**Spring IOC**

* The IOC container in spring boot is responsible for instantiating, configuring and managing the lifecycle of spring beans.
* The primary IOC containers in springboot are ApplicationContext and BeanFactory
* Spring has separate container in RAM, know as Spring IOC container.
* It is not physical like heap memory, it is logical.
* IOC is made to handle lifecycle of objects.

**Use / Work**

* **Create the object**
* **Hold the Object**
* **Inject object into another object (means Dependency Injection) as required.**
* **It maintain life cycle of object(means from creation of an object to destroy of an object)**

**1. IoC Container:**

* The IoC container in Spring Boot is responsible **for instantiating, configuring,** and **managing** the **lifecycle of Spring beans**.
* The primary IoC containers in Spring Boot are **ApplicationContext** and **BeanFactory**.

**2. Dependency Injection:**

* IoC is implemented through Dependency(beans) Injection (DI), where the container injects the required beans into a class at runtime.
* There are three types of DI in Spring: **Constructor** Injection, **Setter** Injection, and **Field** Injection.
* If @Autowired are apply on **variables** then it is known as **field injection.**
* If @Autowired are apply on **setter method** then it is known as **setter injection.**
* If @Autowired are apply on **constructor** then it is known as **constructor injection.**

**3. Beans and @Component:**

* Spring beans are objects managed by the IoC container. They are defined using annotations like @Component, @Service, @Repository, and @Controller.
* @Component is a generic stereotype annotation used to mark a class as a Spring bean.

**4. @Autowired Annotation**:

* The @Autowired annotation is used to inject dependencies automatically by type.
* It can be applied **to constructors, setters,** and **fields**.

**Interview Questions**

* What is IOC container
* Who is point outed to container
* What is dependency Injection
* How many types of Dependency Injection
* What are the annotation which is related to IOC container
* Why use @Component?
  + To mark any class as a bean of spring IOC container we use @Component annotation
  + To provide metadata about any class we use @Componet annotation

Explore:

* What is scope of bean?
  + Singleton & prototype
* How many different bean scopes?
* Which one is default scope?
  + Singletons

**Bean**

* @Bean is always return in class which is configure mean class is annotated with @Configuration .