

BusNama: Bus Reservation System

By:

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Problem Statement:

BusNama is created to meet the needs of online bus reservation system with the customer being able to :

- **Book**
From the existing list of buses which still have available seats
- **View**
From the existing tickets he/she has booked
- **Cancel**
Any particular ticket that has been booked

Admin will be able to :

- **Add**
A bus into the database, which can be used for booking
- **View**
The list of buses in the database
- **Cancel**
Any of the existing buses





Tech Used:

1. Java 8 (base programming language)
2. Hibernate 2.1(JPA implementation)
3. Spring framework (for creating webservice)
 - i. Spring Boot 2.1.9
 - i. Spring Data 2.1.9
 - i. Spring Security & JWT 2.1.9
4. MySQL 5.5.17(database storage)
5. Tomcat 8.5 (hosting server for MVC)
6. GIT 2.23.0(DevOps VCS tool)
7. Maven 3.6.1(DevOps tool- Build & manage project)
8. Postman 7.9.0(for running RESTful service)
9. NodeJS 10.16.3(Javascript Runtime Environment)
10. Angular 6 (framework to develop web apps)

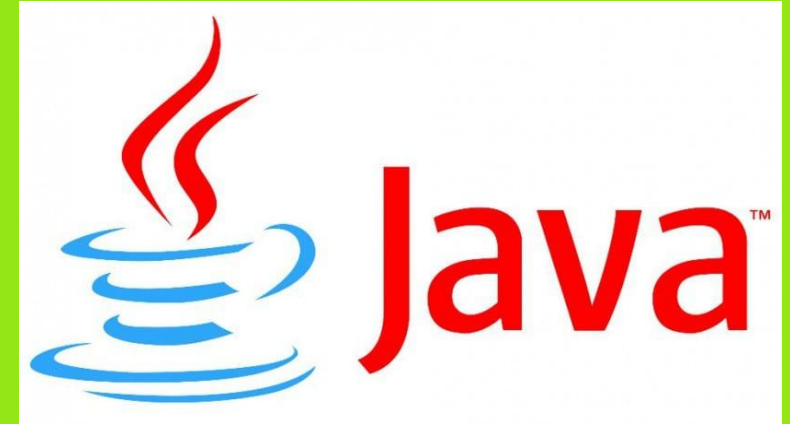


Java 8:

OOP advantage

Platform independence

Rich APIs



Hibernate 2.1:

For Object Relational Mapping

- Saving our entities into the database with ease
- Handles object-relational impedance mismatch problems by replacing direct, persistent database accesses with high-level object handling functions



MySQL 5.5.17:

It is an open source database used to store our data.

It is a **RELATIONAL DATABASE** allowing data to be stored in a related format, thereby improving insertion, updation and deletion operations and reducing redundancy.



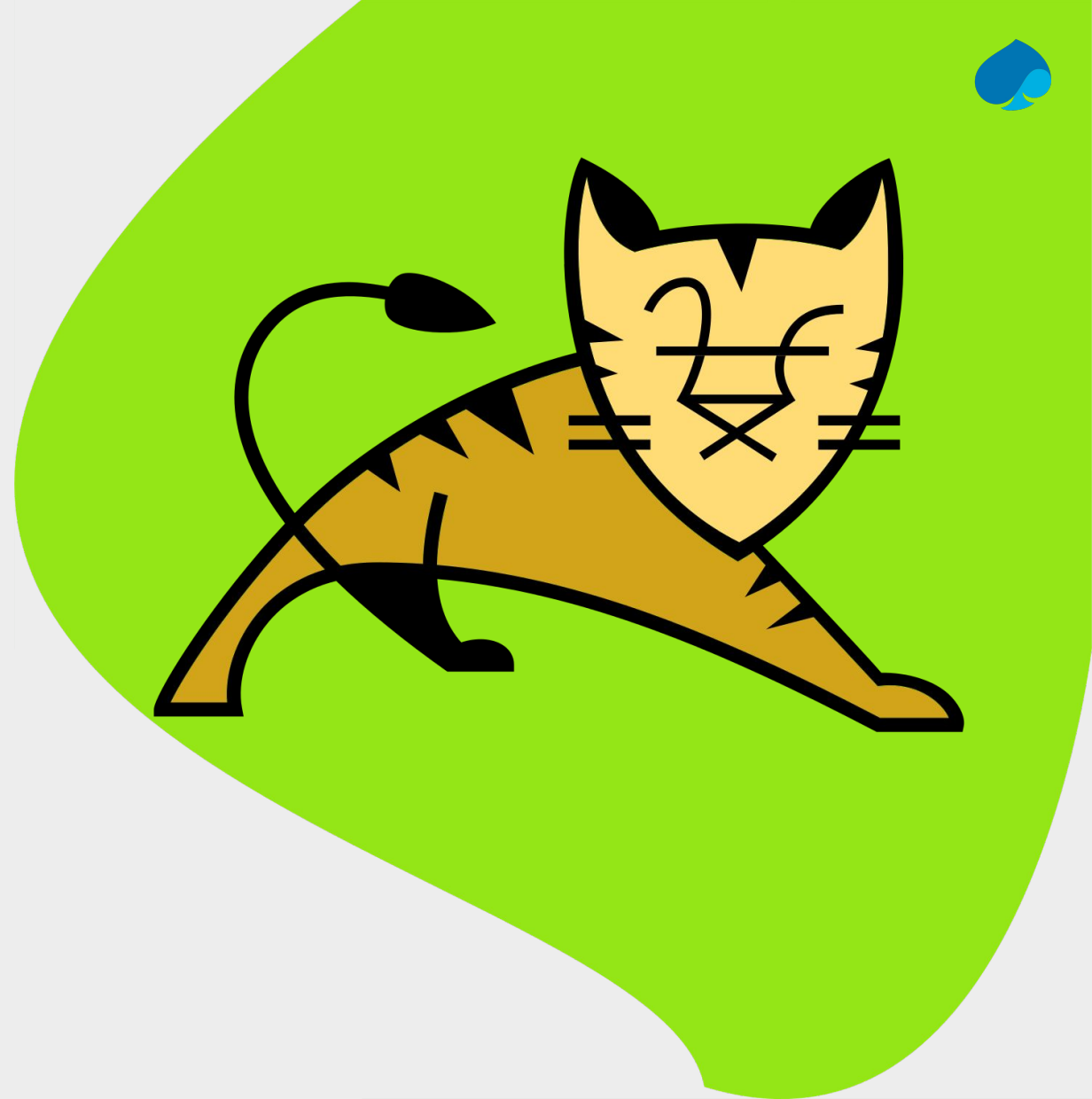
Tomcat v8.5:

It is used for **HOSTING** our application online, allowing users to interact via webpages.

Spring MVC framework is used to create web app.

MVC

Using this, we transmit data (Model) from webpage to Java application (Controller), process the data and return via webpages (View).



Spring Framework:

Spring Framework is an application framework and inversion of control container for the Java platform

Modules used:

Spring Core 2.1.9

Spring MVC 2.1.9

Spring Data 2.1.9

Spring Boot 2.1.9

Spring Security 2.1.9





Spring Boot:

Spring's convention-over-configuration solution for creating stand-alone, production-grade Spring-based Applications that you can "just run"

- Create stand-alone Spring applications
- Embed Tomcat or Jetty directly (no need to deploy WAR files)
- Provide opinionated 'starter' Project Object Models (POMs) to simplify your Maven configuration
- Automatically configure Spring whenever possible
- Provide production-ready features such as metrics, health checks and externalized configuration
- Absolutely no code generation and no requirement for XML configuration



Spring Data:

Provides a familiar and consistent, Spring-based programming model for data access while still retaining the special traits of the underlying data store.

- Powerful repository and custom object-mapping abstractions
- Dynamic query derivation from repository method names
- Implementation domain base classes providing basic properties
- Support for transparent auditing (created, last changed)
- Possibility to integrate custom repository code
- Easy Spring integration via JavaConfig and custom XML namespaces
- Advanced integration with Spring MVC controllers
- Experimental support for cross-store persistence



Spring Security & JWT:

Spring Security is a powerful and highly customizable authentication and access-control framework.

- Comprehensive and extensible support for both Authentication and Authorization
- Protection against attacks like session fixation, clickjacking, cross site request forgery, etc
- Servlet API integration
- Optional integration with Spring Web MVC

JSON Web Tokens are an open, industry standard RFC 7519 method for representing claims securely between two parties.

- It can be used for an authentication system and can also be used for information exchange.



GIT:

It is a distributed version-control system for tracking changes in source code during software development. It is, but it can be. Its goals include speed, data integrity, and.

- Designed for coordinating work among programmers
- Used to track changes in any set of files
- Support for distributed, non-linear workflows



Maven 3.6.1:

It is a project management and comprehension tool that provides developers a complete build lifecycle framework.

- Making the build process easy
- Providing a uniform build system
- Providing quality project information
- Providing guidelines for best practices development
- Allowing transparent migration to new features



Postman 7.9.0:

Create and save REST, SOAP, and GraphQL queries directly

RESTful web services are light weight, highly scalable and maintainable and are very commonly used to create APIs for web-based applications. It also:

- Provides access to resources and REST client accesses and modifies the resources
- Resource is identified by URIs/ global IDs
- Uses various representation to represent a resource like text, JSON, XML



NodeJS 10.16.3:

Open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a browser.

Uses an event-driven, non-blocking I/O model that makes it lightweight and efficient, perfect for data-intensive real-time applications that run across distributed devices.



Angular 6:

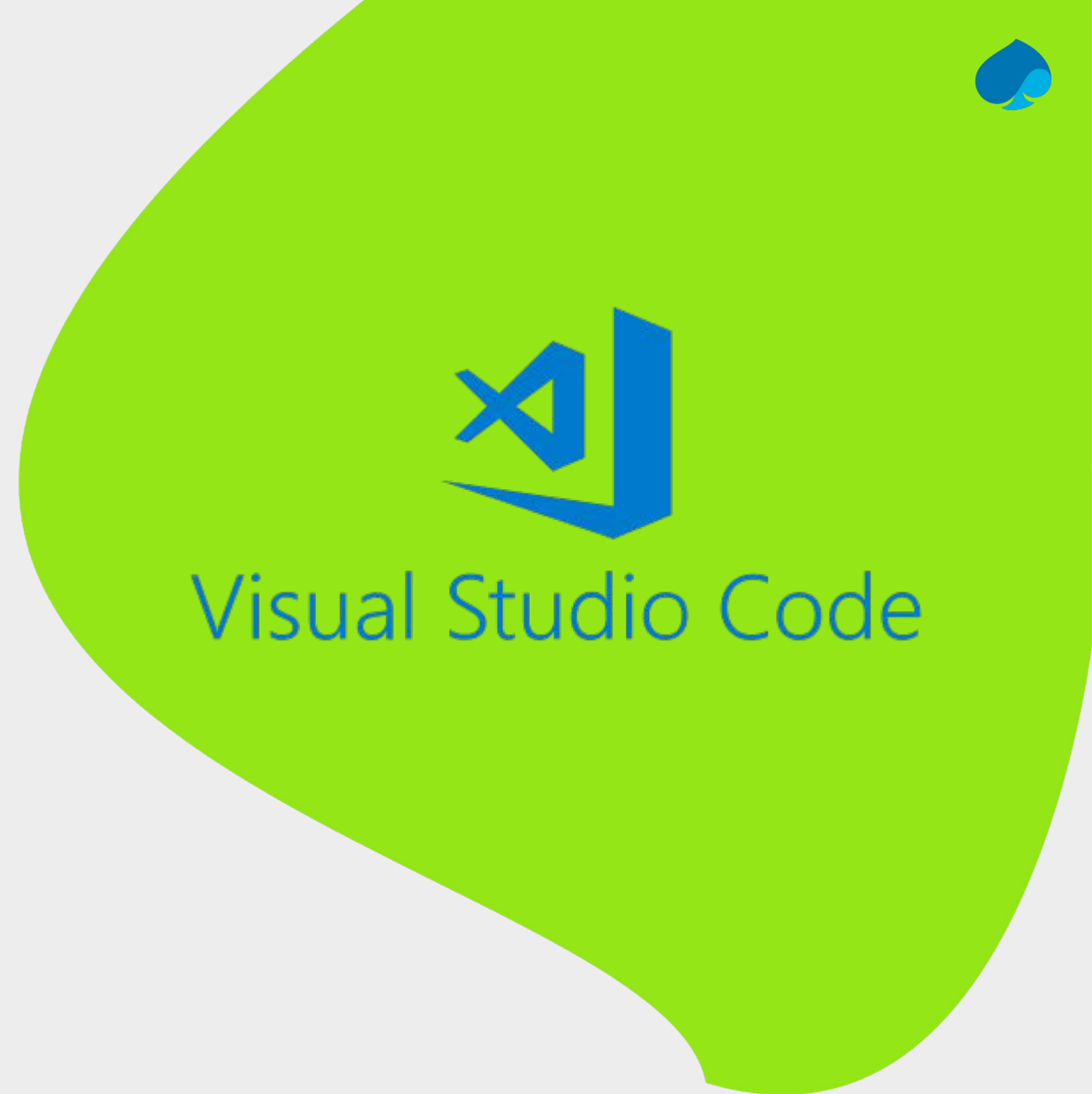
TypeScript-based open-source web application framework for building mobile and desktop web applications.

Lets you use HTML as your template language and lets you extend HTML's syntax to express your application's components clearly and succinctly



VS Code 1.39:

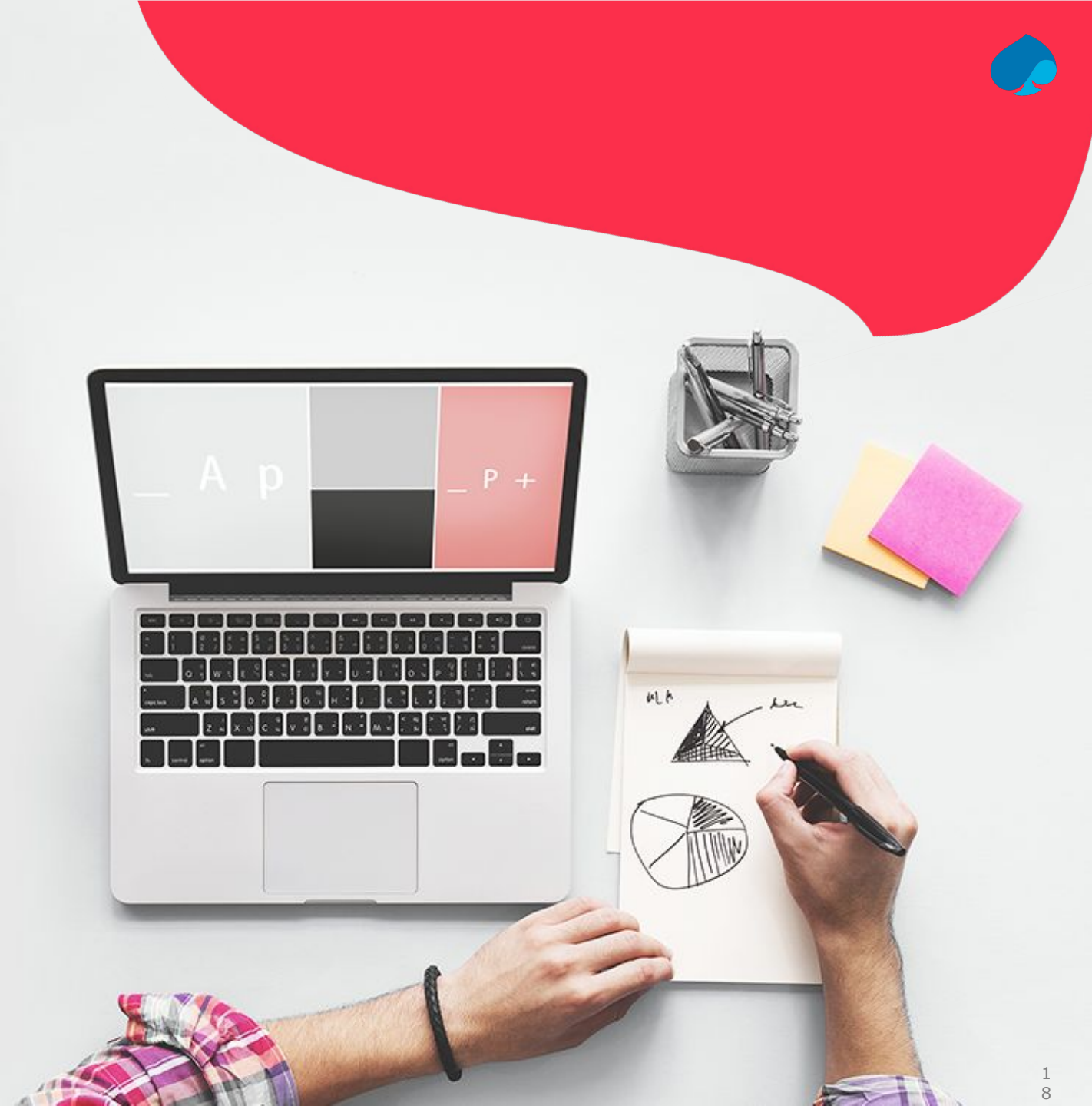
Source code editor developed by Microsoft, includes support for debugging, embedded GIT control, syntax highlighting, intelligent code completion, snippets.





Plan:

1. Design
 1. Identify classes & Interfaces
 2. Identify attributes & methods
2. Creating the Layers
 1. Making independent layers
 2. Modular approach
3. TDD approach
 1. Identify test cases for each module
 2. Write Failing Test cases
 3. Convert the Test Cases in GREEN
4. Implement the phases in incremental manner





Modules:

Admin

Customer

Admin Module:

Add Bus

Show Buses

Delete Bus

Show Users



Customer Module:

Show Tickets
Left

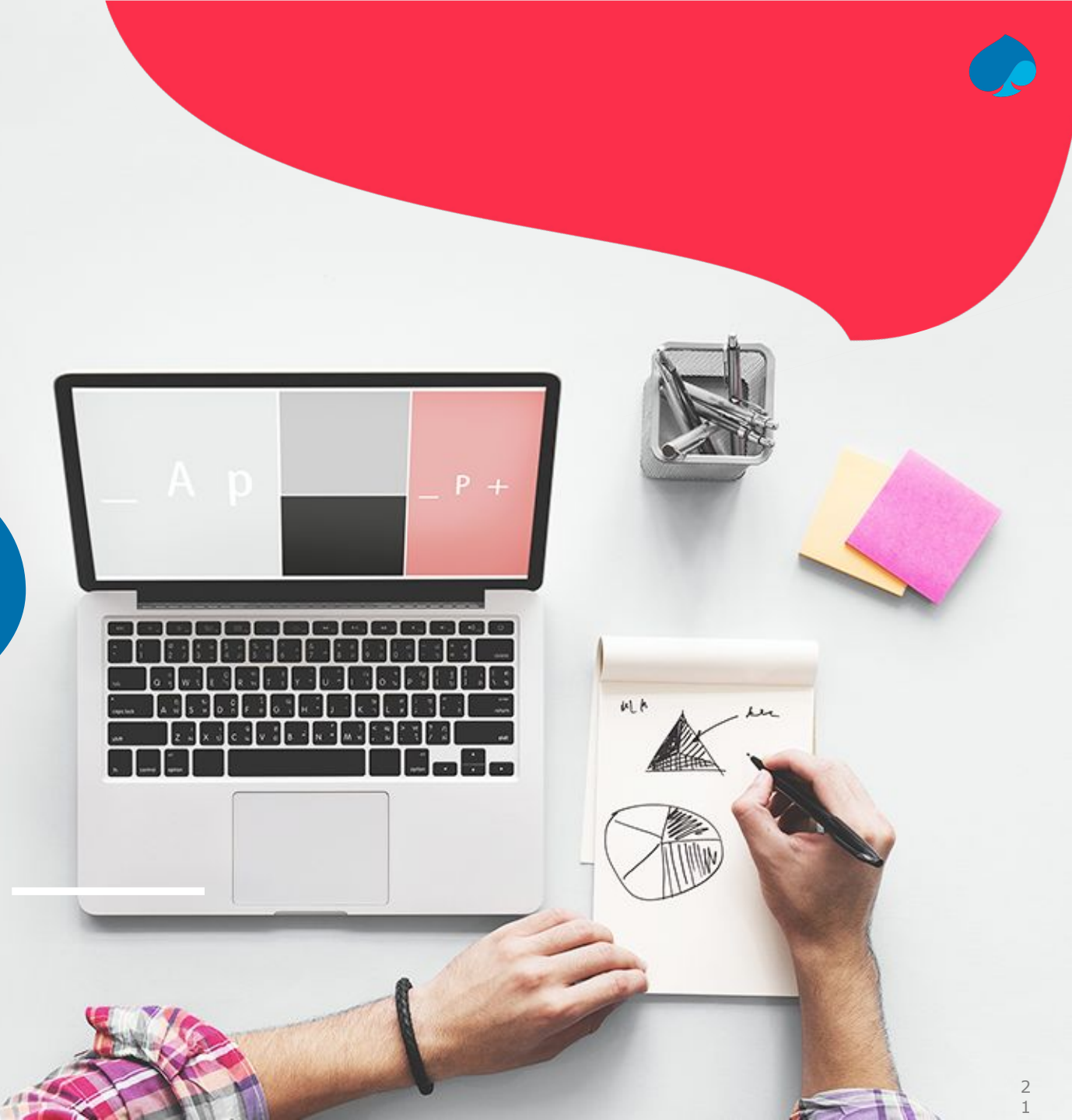
Show
Bookings

Cancel
Booking

Create
Booking

Show
Booking
Details

Add
Passenger



Meet the team:

Tejaswini-

Customer story lead.(UI, Validation, Controller, Service, Backend, Angular Customer Story)
Has implemented Spring Security in the project. Created the Class Diagram.

Aditya-

Admin story lead.(UI, Validation, Controller, Service, Backend, Angular Admin Story)
Has implemented Logger, Audit Trail, Exception handling.
Worked on the Presentation & Use Case Diagram and Front end Bootstrap.

Mayank-

User story lead.(UI, Validation, Controller, Service, Backend, Testing)
Has created the Activity Diagram, ER Diagram.





Yet to implement AWS.

Questions, if any.



Thank You



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