

# **Advanced Java**

## **Assignment - 4**

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**Write a program to demonstrate Spring AOP – before advice.**

### **BeforeAopKulsum.java**

```
package bvimit.edu;
import org.aspectj.lang.JoinPoint;
import org.aspectj.lang.annotation.Aspect;
import org.aspectj.lang.annotation.Before;
import org.aspectj.lang.annotation.Pointcut;
@Aspect
public class BeforeAopKulsum{
    @Pointcut("execution(int BeforeOperationKulsum.*(..))")
    public void p(){}
    @Before("p()")
    public void myAdvice(JoinPoint jp){
        System.out.println("before advice");
    }
}
```

### **BeforeOperationKulsum.java**

```
package bvimit.edu;
public class BeforeOperationKulsum{
    public void msg(){System.out.println("method 1");}
    public int m(){System.out.println("method 2 with return");return 2;}
    public int k(){System.out.println("method 3 with return");return 3;}
}
```

### **aopctx1.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:schemaLocation="http://www.springframework.org/schema/beans
                           http://www.springframework.org/schema/beans/spring-beans.xsd">
    <bean id="opBean" class="bvimit.edu.BeforeOperationKulsum"/>
    <bean id="trackMyBean" class="bvimit.edu.BeforeAopKulsum"/>
```

```
<bean  
class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCrea  
tor"/>  
</beans>
```

### **BeforeTestKulsum.java**

```
package bvimit.edu;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
public class BeforeTestKulsum{  
public static void main(String[] args){  
ApplicationContext context=new ClassPathXmlApplicationContext("aopctx1.xml");  
BeforeOperationKulsum e=(BeforeOperationKulsum)context.getBean("opBean");  
System.out.println("calling m1.....");  
e.msg();  
System.out.println("calling m2.....");  
e.m();  
System.out.println("calling m3.....");  
e.k();  
}  
}
```

### **Output**

```
calling m1.....  
method 1  
calling m2.....  
before advice  
method 2 with return  
calling m3.....  
before advice  
method 3 with return
```

**Write a program to demonstrate Spring AOP – after advice.**

### **AfterAopDataKulsum.java**

```
package bvimit.edu;  
import org.aspectj.lang.JoinPoint;  
import org.aspectj.lang.annotation.After;  
import org.aspectj.lang.annotation.Aspect;  
import org.aspectj.lang.annotation.Pointcut;  
@Aspect
```

```
public class AfterAopDataKulsum{  
    @Pointcut("execution(int AfterOperationKulsum.*(..))")  
    public void p0(){  
        @After("p0")  
        public void myadvice(JoinPoint jp){  
            System.out.println("after advice");  
        }  
    }  
}
```

### **AfterOperationKulsum.java**

```
package bvimit.edu;  
public class AfterOperationKulsum{  
    public void msg(){System.out.println("method 1");}  
    public int m(){System.out.println("method 2 with return");return 2;}  
    public int k(){System.out.println("method 3 with return");return 3;}  
}
```

### **aopctx.xml**

```
<?xml version="1.0" encoding="UTF-8"?>  
<beans xmlns="http://www.springframework.org/schema/beans"  
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
       xsi:schemaLocation="http://www.springframework.org/schema/beans  
                           http://www.springframework.org/schema/beans/spring-beans.xsd">  
    <bean id="opBean" class="bvimit.edu.AfterOperationKulsum"/>  
    <bean id="trackMyBean" class="bvimit.edu.AfterAopDataKulsum"/>  
    <bean  
        class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCreat  
or"/>  
  </beans>
```

### **AfterTestKulsum.java**

```
package bvimit.edu;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
public class AfterTestKulsum{  
    public static void main(String[] args){  
        ApplicationContext context=new ClassPathXmlApplicationContext("aopctx.xml");  
        AfterOperationKulsum e=(AfterOperationKulsum)context.getBean("opBean");  
        System.out.println("calling m1.....");  
        e.msg();  
        System.out.println("calling m2.....");  
        e.m();  
        System.out.println("calling m3.....");  
    }  
}
```

```
        e.k();
    }
calling m1.....
method 1
calling m2.....
method 2 with return
after advice
calling m3.....
method 3 with return
after advice

}
```

## Output

**Write a program to demonstrate Spring AOP – around advice.**

### **BankaopdataKulsum.java**

```
package bvimit.edu;
import org.aspectj.lang.ProceedingJoinPoint;
import org.aspectj.lang.annotation.Around;
import org.aspectj.lang.annotation.Aspect;
import org.aspectj.lang.annotation.Pointcut;
@Aspect
public class BankaopdataKulsum{
@Pointcut("execution(* BankKulsum.*(..))")
public void a(){}
@Around("a()")
public Object myadvice(ProceedingJoinPoint p) throws Throwable{
System.out.println("Around concern Before calling actual method");
Object obj=p.proceed();
System.out.println("Around Concern After calling actual method");
return obj;
}
}
```

### **BankKulsum.java**

```
package bvimit.edu;
public class BankKulsum{
    public void welcome(){System.out.println("welcome to bank");}
    public int icici(){System.out.println("icici bank interest rate");return 7;}
    public int pnb(){System.out.println("pnb bank interest rate");return 6;}
}
```

### **Bankaopdata.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:schemaLocation="http://www.springframework.org/schema/beans
                           http://www.springframework.org/schema/beans/spring-beans.xsd">
    <bean id="opBean" class="bvimit.edu.BankKulsum"/>
    <bean id="trackMyBean" class="bvimit.edu.BankaopdataKulsum"/>
    <bean
        class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCreator"/>
</beans>
```

### **BanktestKulsum.java**

```
package bvimit.edu;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;
public class BanktestKulsum{
    private static ApplicationContext context;
    public static void main(String[] args){
        context=new ClassPathXmlApplicationContext("Bankaopdata.xml");
        BankKulsum e=(BankKulsum)context.getBean("opBean");
        System.out.println("Calling welcome method... ");
        e.welcome();
        System.out.println("Calling icici method... ");
        e.icici();
        System.out.println("Calling pnb method... ");
        e.pnb();
    }
}
```

### **Output**

```
Around concern Before calling actual method  
welcome to bank  
Around Concern After calling actual method  
Around concern Before calling actual method  
icici bank interest rate  
Around Concern After calling actual method  
Around concern Before calling actual method  
pnb bank interest rate  
Around Concern After calling actual method
```

**Write a program to demonstrate Spring AOP – after returning advice.**

### **BankaopdataKulsum.java**

```
package bvimit.edu;  
import org.aspectj.lang.JoinPoint;  
import org.aspectj.lang.annotation.AfterReturning;  
import org.aspectj.lang.annotation.Aspect;  
@Aspect  
public class BankaopdataKulsum{  
    @AfterReturning(pointcut="execution(* BankKulsum.*(..))",returning="result")  
    public void myadvice(JoinPoint jp, Object result){  
        System.out.println("AfterReturning concern");  
        System.out.println("Result in advice"+result);  
    }  
}
```

### **BankKulsum.java**

```
package bvimit.edu;  
public class BankKulsum{  
    public void welcome(){System.out.println("welcome to bank");}  
    public int icici(){System.out.println("icici bank interest rate");return 7;}  
    public int pnb(){System.out.println("pnb bank interest rate");return 6;}  
}
```

### **Bankaopdata.xml**

```
<?xml version="1.0" encoding="UTF-8"?>  
<beans xmlns="http://www.springframework.org/schema/beans"  
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
       xsi:schemaLocation="http://www.springframework.org/schema/beans  
                           http://www.springframework.org/schema/beans/spring-beans.xsd">  
    <bean id="opBean" class="bvimit.edu.BankKulsum"/>  
    <bean id="trackMyBean" class="bvimit.edu.BankaopdataKulsum"/>
```

```
<bean  
class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCreat  
or"/>  
</beans>
```

### **BanktestKulsum.java**

```
package bvimit.edu;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
public class BanktestKulsum{  
private static ApplicationContext context;  
public static void main(String[] args){  
context=new ClassPathXmlApplicationContext("Bankaopdata.xml");  
BankKulsum e=(BankKulsum)context.getBean("opBean");  
e.welcome();  
e.icici();  
e.pnb();  
}  
  
welcome to bank  
AfterReturning concern  
Result in advice1null  
icici bank interest rate  
AfterReturning concern  
Result in advice7  
pnb bank interest rate  
AfterReturning concern  
Result in advice6
```

**Write a program to demonstrate Spring AOP – after throwing advice.**

### **Operationaop\_atKulsum.java**

```
package bvimit.edu;  
import org.aspectj.lang.JoinPoint;  
import org.aspectj.lang.annotation.AfterThrowing;  
import org.aspectj.lang.annotation.Aspect;  
@Aspect  
public class Operationaop_atKulsum{
```

```
@AfterThrowing(pointcut="execution(* Operation_atKulsum.*(..))",throwing="error")
public void myadvice(JoinPoint jp,Throwable error){
System.out.println("AfterThrowing concern");
System.out.println("Exception is: "+error);
System.out.println("end of after throwing advice....");
}
}
```

### **Operation\_atKulsum.java**

```
package bvimit.edu;
public class Operation_atKulsum{
public void validate(int att)throws Exception{
if(att<75){
throw new ArithmeticException("Not eligible for exam");
} else{
System.out.println("Eligible for exam");
}
}
}
```

### **validctx.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd">
<bean id="opBean" class="bvimit.edu.Operation_atKulsum"/>
<bean id="trackMyBean" class="bvimit.edu.Operationaop_atKulsum"/>
<bean
class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCreator"/>
</beans>
```

### **OperationTest\_atKulsum.java**

```
package bvimit.edu;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;
public class OperationTest_atKulsum{
private static ApplicationContext context;
```

```

public static void main(String[] args){
ApplicationContext context=new ClassPathXmlApplicationContext("validctx.xml");
Operation_atKulsum op=(Operation_atKulsum)context.getBean("opBean");
System.out.println("calling validate....");
try{
op.validate(85);
}catch(Exception e){System.out.println(e);}
System.out.println("calling validate again....");
try{
op.validate(25);
}catch(Exception e){System.out.println(e);}
}

```

### **Output**

```

calling validate....
Eligible for exam
calling validate again....
AfterThrowing concern
Exception is: java.lang.ArithmeticException: Not eligible for exam
end of after throwing advice....
java.lang.ArithmeticException: Not eligible for exam

```

**Write a program to demonstrate Spring AOP –pointcuts.**

### **Operation\_pcKulsum.java**

```

package bvimit.edu;
public class Operation_pcKulsum{
public void msg(){System.out.println("method 1");}
public int m(){System.out.println("method 2 with return");return 2;}
public int k(){System.out.println("method 3 with return");return 3;}
}

```

### **Aopdata\_pcKulsum.java**

```

package bvimit.edu;
import org.aspectj.lang.JoinPoint;
import org.aspectj.lang.annotation.After;
import org.aspectj.lang.annotation.Pointcut;
import org.aspectj.lang.annotation.Aspect;
import org.aspectj.lang.annotation.Before;
@Aspect
public class Aopdata_pcKulsum{
@Pointcut("execution(int Operation_pcKulsum.*(..))")

```

```

public void p(){
@After("p0")
public void myadvice(JoinPoint jp){
System.out.println("After advice");
}
@Pointcut("execution(* Operation_pcKulsum.*(..))")
public void i(){
@Before("i0")
public void myadvice1(JoinPoint jp){
System.out.println("Before advice");
}
}
Test_pcKulsum.java

```

```

package bvimit.edu;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;
public class Test_pcKulsum{
public static void main(String[] args){
ApplicationContext context=new ClassPathXmlApplicationContext("aopctx_pc.xml");
Operation_pcKulsum e=(Operation_pcKulsum)context.getBean("opBean");
System.out.println("calling m1...");
e.msg();
System.out.println("calling m2...");
e.m();
System.out.println("calling m3...");
e.k();
}
}

```

### **aopctx\_pc.xml**

```

<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd">
<bean id="opBean" class="bvimit.edu.Operation_pcKulsum"/>
<bean id="trackMyBean" class="bvimit.edu.Aopdata_pcKulsum"/>
<bean
class="org.springframework.aop.aspectj.annotation.AnnotationAwareAspectJAutoProxyCreator"/>
</beans>

```

### **Output**

```
calling m1...
method 1
calling m2...
method 2 with return
calling m3...
method 3 with return
```