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Q2 – What are the Spring Stereotype annotations, and what are the main uses of these annotations

The Spring Framework provides you with some special annotations. These annotations are used to create Spring beans automatically in the application context. The main stereotype annotation is `@Component`. By using this annotation, Spring provides more Stereotype meta annotations such as `@Service`, used to create Spring beans at the Service layer, `@Repository`, which is used to create Spring beans for the repositories at the DAO layer, and `@Controller`, which is used to create Spring beans at the controller layer.

In spring framework there are four types of stereotype annotations spring has provided and these are very useful for the web application development. If any class or bean is annotated with one of these annotation spring will automatically create the object of that bean and register that bean in spring container. Now that bean will be available for entire application to use. We can inject those beans in any layer of the application. These annotations are found in the `org.springframework.stereotype` package.

These annotations are :

1. `@Controller`: This annotation is basically used for the controller classes of the application. This annotation is available for presentation layer component.

2. `@Service`: This annotation is used for the service classes of the application where we write the business logic.

3. `@Component`: This is a generic annotation and can be used anywhere in the application. We can annotate REST resource classes with this annotation.

4. `@Repository`: This annotation is used for the repository layer components from where we can contact to the database directly.

Spring 2.0 introduced the first stereotype annotation named as `@Repository`. The `@Component` annotation introduced in Spring 2.5 version. Spring stereotype annotations are the markers for any class that fulfills a role within the application. These annotations have greatly reduced the burden of developers to write the code for configuring the beans in the spring configuration document.

These annotations are used for concrete classes but not for interfaces.

Uses of Spring Stereotype Annotations

Spring stereotype annotations are used to create Spring beans automatically in the application context. `@Component` annotation is the main Stereotype Annotation.

Spring Annotations are a form of metadata that provides data about a program. Annotations are used to provide supplemental information about a program. It does not have a direct effect on the operation of the code they annotate. It does not change the action of the compiled program.

Spring provides the following 4 annotations for marking the specific usages of beans. For each annotation, if we want to define the name of the bean with which they will be registered in DI container, we can pass the name in the annotation attribute, e.g. `@Service` ("employeeService").

The Spring Framework provides you with some special annotations. These annotations are used to create Spring beans automatically in the application context.

@Component auto-detects and configures the beans using classpath scanning whereas @Bean explicitly declares a single bean

@Component does not decouple the declaration of the bean from the class definition whereas @Bean decouples the declaration of the bean from the class definition