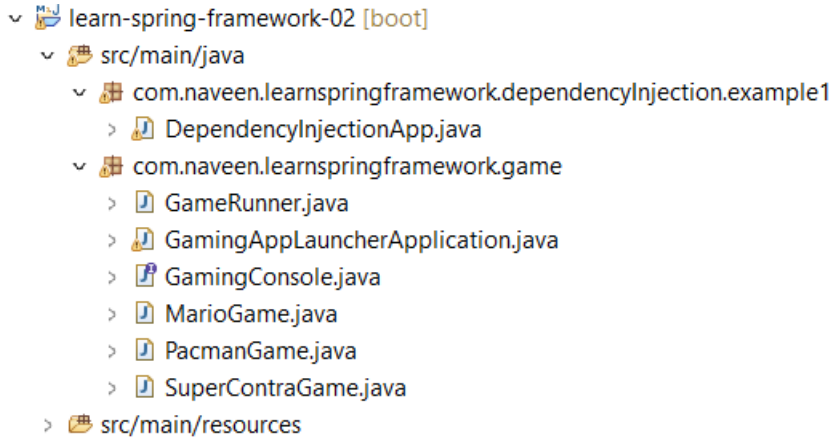
DIFFERENT TYPES OF DEPENDENCY INJECTION

PROJECT STRUCTURE:



DependencyInjectionApp.java

```java
package com.naveen.learnspringframework.dependencyInjection.example1;

import java.util.Arrays;

import
org.springframework.context.annotation.AnnotationConfigApplicationContext;
import org.springframework.context.annotation.ComponentScan;
import org.springframework.context.annotation.Configuration;

import com.naveen.learnspringframework.game.GameRunner;
import com.naveen.learnspringframework.game.GamingConsole;

@Configuration
@ComponentScan // automatically scan on current package when we doesn't mention
package.
public class DependencyInjectionApp {

    public static void main(String[] args) {

        try(var context =
                new AnnotationConfigApplicationContext
                    (DependencyInjectionApp.class)){

        Arrays.stream(context.getBeanDefinitionNames())
        .forEach(System.out::println);
        }
    }
}
```

OUTPUT:

```
15:35:09.406 [main] DEBUG org.springframework.beans.factory.support.DefaultI
15:35:09.411 [main] DEBUG org.springframework.beans.factory.support.DefaultI
15:35:09.414 [main] DEBUG org.springframework.beans.factory.support.DefaultI
15:35:09.417 [main] DEBUG org.springframework.beans.factory.support.DefaultI
15:35:09.434 [main] DEBUG org.springframework.beans.factory.support.DefaultI
org.springframework.context.annotation.internalConfigurationAnnotationProces
org.springframework.context.annotation.internalAutowiredAnnotationProcessor
org.springframework.context.annotation.internalCommonAnnotationProcessor
org.springframework.context.event.internalEventListenerProcessor
org.springframework.context.event.internalEventListenerFactory
dependencyInjectionApp
15:35:09.537 [main] DEBUG org.springframework.context.annotation.AnnotationC
```

In this case, **DependencyInjectionApp** is being treated as a bean by the Spring framework. When the **AnnotationConfigApplicationContext** is created with **DependencyInjectionApp.class** as a parameter, it registers the **DependencyInjectionApp** class as a bean in the Spring application context. The **context.getBeanDefinitionNames()** method call retrieves the names of all the beans in the context, which includes the name of the **DependencyInjectionApp** bean, and prints it to the console.

FIELD INJECTION

Field injection is one of the ways to perform dependency injection in the Spring framework. In field injection, the dependencies of a class are injected directly into its fields using Spring's **@Autowired** annotation.

DependencyInjectionApp.java

```java
package com.naveen.learnspringframework.dependencyInjection.example1;

import java.util.Arrays;

import org.springframework.beans.factory.annotation.Autowired;
import
org.springframework.context.annotation.AnnotationConfigApplicationContext;
import org.springframework.context.annotation.ComponentScan;
import org.springframework.context.annotation.Configuration;
import org.springframework.stereotype.Component;

@Component
class YourBusiness{

    @Autowired
    Dependency1 dependency1;

    @Autowired
    Dependency2 dependency2;

    public String toString() {
        return "Using " + dependency1 + " and " + dependency2;
```

```
    }
}
@Component
class Dependency1{

}
@Component
class Dependency2{

}

@Configuration
@ComponentScan // automatically scan on current package
public class DependencyInjectionApp {

    public static void main(String[] args) {

        try(var context =
                new AnnotationConfigApplicationContext
                    (DependencyInjectionApp.class)){

        Arrays.stream(context.getBeanDefinitionNames())
        .forEach(System.out::println);

        System.out.println(context.getBean(YourBusiness.class));
        }
    }
}
```

OUTPUT:

```
dependencyInjectionApp
dependency1
dependency2
yourBusiness
Using com.naveen.learnspringframework.dependencyInjection.example1.Dependenc
```

YourBusiness class has two dependencies, **Dependency1** and **Dependency2**, which are marked with **@Autowired** annotation. This tells Spring that these dependencies should be injected automatically at runtime by Spring's dependency injection mechanism.

SETTER INJECTION

In setter injection, the dependencies of a class are injected through its setter methods using Spring's **@Autowired** annotation.

DependencyInjectionApp.java

```
@Component
class YourBusiness{


    Dependency1 dependency1;
    Dependency2 dependency2;

    @Autowired
    public void setDependency1(Dependency1 dependency1) {
        System.out.println("Setter Injection - setDependency1");
        this.dependency1 = dependency1;
    }

    @Autowired
    public void setDependency2(Dependency2 dependency2) {
        System.out.println("Setter Injection - setDependency2");
        this.dependency2 = dependency2;
    }



    public String toString() {
        return "Using " + dependency1 + " and " + dependency2;
    }
}
@Component
class Dependency1{
}
@Component
class Dependency2{
}

@Configuration
@ComponentScan // automatically scan on current package
public class DependencyInjectionApp {

    public static void main(String[] args) {

        try(var context =
                new AnnotationConfigApplicationContext
                    (DependencyInjectionApp.class)){

        Arrays.stream(context.getBeanDefinitionNames())
        .forEach(System.out::println);

        System.out.println(context.getBean(YourBusiness.class));
        }
```

```
    }
}
```

OUTPUT:

```
Setter Injection - setDependency1
Setter Injection - setDependency2
org.springframework.context.annotation.internalConfigurationAnnotationProces
org.springframework.context.annotation.internalAutowiredAnnotationProcessor
org.springframework.context.annotation.internalCommonAnnotationProcessor
org.springframework.context.event.internalEventListenerProcessor
org.springframework.context.event.internalEventListenerFactory
dependencyInjectionApp
dependency1
dependency2
yourBusiness
Using com.naveen.learnspringframework.dependencyInjection.example1.Dependenc
```

CONSTRUCTOR INJECTION

In constructor injection, the dependencies of a class are injected through its constructor with or without using Spring's **@Autowired** annotation.

DependencyInjectionApp.java

```java
package com.naveen.learnspringframework.dependencyInjection.example1;

@Component
class YourBusiness{


    Dependency1 dependency1;
    Dependency2 dependency2;

    @Autowired
    public YourBusiness(Dependency1 dependency1, Dependency2 dependency2) {
        super();
        System.out.println("Constructor Injection - YourBusiness");
        this.dependency1 = dependency1;
        this.dependency2 = dependency2;
    }

    public String toString() {
        return "Using " + dependency1 + " and " + dependency2;
    }
}
@Component
class Dependency1{

}
@Component
class Dependency2{

}
```

```java
@Configuration
@ComponentScan // automatically scan on current package
public class DependencyInjectionApp {

    public static void main(String[] args) {

        try(var context =
                new AnnotationConfigApplicationContext
                    (DependencyInjectionApp.class)){

        Arrays.stream(context.getBeanDefinitionNames())
        .forEach(System.out::println);

        System.out.println(context.getBean(YourBusiness.class));
        }
    }
}
```

OUTPUT:

```
Constructor Injection - YourBusiness
org.springframework.context.annotation.internalConfigurationAnnotationProces
org.springframework.context.annotation.internalAutowiredAnnotationProcessor
org.springframework.context.annotation.internalCommonAnnotationProcessor
org.springframework.context.event.internalEventListenerProcessor
org.springframework.context.event.internalEventListenerFactory
dependencyInjectionApp
dependency1
dependency2
yourBusiness
Using com.naveen.learnspringframework.dependencyInjection.example1.Dependenc
```