What is `@Qualifier` and how does it help?

The `@Qualifier` annotation is used in Spring to **resolve ambiguity** during dependency injection.

When you have **multiple beans of the same type** (e.g., multiple implementations of the same interface), Spring's `@Autowired` (which injects by type) gets confused and throws a `NoUniqueBeanDefinitionException`.
`@Qualifier` helps by telling Spring exactly **which bean name** to inject. [1] [2]

How it helps (The Problem it Solves)

Imagine you have an interface `PaymentService` with two implementations: `CreditCardPaymentService` and `PayPalPaymentService`.

If you just do this:

```
@Autowired
private PaymentService paymentService; // Spring Fails: "Which one do you want?"
```

Spring doesn't know whether to inject the Credit Card one or the PayPal one.

The Solution with `@Qualifier`

You explicitly tell Spring which one to use:

```
@Autowired
@Qualifier("creditCardPaymentService") // Matches the component name
private PaymentService paymentService;
```

Interview Use Case Example

"In my application, we have a notification system. We have a `NotificationService` interface with two implementations: `EmailNotificationService` and `SmsNotificationService`.

In our `OrderController`, we wanted to send emails specifically. So, I used `@Qualifier("emailNotificationService")` to ensure the email implementation was injected, while in the `2FAController`, I used `@Qualifier("smsNotificationService")` for sending OTPs." [3]

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