

# Spring: Annotations

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# Annotation Configuration



Before using annotations, the ApplicationContext needs to be told which packages to scan:

```
<context:annotation-config />  
<context:component-scan base-package="com.revature" />
```

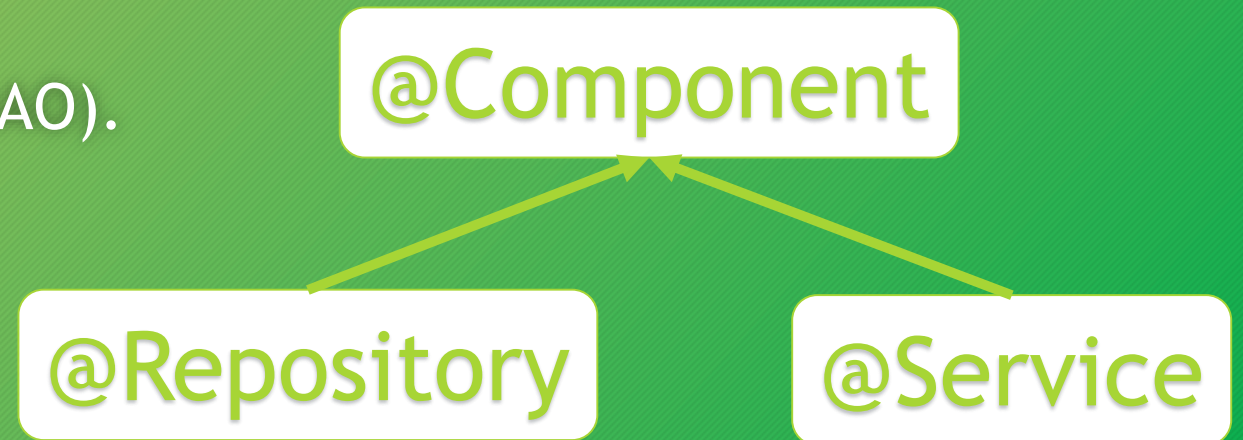
# Stereotype Annotations



Spring is going to **instantiate** these beans as **singletons** and have them available within the **container**.

They all perform the same but have a different meaning:

- **@Component**: used for any POJO (very general)
- **@Service**: business logic layer.
- **@Repository**: data access layer (DAO).





# @Autowired



Tied to location.

- Member variables.
  - Most used.
- Constructor.
  - Provides validation.
- Setter.
  - Provides TDD with no Spring and validation.

```
@Autowired
private CustomerRepository customerRepository;

public CustomerServiceImpl() {}

@Override
public List<Customer> findAll() {
    return customerRepository.findAll();
}
```

# @Autowired, @Inject, @Resource



The three of them perform the same function with these differences:

- **@Autowired** and **@Inject** perform exactly the same.
  - @Autowired is specifically a Spring implementation.
  - @Inject comes from the Java API (javax).
- **@Autowired** and **@Inject** use:
  - AutowiredAnnotationBeanPostProcessor.
- **@Autowired** and **@Inject** execution path.
  - Matches by **type**, restricts by **qualifiers** and matches by **name**.
- **@Resource** uses:
  - CommonAnnotationBeanPostProcessor.
- **@Resource** execution path.
  - Matches by **name**, matches by **type**, restricts by **qualifiers**.

The three of them can use **@Qualifier** to use a bean name that doesn't match by attribute name.



# Annotation Best Practices



- Explicitly name your components.
  - `@Component("beanName")`.
- Avoid `@Qualifier`.
- Scan specific packages.
  - Avoid adding unused components to your Spring context.

# Materials



- Spring Annotations:  
<https://docs.spring.io/spring/docs/current/spring-framework-reference/htmlsingle/#beans-annotation-config>