Spring Boot Fundamentals

1. IOC
   1. What are containers?
      1. Place where we can put something in it
      2. Provides an infrastructure required by some components to live
      3. JVM is a container for JAVA Program
      4. Tomcat is container for servlets
   2. Difference between libraries and framework?
      1. Flow of the program is handled by the main function and when required we are making use of libraries
      2. In Framework everything is handled by framework and wherever required we call our program to do the task. This is Inversion of Control; IOC is a principle in software engineering where the container of our code is transferred to the software or the framework
   3. With IOC Framework gets control of the code and when the framework needs our code it will call your code to get the task done.
   4. Advantages
      1. Decoupling
      2. Modularization
   5. Containers are like Frameworks
      1. In Spring we have 2 types of containers
         1. Core Containers
            1. Bean Factory
         2. J2EE Containers
            1. Application Context
            2. Configurable Application Context
      2. In Spring Boot, we will use configurable Application Context
      3. In the Case of Spring and Spring Boot we have an inversion of control over dependencies
      4. Containers have 3 main abilities:
         1. Creating Instances of Simple POJO
         2. Managing the lifecycle of these instances
         3. Able to do Dependency Injection
   6. Dependency Injections
      1. When one object needs another object, the container injects dependency for us
      2. We need to specify container how we want Dependency Injection
      3. We need to specify the scope of the Object
      4. In Spring we have XML files for Providing the Above configurations
      5. In Spring Boot, we have annotation-based configurations
      6. In Spring Boot once the main applications are run, the control of the flow goes to the container
      7. @SpringBootApplication comprises 3 annotations
         1. @Confiuguration – Can be used for a bean definition
         2. @ComponentScan – tells spring boot to look for a controller, services classes to create beans
         3. @EnableAutoConfguration- SpringBoot scans your entire code to look for classes with special annotations, it scans the classpath to create beans automatically, it also sets up default behaviors of the codes