

## Springboot: Dynamic Bean Initialization

### Concept & Coding YT Notes

#### Unsatisfied Dependency problem

```
@RestController
@RequestMapping(value = "/api")
public class User {

    @Autowired
    Order order;

    @PostMapping("/createOrder")
    public ResponseEntity<String> createOrder() {

        order.createOrder();
        return ResponseEntity.ok( body: "");
    }
}
```

```
public interface Order {

    public void createOrder();
}
```

```
@Component
public class OnLineOrder implements Order{

    public OnLineOrder(){
        System.out.println("OnLine Order Initialized");
    }

    public void createOrder(){
        System.out.println("created OnLine Order");
    }
}
```

```
@Component
public class OffLineOrder implements Order{

    public OffLineOrder(){
        System.out.println("Offline Order initialized");
    }

    public void createOrder(){
        System.out.println("created Offline Order");
    }
}
```

```
*****
APPLICATION FAILED TO START
*****
```

```
UnsatisfiedDependencyException: Error creating bean with name 'user'
```

## @Qualifier

```
@RestController
@RequestMapping(value = "/api")
public class User {

    @Qualifier("onlineOrderObject")
    @Autowired
    Order order;

    @PostMapping("/createOrder")
    public ResponseEntity<String> createOrder() {
        order.createOrder();
        return ResponseEntity.ok("body: {}");
    }
}
```

```
public interface Order {

    public void createOrder();
}
```

```
@Qualifier("onlineOrderObject")
@Component
public class OnLineOrder implements Order{

    public OnLineOrder(){
        System.out.println("OnLine Order Initialized");
    }

    public void createOrder(){
        System.out.println("created Online Order");
    }
}
```

```
@Qualifier("offlineOrderObject")
@Component
public class OffLineOrder implements Order{

    public OffLineOrder(){
        System.out.println("Offline Order initialized");
    }

    public void createOrder(){
        System.out.println("created Offline Order");
    }
}
```

```
2024-05-07T16:41:14.520+05:30 INFO 98826 --- [main] c.c.l.SpringbootApplication
2024-05-07T16:41:14.521+05:30 INFO 98826 --- [main] c.c.l.SpringbootApplication
2024-05-07T16:41:14.953+05:30 INFO 98826 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer
2024-05-07T16:41:14.959+05:30 INFO 98826 --- [main] o.apache.catalina.core.StandardService
2024-05-07T16:41:14.959+05:30 INFO 98826 --- [main] o.apache.catalina.core.StandardEngine
2024-05-07T16:41:14.985+05:30 INFO 98826 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/]
2024-05-07T16:41:14.985+05:30 INFO 98826 --- [main] w.s.c.ServletWebServerApplicationContext
Offline Order initialized
Online Order Initialized
2024-05-07T16:41:15.149+05:30 INFO 98826 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer
2024-05-07T16:41:15.154+05:30 INFO 98826 --- [main] c.c.l.SpringbootApplication
```

POST http://localhost:8090/api/createOrder

```
2024-05-07T16:41:14.959+05:30 INFO 98826 --- [main] o.apache.catalina.core.StandardEngine
2024-05-07T16:41:14.985+05:30 INFO 98826 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/]
2024-05-07T16:41:14.985+05:30 INFO 98826 --- [main] w.s.c.ServletWebServerApplicationContext
Offline Order initialized
Online Order Initialized
2024-05-07T16:41:15.149+05:30 INFO 98826 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer
2024-05-07T16:41:15.154+05:30 INFO 98826 --- [main] c.c.l.SpringbootApplication
2024-05-07T16:41:54.579+05:30 INFO 98826 --- [nio-8090-exec-2] o.a.c.c.C.[Tomcat].[localhost].[/]
2024-05-07T16:41:54.579+05:30 INFO 98826 --- [nio-8090-exec-2] o.s.web.servlet.DispatcherServlet
2024-05-07T16:41:54.580+05:30 INFO 98826 --- [nio-8090-exec-2] o.s.web.servlet.DispatcherServlet
created Online Order
```

## 1st Solution:

```
@RestController
@RequestMapping(value = "/api")
public class User {

    @Qualifier("onlineOrderObject")
    @Autowired
    Order onlineOrderObj;

    @Qualifier("offlineOrderObject")
    @Autowired
    Order offlineOrderObj;

    @PostMapping("/createOrder")
    public ResponseEntity<String> createOrder(@RequestParam boolean isOnlineOrder) {
        if (isOnlineOrder) {
            onlineOrderObj.createOrder();
        } else {
            offlineOrderObj.createOrder();
        }
        return ResponseEntity.ok("body: {}");
    }
}
```

```
public interface Order {

    public void createOrder();
}
```

```
@Qualifier("onlineOrderObject")
@Component
public class OnLineOrder implements Order{

    public OnLineOrder(){
        System.out.println("Online Order Initialized");
    }

    public void createOrder(){
        System.out.println("created Online Order");
    }
}
```

```
@Qualifier("offlineOrderObject")
@Component
public class OffLineOrder implements Order{

    public OffLineOrder(){
        System.out.println("Offline Order initialized");
    }

    public void createOrder(){
        System.out.println("created Offline Order");
    }
}
```

## 2nd Solution:

```
@RestController
@RequestMapping(value = "/api")
public class User {

    @Autowired
    Order order;

    @PostMapping("/createOrder")
    public ResponseEntity<String> createOrder() {

        order.createOrder();

        return ResponseEntity.ok( body: "");
    }
}
```

```
public interface Order {

    public void createOrder();
}
```

```
public class OnlineOrder implements Order{

    public OnlineOrder(){
        System.out.println("Online Order Initialized");
    }

    public void createOrder(){
        System.out.println("created Online Order");
    }
}
```

```
public class OfflineOrder implements Order{

    public OfflineOrder(){
        System.out.println("Offline Order initialized");
    }

    public void createOrder(){
        System.out.println("created Offline Order");
    }
}
```

```
@Configuration
public class AppConfig {

    @Bean
    public Order createOrderBean(@Value("${isOnlineOrder}") boolean isOnlineOrder){
        if(isOnlineOrder) {
            return new OnlineOrder();
        } else {
            return new OfflineOrder();
        }
    }
}
```

application.properties

isOnlineOrder=false

```
2024-05-08T19:30:38.605+05:30 INFO 45167 --- [main] o.apache.catalina.core.StandardService :
2024-05-08T19:30:38.606+05:30 INFO 45167 --- [main] o.apache.catalina.core.StandardEngine :
2024-05-08T19:30:38.631+05:30 INFO 45167 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] :
2024-05-08T19:30:38.632+05:30 INFO 45167 --- [main] w.s.c.ServletWebServerApplicationContext :
Offline Order initialized
2024-05-08T19:30:38.793+05:30 INFO 45167 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer :
2024-05-08T19:30:38.798+05:30 INFO 45167 --- [main] c.c.l.SpringbootApplication :
```

POST http://localhost:8090/api/createOrder

```
2024-05-08T19:30:38.606+05:30 INFO 45167 --- [main] o.apache.catalina.core.StandardEngine :
2024-05-08T19:30:38.631+05:30 INFO 45167 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] :
2024-05-08T19:30:38.632+05:30 INFO 45167 --- [main] w.s.c.ServletWebServerApplicationContext :
Offline Order initialized
2024-05-08T19:30:38.793+05:30 INFO 45167 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer :
2024-05-08T19:30:38.798+05:30 INFO 45167 --- [main] c.c.l.SpringbootApplication :
2024-05-08T19:32:33.610+05:30 INFO 45167 --- [nio-8090-exec-2] o.a.c.c.C.[Tomcat].[localhost].[/] :
2024-05-08T19:32:33.610+05:30 INFO 45167 --- [nio-8090-exec-2] o.s.web.servlet.DispatcherServlet :
2024-05-08T19:32:33.611+05:30 INFO 45167 --- [nio-8090-exec-2] o.s.web.servlet.DispatcherServlet :
created Offline Order
```

### @Value :

it is used to inject values from various sources like property file, environment variables or inline literals.

#### Inline Literal Example

```
@Bean
public Order createOrderBean(@Value("false") boolean isOnlineOrder){
    if(isOnlineOrder) {
        return new OnlineOrder();
    } else {
        return new OfflineOrder();
    }
}
```