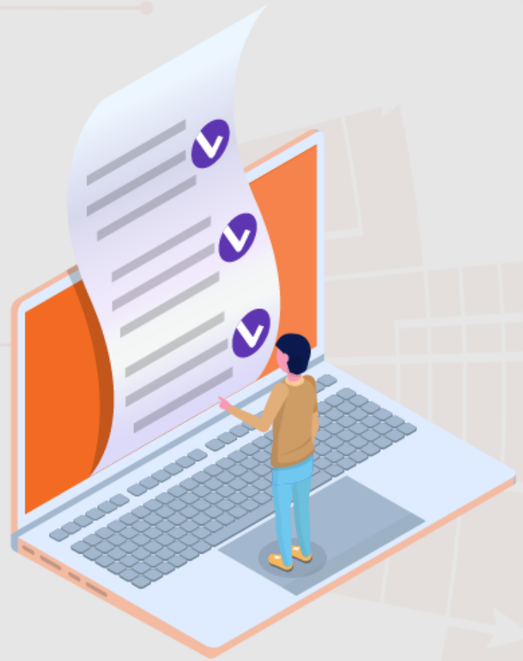
Project Reference

- **Task 1:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 2:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 3:** SQL CRUD Commands, Primary and Foreign Key Relationship
- **Task 4:** Spring Boot Web Dependency, RestController, RequestMapping, Post and Get Requests
- **Task 5:** Angular HTTP Client Library, HTTP Request Response, JSON
- **Task 6:** Jenkinsfile stages and step declarations
- **Task 7:** Dockerfile and commands to assemble an image
- **Task 8:** Jenkins Pipeline Project Creation with git SCM
- **Task 9:** AWS, EC2, SSH/CloudShell Connection, Tool COnfiguration
- **Task 10:** Jenkins Pipeline Build

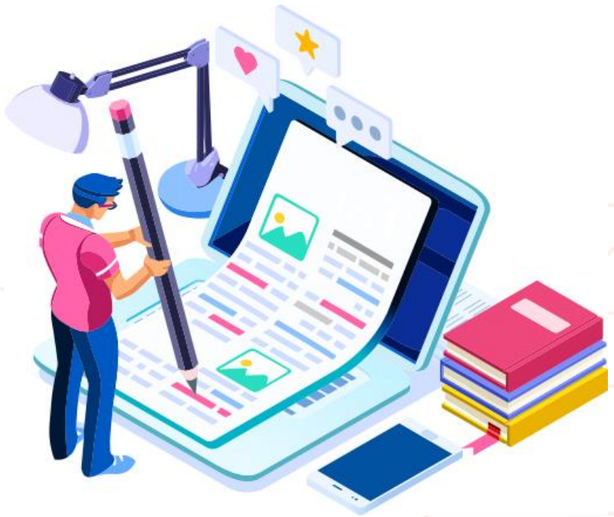
Domain: Healthcare

Objectives

To create a dynamic and responsive Java e-healthcare web application for ordering medicines of different categories

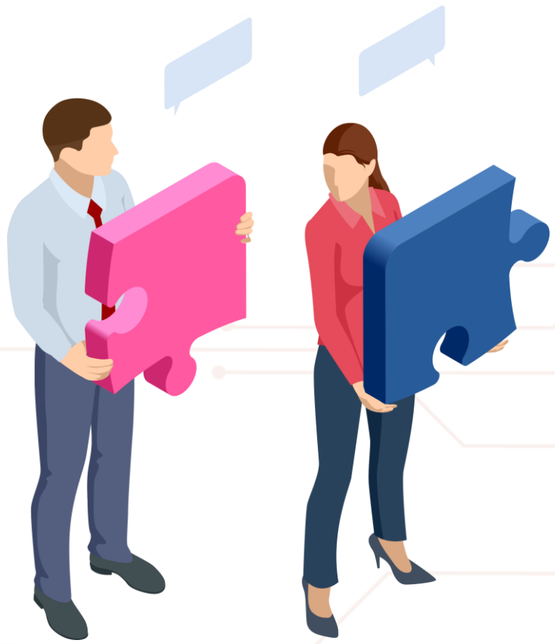


Prerequisites



- Angular
- Java
- MySQL
- SpringBoot
- Jenkins
- Docker
- AWS
- Git and GitHub

Problem Statement and Motivation



Problem Statement:

In this project, you should be able to develop a front-end web app using Angular and a Java backend using Spring Boot, configure the applications using Docker containers, deploy the project on AWS using CI CD Pipeline

Real-World Scenario:

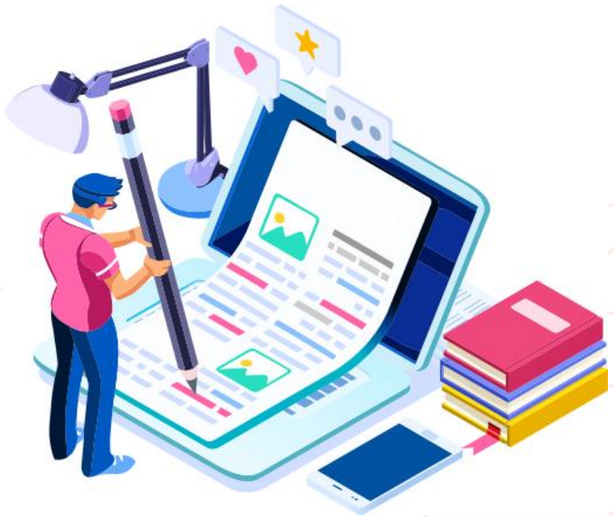
Medicare is a company that supplies medicines and a couple of other healthcare essentials at an affordable price. They found out that online ordering of medicines with companies, such as 100mg and mfine are gaining more profits by eliminating middlemen from the equation. As a result, the team decided to hire a Full Stack developer to develop a healthcare web application with a rich and user-friendly interface.

Industry Relevance

Skills used in the project and their usage in the industry are given below:

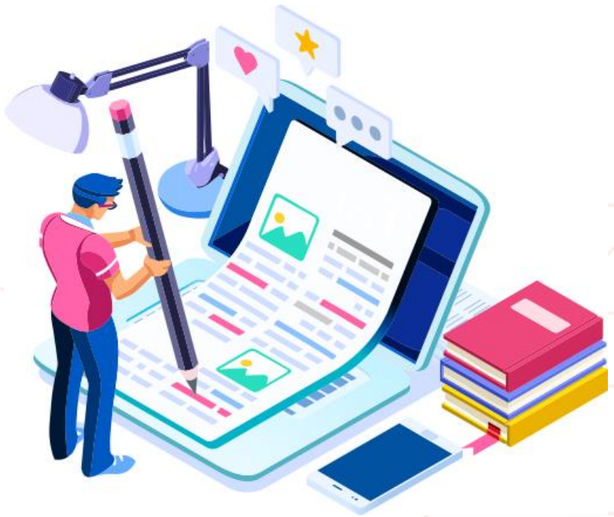
- **Angular** - Platform for building mobile and desktop web applications
- **Java and SpringBoot** - Leading technology to develop backend
- **Docker** - Deliver Software as Containers
- **AWS** - Host and Deploy your Apps in World's leading Cloud Platform
- **Jenkins** - Use Jenkins to build CI CD Pipelines

Task (Activities)



1. Develop the Front End with Angular for the Admin to add Medicines, prescription, brands and symptoms from the Interface with authentication for the Admin User.
2. Develop an End User Web Application listing the Medicines and their complete detail using Angular.
3. Define the structure of a database and create necessary tables using SQL in MySQL Database or MongoDB as per your preference.
4. Develop a Java Backend using Spring Boot containing various microservices for various functionalities like login, register, ordering medicines, filtering based on brands, symptoms or prescription, dummy payment gateway, and order tracking.

Task (Activities)



5. Perform the Front-End and Back-End communication using HTTP ClientDefine Jenkinsfile for both Angular and Java Projects for the automated builds.
6. Define Dockerfile for both Angular and Java Projects to develop images and run them as containers.
7. Develop a CI CD Pipeline in Jenkins for both Angular and Java Backend Projects.
8. Using AWS Launch EC2 Instances and configure other required ServicesDeploy the Projects on EC2 Instance

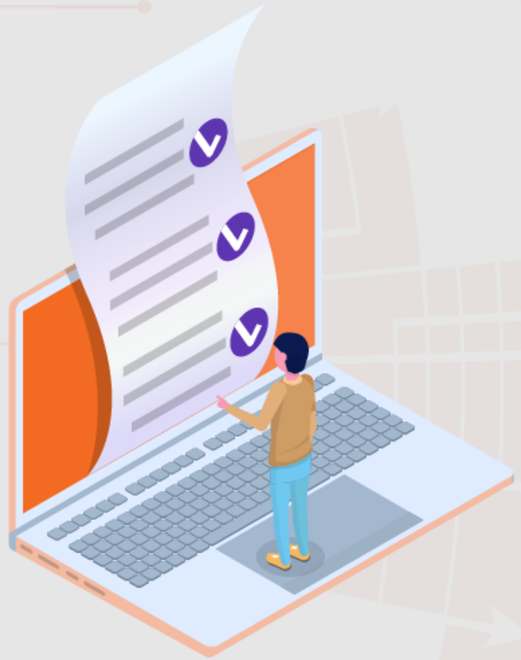
Project Reference

- **Task 1:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 2:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 3:** SQL CRUD Commands, Primary and Foreign Key Relationship
- **Task 4:** Spring Boot Web Dependency, RestController, RequestMapping, Post and Get Requests
- **Task 5:** Angular HTTP Client Library, HTTP Request Response, JSON
- **Task 6:** Jenkinsfile stages and step declarations
- **Task 7:** Dockerfile and commands to assemble an image
- **Task 8:** Jenkins Pipeline Project Creation with git SCM
- **Task 9:** AWS, EC2, SSH/CloudShell Connection, Tool COnfiguration
- **Task 10:** Jenkins Pipeline Build

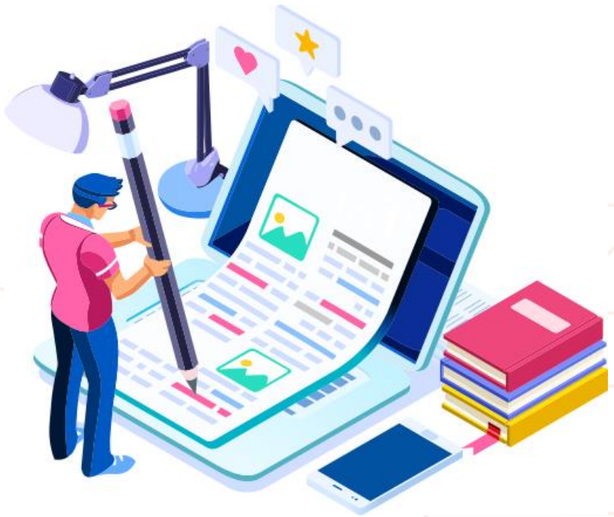
Domain: Travel

Objectives

To create a dynamic and responsive Java travel website for booking travel tickets for all types of transport mediums.

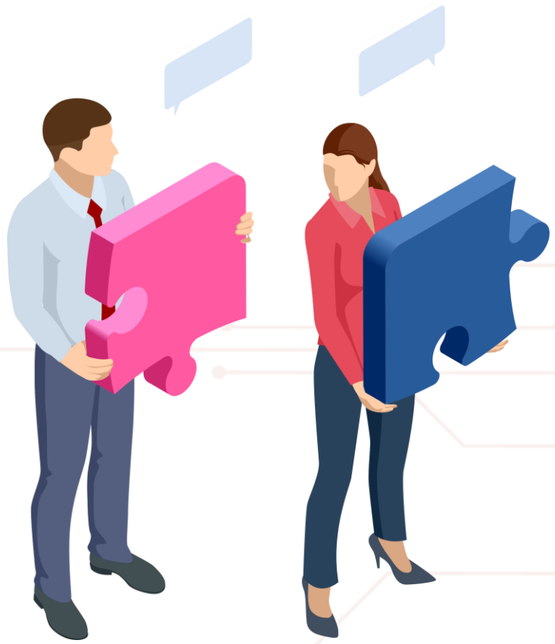


Prerequisites



- Angular
- Java
- MySQL
- SpringBoot
- Jenkins
- Docker
- AWS
- Git and GitHub

Problem Statement and Motivation



Problem Statement:

In this project, you should be able to develop a front-end web app using Angular and a Java backend using Spring Boot, configure the applications using Docker containers, deploy the project on AWS using CI CD Pipeline

Real-World Scenario:

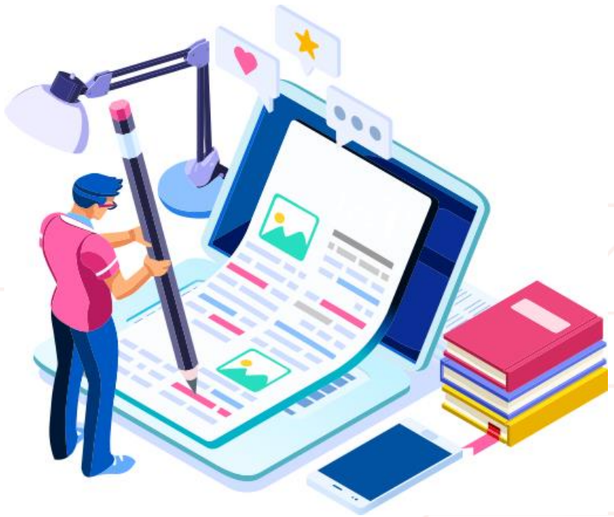
TravelBuddy is a company that provides travel solutions for your travel bookings. They found out that online booking with companies, such as Ixigo and Ibibo are gaining more profits by eliminating middlemen from the equation. As a result, the team decided to hire a Full Stack developer to develop a online booking portal with a rich and user-friendly interface.

Industry Relevance

Skills used in the project and their usage in the industry are given below:

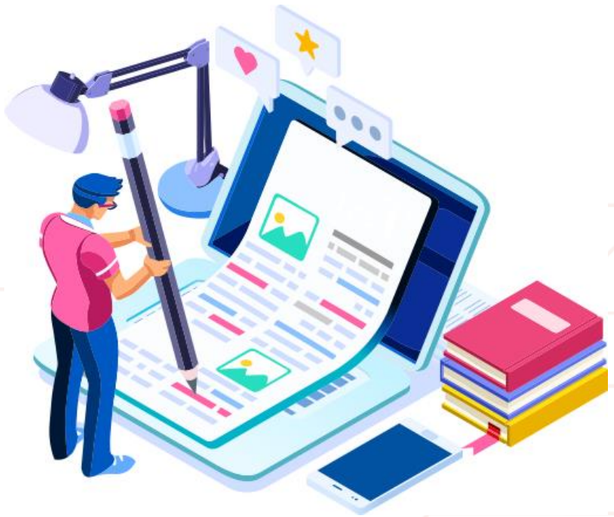
- **Angular** - Platform for building mobile and desktop web applications
- **Java and SpringBoot** - Leading technology to develop backend
- **Docker** - Deliver Software as Containers
- **AWS** - Host and Deploy your Apps in World's leading Cloud Platform
- **Jenkins** - Use Jenkins to build CI CD Pipelines

Task (Activities)



1. Develop the Front End with Angular for the Admin to add flight details, cities, airline brands and fairs from the Interface with authentication for the Admin User.
2. Develop an End User Web Application listing the airlines based on the data provided by user with respect to the source and destination cities and date of travel.
3. Define the structure of a database and create necessary tables using SQL in MySQL Database or MongoDB as per your preference.
4. Develop a Java Backend using Spring Boot containing various microservices for various functionalities like login, register, booking flihts, searching relevant flughts, filtering search based on different parametrs like airlines and duration of journey, dummy payment gateway, tracking flight status.

Task (Activities)



5. Perform the Front-End and Back-End communication using HTTP ClientDefine Jenkinsfile for both Angular and Java Projects for the automated builds.
6. Define Dockerfile for both Angular and Java Projects to develop images and run them as containers.
7. Develop a CI CD Pipeline in Jenkins for both Angular and Java Backend Projects.
8. Using AWS Launch EC2 Instances and configure other required ServicesDeploy the Projects on EC2 Instance

Project Reference

- **Task 1:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 2:** Angular Components, Routing, Services and AuthGuard, Forms
- **Task 3:** SQL CRUD Commands, Primary and Foreign Key Relationship
- **Task 4:** Spring Boot Web Dependency, RestController, RequestMapping, Post and Get Requests
- **Task 5:** Angular HTTP Client Library, HTTP Request Response, JSON
- **Task 6:** Jenkinsfile stages and step declarations
- **Task 7:** Dockerfile and commands to assemble an image
- **Task 8:** Jenkins Pipeline Project Creation with git SCM
- **Task 9:** AWS, EC2, SSH/CloudShell Connection, Tool COnfiguration
- **Task 10:** Jenkins Pipeline Build

Thank you