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Spring First Application's files of ecountry.
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                                             Decrease resulting plane multiple spraperty bugs, writer, should begin target up to glosse about dig
                                          to in sentention drives the . If want to perform setter injection on multiple (MS-4, properties of its spring bean
                                          class, then we need to place multiple disturbished Americations on the setter methods of target Spring bean class.

    If spring been class is signating cheens, either having no injections on having only setter injections.

                                                   care server sage the side IOC container creates the spring bear classical using Operans constructor
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                                                                 egit. (Clean McPeng* dissufficer a blacked Width George Stemmater *> |

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- sprojects name of Stem* instrictions (in) | Setter Indication |
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Spring First Application's flow of execution IOCProj01-DependencyInjection >
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```
JRE System Library [JavaSE-21]
src
com.nt.cfgs
applicationContext.xml
com.nt.main
> Dependency Injection Test.java

✓ com.nt.sbeans

WishMessageGenerator.java
Referenced Libraries
//WishMessageGenerator.java (Target spring bean class) package com.nt.sbeans;
import java.time.LocalTime;
public class Wish MessageGenerator {
private LocalTime time;
public WishMessageGenerator() {
System.out.println("WishMessageGenerator:: 0-param constructor");
//setter method for setter Injection
public void setTime(LocalTime time) {
System.out.println("Wish MessageGenerator.setTime(-)"); this.time-time;
}
applicationContext.xml
<?xml version="1.0" encoding="UTF-8"?>
//b.method
(20)
public String showWishMessage(String user) {
}
System.out.println("WishMessageGenerator.showWishMessage()");
// get current hour of the day
int hour=time.getHour(); (21)--> Calls getHour() method of LocalTime //generate wish message based on
current hour of the day if(hour<12)
return "Good Morning::" + user;
else if(hour<16)
```

```
return "Good Afternoon:" + user;
else if(hour<20)
else
return "Good Evening:"+user; (22)
return "Good Night:" + user;
(9) The IOC container searches for cproperty> tag availability under <br/>
sear> tags..finds in the <br/>
bean> tag
related "WishMessageGenerator" class.From that property tag collects property name "time" and the
value/object to be injected from ref attribute (Itime)
<beans xmlns="http://www.springframework.org/schema/beans"</pre>
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="
(10) IOC container searches for "Itime" bean id based spring bean class object (that LocalTime class obj) and
injects that object to "time" property of WishMessageGenerator class obj (wmg) by calling setter method on
it
wmg.setTime(Itime); (setter Injection)
http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd">
<!-- Dependent spring bean cfg -->
<bean id="Itime" class="java.time.LocalTime" factory-method="now" />
(11) IOC container keeps spring bean class obj ref
in the internal cache of IOC container for reusability
<!-- calls LocalTime.now() method to create LocalTime class obj having system time -->
<!-- Target spring bean class cfg -->
<bean id="wmg" class="com.nt.sbeans.WishMessageGenerator"> cproperty name="time" ref="ltime"/>
of the objects
Internal cache of IOC container
wmg (15)? WishMessageGenerator obj ref LocalTime obj ref
Itime
(bean ids)
spring bean class obj refs
<!-- setter injection to inject LocalTime obj(Itime) to time property of Wish MessageGenerator class obj(wmg)
--> </bean>
IOC container
</beans>
main class (Client App)
//DependencyInjection Test.java
package com.nt.main;
```

(5) reads the spring bean cfg file and checks how many spring beans are cfgs having no scope (default scope is singleton).. In that process finds two spring beans having the default scope "singleton" (single object for spring bean) com.nt.sbeans.Wish MessageGenerator, java.time.LocalTime (6) IOC container performs pre-instantiation /eager instantiation of singleton scope spring beans import org.springframework.context.support.FileSystemXmlApplicationContext; import com.nt.sbeans.Wish MessageGenerator; (1) Run App public class DependencyInjection Test { **IOC** container WishMessage Generator class obj(wmg) time: **(7)** LocalTime obj(It me) (8)sys date, time) wing.setTime(Itime) (#10 setter injection) } public static void main(String[] args) { System.out.println("DependencyInjection Test.main()"); //crete IOC Container (13) FileSystemXmlApplicationContext ctx= (3) IOC container creation (IOC container creation is completed) (16) Object obj=ctx.getBean("mg"); (17) (4) Loads the spring bean cfg file, checks wheather it is well-formed or not and valid or not, if well-formed and valid then in creates InMemory MetaData in the JVM memory where the Application is running WishMessageGenerator generator=(Wish MessageGenerator)obj; //invoke the b.method (18) & (19)(23) String result-generator.showWishMessage("raja"); System.out.println("Result is ::"+result); (24)//close the IOC cotnainer ctx.close(); (25) --> As part of IOC container closing, all Spring bean class objs will be destroyed System.out.println("DependencyInjection Test.main()"); } //end of the main(-) method

=> In xml driven cfgs, if want to perform setter injection on multiple HAS-A properties of target spring bean

and end of the Application execution

class then we need to place multiple cproperty> tags under <bean> tag of target spring bean class cfg

- => In annotation driven cfgs, if want to perform setter injection on multiple HAS-A properties of target spring bean class then we need to place multiple @Autowired Annotations on the setter methods of target Spring bean class
- eg1: <bean id="wmg" class="com.nt.sbeans.WishMessageGenerator"/>| Spring bean with no Injection cfgs eg2: <bean id="wmg" class="com.nt.sbeans.Wish MessageGenerator">

property name="time" ref="Itime"/>

Spring bean with setter Injection cfgs

coperty name="date" ref="Idate"/> Setter Injection /bean>

=> if spring bean class cfg having factory-method attribute in <bean> tag then IOC container peforms static factory method call based spring bean class obj creation

eg:: <bean id="Itime" class="java.time.LocalTime" factory-method="now"/>

- => calls LocalTime.now() method to create and spring bean class obj
- => if spring bean class is cfg by placing multiple <constructor-arg> tags (1 or more) under <bean> tag then the IOC container uses parameterized constructor to create spring bean class obj and also to inject Dependents to it.

(constructor Injection)

<bean id="wmg" class="com.nt.sbeans.WishMessageGenrator"> <constructor-arg name="time" ref="ltime"/>
<constructor-arg name="date" ref="ldate"/>

</bean>

if we place <constructor-arg> tags for

"n" times then the IOC uses

"n" param constructor to perform constructor Injection