1a. Create a Spring Boot web application:
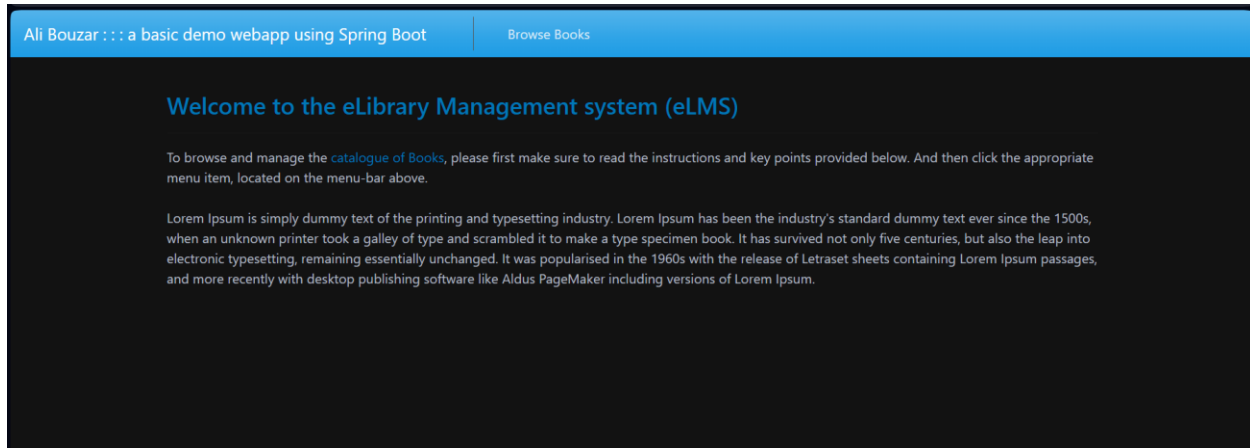

1. What is Spring?
   - Spring is a framework that is used to facilitate building a complex enterprise java application, it includes various modules that help the application development process such as POJO, dependency injection, AOP, data access, messaging …

2. What is Spring Boot?

   - Is a tool that is built on top of the Spring framework to simplify and accelerate the creation and the deployment of a spring based application, it provides a range of starters and dependencies that help easily to integrate with database, security, …
   - Because of the convention over configuration, spring boot reduce the need

3. What is the relation between Spring platform and Spring Boot?
   - Spring boot is a project with Spring platform, where Spring platform form the entire Spring projects ecosystem and tools such as Spring security, Spring Batch, Spring Data, …

4. What is the relation between Spring platform and Spring framework?
   - ***Spring framework*** is a framework that is used to build java based enterprise applications, it provides a wide range of functionalities such as dependency injection, Aspect Oriented Programming AOP, data access, messaging, and more
   - ***Spring platform*** is Spring framework plus other various Spring projects such as Spring boot, spring cloud, spring batch, spring data, spring security, and more, where these projects provide more features, integration to simplify and accelerate the development of the enterprise application.

5. What is Dependency Injection and how is it done in the Spring platform/framework?
   - Is a design pattern used in software development to manage dependencies between objects, achieve loose coupling and flexibility between components.
   - Spring framework is done through the following mechanisms:
     - ***Setter injection***: we can achieve it via setter methods

- **Constructor injection**: when an instance of class is created
- **Autowiring**:
  - **By name**: Spring automatically wires beans by matching the name of the bean property with the bean's name in the container.
  - **By type**: Spring automatically wires beans by matching the type of the bean property with the type of the bean in the container.
  - **By constructor**: By matching the constructor argument with the bean in the container, if the type of the constructor arguments and the beans in the container matches, spring automatically inject them into the constructor when creating an instance of the class.

6. What is Inversion of Control (IoC) and how is it related to Spring?

- Is a design principle where the class get dependencies from the framework instead of creating its own, it enables loose coupling and flexibility in building enterprise applications.