Spring IOC

- <mark>The IOC container in spring boot is responsible for instantiating, configuring and managing the lifecycle of spring beans.</mark>
- <mark>The primary IOC containers in springboot are ApplicationContext and BeanFactory</mark>
- 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
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Explore:

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