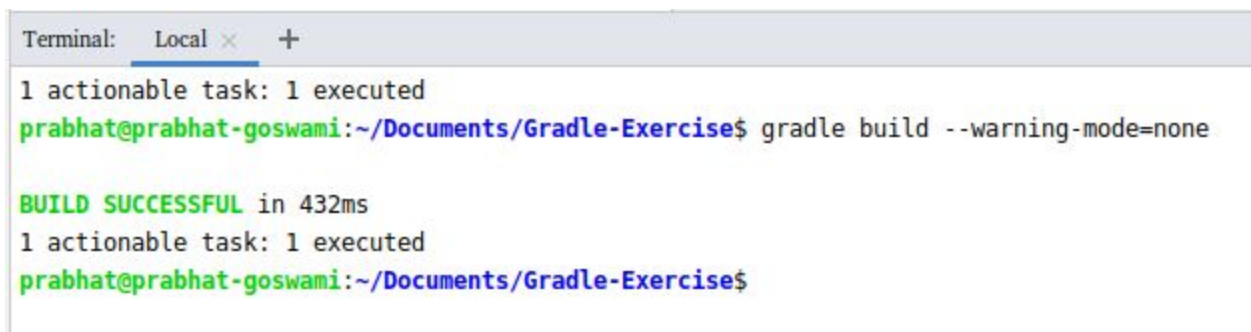1. Add a gradle dependency and its related repository url.

   Ans. I used maven repository and add its dependency in it.

   I have write this code in the build.gradle

```
repositories {

        mavenCentral()

                maven {

                                url "https:mvnrepository.com/artifact/com.google.code.gson/gson"

                        }

        }
dependencies {

                compile group: 'com.google.code.gson', name: 'gson', version: '2.8.6'

                testCompile group: 'junit', name: 'junit', version: '4.12'

                }
```

```
Terminal:   Local ×   +

1 actionable task: 1 executed
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ gradle build --warning-mode=none

BUILD SUCCESSFUL in 432ms
1 actionable task: 1 executed
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$
```

2. Using java plugin, make changes in the manifest to make the jar executable. Using java -jar JAR_NAME, the output should be printed as "Hello World"
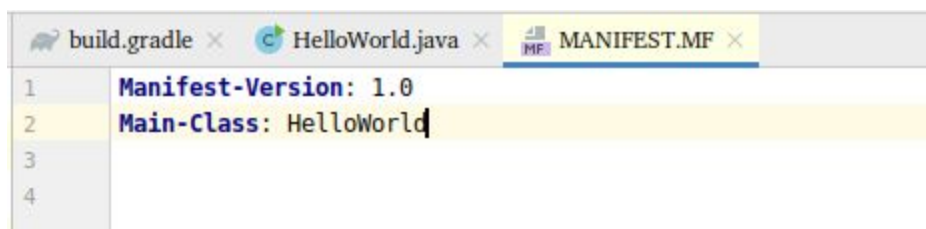
To Create a Jar File, following steps are done

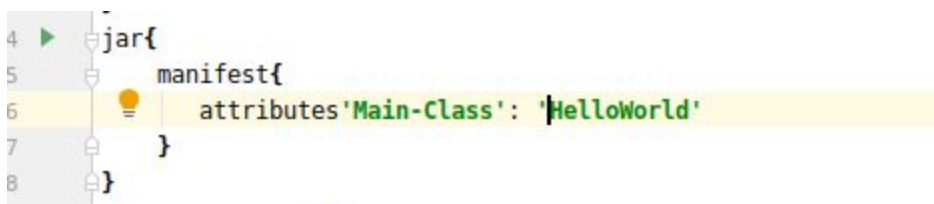1. Create a HelloWorld.java class declaring Hello World

```
build.gradle ×   C HelloWorld.java ×
1 ▶    public class HelloWorld {
2 ▶        public static void main(String[] args) {
3              System.out.println("Hello World");
4          }
5      }
6
```

2. Build Gradle. Then add Changes to the Manifest File in /tmp Folder.

```
build.gradle ×   C HelloWorld.java ×   MF MANIFEST.MF ×
1      Manifest-Version: 1.0
2      Main-Class: HelloWorld
3
4
```

3. Make changes in build Gradle.

```
4 ▶    jar{
5          manifest{
6              attributes'Main-Class': 'HelloWorld'
7          }
8      }
```

4. Run the changes in the terminal.

```
Terminal:    Local ×    +

Use '--warning-mode all' to show the individual deprecation warnings.
See https://docs.gradle.org/6.2.1/userguide/command_line_interface.html#sec:command_line_warnings

BUILD SUCCESSFUL in 486ms
2 actionable tasks: 2 executed
prabhat@prabhat-goswami:~/Downloads/Gradle-Exercises$ cd build
prabhat@prabhat-goswami:~/Downloads/Gradle-Exercises/build$ cd libs
prabhat@prabhat-goswami:~/Downloads/Gradle-Exercises/build/libs$ java -jar Gradle-Exercises-1.0-SNAPSHOT.
Hello World
prabhat@prabhat-goswami:~/Downloads/Gradle-Exercises/build/libs$
```

3. Differentiate between the different dependency scopes: compile, runtime, testCompile, testRuntime using different dependencies being defined in your build.gradle

compile: group of dependencies you need to build your application

testCompile: group of dependencies that you need only for testing.

runtime: It can be used for dependencies that are not needed at compile time
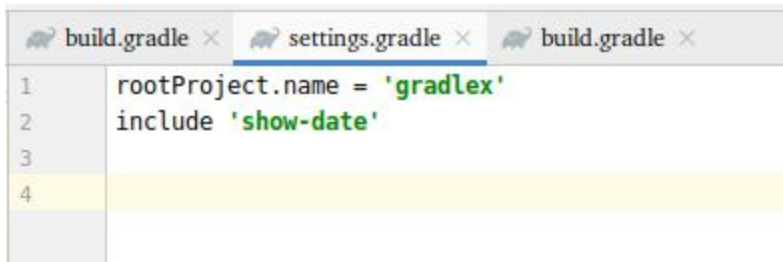
testRuntime: group of dependencies that you need only for testing at runtime.

```
19  ▶  dependencies {
20          compile group: 'com.google.code.gson', name: 'gson', version: '2.8.6'
21          testCompile group: 'junit', name: 'junit', version: '4.12'
22          runtime 'com.google.code.gson:gson:2.8.6'
23          testRuntime 'com.google.code.gson:gson:2.8.6'
24      }
25
```

4. Create a custom plugin which contains a custom task which prints the current date-time. Using that plugin in your project, execute that task after the jar task executes.

TO show the custom plugin , follow the steps

1. Create a Show-date sub project within the main project. Create a groovy enabled file naming show-date and show-date-plugin with the following code.
2. After adding the changes to the code file, include the file in settings.gradle of the src file.
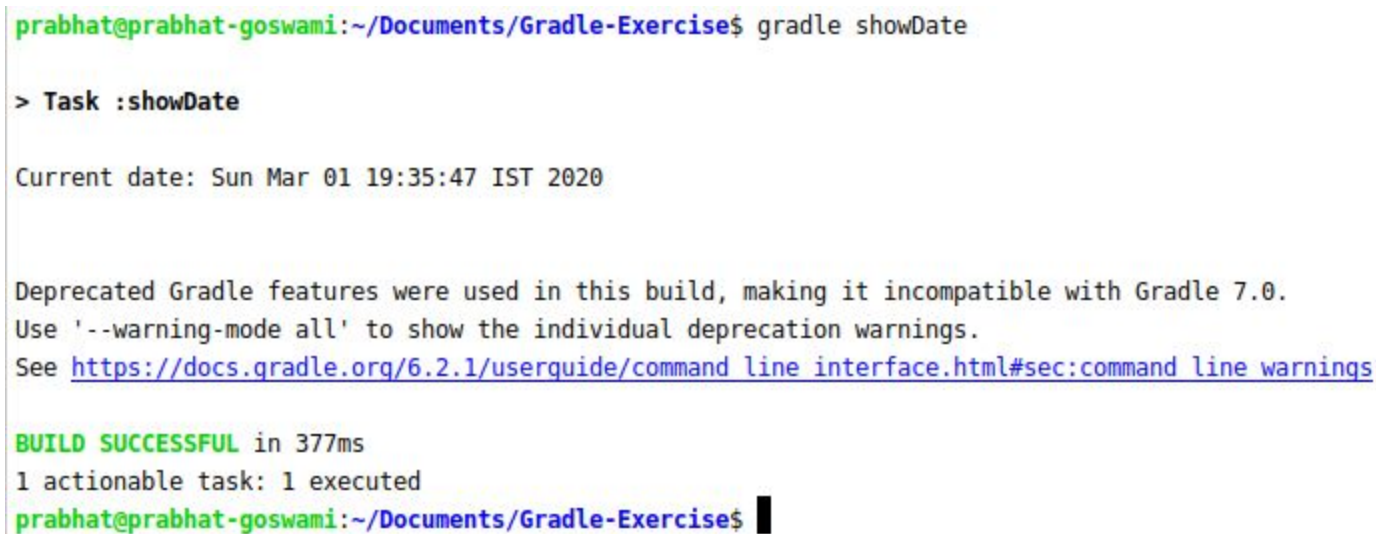
```
build.gradle ×    settings.gradle ×    build.gradle ×
1        rootProject.name = 'gradlex'
2        include 'show-date'
3
4
```

3. Build gradle using gradle build command , add plugins and buildcsripts

```
build.gradle (:show-date) ×    settings.gradle (gradlex) ×    build.gradle (gradlex) ×
1        buildscript {
2            dependencies {
3                classpath files(
4                        'show-date/build/libs/show-date-1.0-SNAPSHOT.jar'
5                )
6            }
7        }
8
```

4. Run the below command –to check if the gradle uses the gradle uses the showDate format

```
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ gradle showDate

> Task :showDate

Current date: Sun Mar 01 19:35:47 IST 2020


Deprecated Gradle features were used in this build, making it incompatible with Gradle 7.0.
Use '--warning-mode all' to show the individual deprecation warnings.
See https://docs.gradle.org/6.2.1/userguide/command_line_interface.html#sec:command_line_warnings

BUILD SUCCESSFUL in 377ms
1 actionable task: 1 executed
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ 
```

5. Instead of using default source set, use src/main/javaCode1, src/main/javaCode2 to be taken as code source. Make sure that the JAR created contains files from both the directories and not from src/main/java.

To do so, we performed the following steps:

1. Create two folders in the src/main with JavaCode1 and JavaCode2. Each will have a java class with name Code1 and Code2.
2. In build:gradle of the main project, we added :

```
sourceSets {
    main{

        java.srcDirs 'src/main/JavaCode1'
        java.srcDirs 'src/main/JavaCode2'
    }
}
```

3. Build gradle to find both classes executable, that also shows the manifest files.

```
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ cd build/libs
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise/build/libs$ jar tf gradlex-1.0-SNAPSHOT.jar
META-INF/
META-INF/MANIFEST.MF
Code2.class
Code1.class
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise/build/libs$ 
```

6. Override the Gradle Wrapper task to install a different version of gradle. Make sure that the task written in Q4 also executes with it.

To change the version of gradle, run the following command on terminal, also the function showDate executes along

```
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ gradle wrapper --gradle-version 3.2 --warning-mode=none

BUILD SUCCESSFUL in 382ms
1 actionable task: 1 up-to-date
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ 
```

Changes Observed in the gradle properties file.

```
build.gradle (:show-date) ×    settings.gradle (gradlex) ×    gradle-wrapper.properties ×    build.gradle (gradlex)

1      #Sun Mar 01 19:52:01 IST 2020
2      distributionUrl=https\://services.gradle.org/distributions/gradle-3.2-all.zip
3      distributionBase=GRADLE_USER_HOME
4      distributionPath=wrapper/dists
5      zipStorePath=wrapper/dists
6      zipStoreBase=GRADLE_USER_HOME
7
```

```
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ gradle showDate

> Task :showDate

Current date: Sun Mar 01 19:49:07 IST 2020


Deprecated Gradle features were used in this build, making it incompatible with Gradle 7.0.
Use '--warning-mode all' to show the individual deprecation warnings.
See https://docs.gradle.org/6.2.1/userguide/command_line_interface.html#sec:command_line_warnings

BUILD SUCCESSFUL in 366ms
1 actionable task: 1 executed
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$
```

7. **Run the gradle profile command and attach the resulting files.**

Run the command given below

```
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$ gradle build --profile --warning-mode=none

BUILD SUCCESSFUL in 401ms
2 actionable tasks: 2 up-to-date

See the profiling report at: file:///home/prabhat/Documents/Gradle-Exercise/build/reports/profile/profile-2020-03-01-19-55-43.htm
A fine-grained performance profile is available: use the --scan option.
prabhat@prabhat-goswami:~/Documents/Gradle-Exercise$
```

Profile report

Profiled build: build

Started on: 2020/03/01 - 19:54:20

Summary	Configuration	Dependency Resolution	Artifact Transforms	Task Execution

Description	Duration
Total Build Time	0.425s
Startup	0.372s
Settings and buildSrc	0.003s
Loading Projects	0s
Configuring Projects	0.020s
Artifact Transforms	0s
Task Execution	0.011s