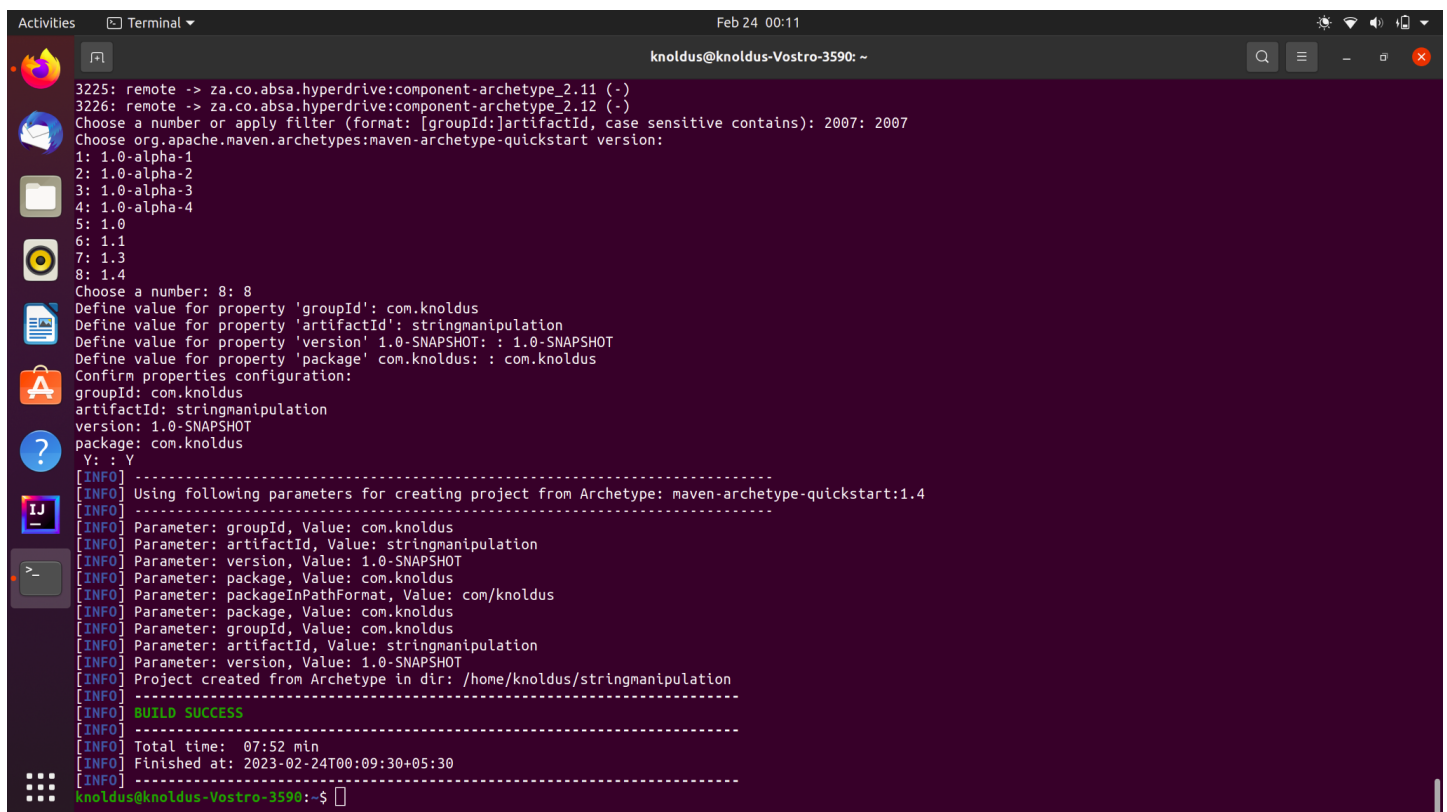


Name - Pradyuman Pratap Singh
Employee Code : 1884

Steps I followed to create a Multi-Module Project(KIP Assignment)
through Terminal.

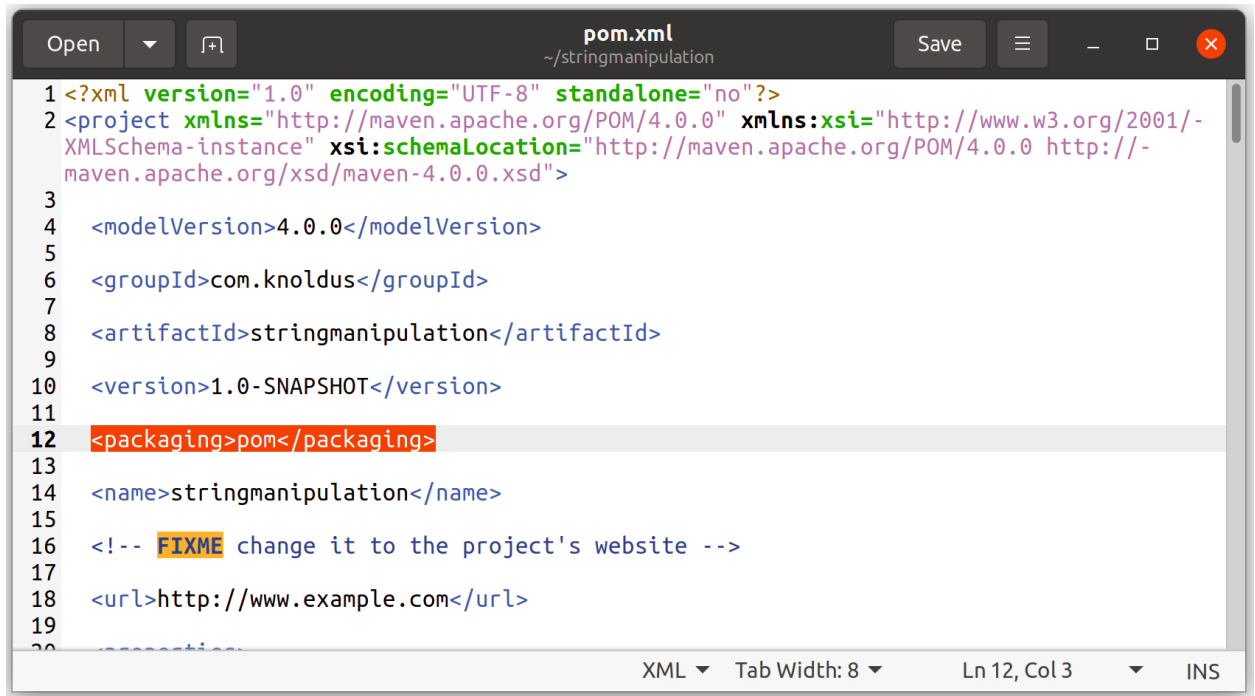
- Step 1: Open the terminal and enter **mvn archetype:generate** .
- Step 2: It will ask you to fill in GroupID, ArtifactID, Version, and Package.
Here you fill in the details of the parent module.



```
knoldus@knoldus-Vostro-3590: ~  
3225: remote -> za.co.absa.hyperdrive:component-archetype_2.11 (-)  
3226: remote -> za.co.absa.hyperdrive:component-archetype_2.12 (-)  
Choose a number or apply filter (format: [groupId:artifactId, case sensitive contains): 2007: 2007  
Choose org.apache.maven.archetypes:maven-archetype-quickstart version:  
1: 1.0-alpha-1  
2: 1.0-alpha-2  
3: 1.0-alpha-3  
4: 1.0-alpha-4  
5: 1.0  
6: 1.1  
7: 1.3  
8: 1.4  
Choose a number: 8: 8  
Define value for property 'groupId': com.knoldus  
Define value for property 'artifactId': stringmanipulation  
Define value for property 'version' 1.0-SNAPSHOT: : 1.0-SNAPSHOT  
Define value for property 'package' com.knoldus: : com.knoldus  
Confirm properties configuration:  
groupId: com.knoldus  
artifactId: stringmanipulation  
version: 1.0-SNAPSHOT  
package: com.knoldus  
Y: : Y  
[INFO] -----  
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.4  
[INFO] -----  
[INFO] Parameter: groupId, Value: com.knoldus  
[INFO] Parameter: artifactId, Value: stringmanipulation  
[INFO] Parameter: version, Value: 1.0-SNAPSHOT  
[INFO] Parameter: package, Value: com.knoldus  
[INFO] Parameter: packageInPathFormat, Value: com/knoldus  
[INFO] Parameter: package, Value: com.knoldus  
[INFO] Parameter: groupId, Value: com.knoldus  
[INFO] Parameter: artifactId, Value: stringmanipulation  
[INFO] Parameter: version, Value: 1.0-SNAPSHOT  
[INFO] Project created from Archetype in dir: /home/knoldus/stringmanipulation  
[INFO] -----  
[INFO] BUILD SUCCESS  
[INFO] -----  
[INFO] Total time: 07:52 min  
[INFO] Finished at: 2023-02-24T00:09:30+05:30  
[INFO] -----  
knoldus@knoldus-Vostro-3590:~$
```

Now , go to the created file and delete the src file manually.

- Step 3: Now open the POM.xml file of stringmanipulation (Parent Module) and add **<packaging>pom</packaging>**. pom is basically a container of submodules. If we don't add this to POM.xml the submodule build fails abruptly.



```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/-
  XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://-
  maven.apache.org/xsd/maven-4.0.0.xsd">
3
4   <modelVersion>4.0.0</modelVersion>
5
6   <groupId>com.knoldus</groupId>
7
8   <artifactId>stringmanipulation</artifactId>
9
10  <version>1.0-SNAPSHOT</version>
11
12  <packaging>pom</packaging>
13
14  <name>stringmanipulation</name>
15
16  <!-- FIXME change it to the project's website -->
17
18  <url>http://www.example.com</url>
19
20  <description>
```

- Step 4: Use **cd stringmanipulation** command to get into that module and follow the above steps (Give ArtifactID: **modify-string**)

```
Activities Terminal Feb 24 00:34 knoldus@knoldus-Vostro-3590: ~/stringmanipulation

3223: remote -> xyz.luan.generator:xyz-generator (-)
3224: remote -> za.co.absa.hyperdrive:component-archetype (-)
3225: remote -> za.co.absa.hyperdrive:component-archetype_2.11 (-)
3226: remote -> za.co.absa.hyperdrive:component-archetype_2.12 (-)
Choose a number or apply filter (format: [groupId:]artifactId, case sensitive contains): 2007: 2007
Choose org.apache.maven.archetypes:maven-archetype-quickstart version:
1: 1.0-alpha-1
2: 1.0-alpha-2
3: 1.0-alpha-3
4: 1.0-alpha-4
5: 1.0
6: 1.1
7: 1.3
8: 1.4
Choose a number: 8: 8
Define value for property 'groupId': com.knoldus
Define value for property 'artifactId': modify-string
Define value for property 'version' 1.0-SNAPSHOT: : 1.0-SNAPSHOT
Define value for property 'package' com.knoldus: : com.knoldus
Confirm properties configuration:
groupId: com.knoldus
artifactId: modify-string
version: 1.0-SNAPSHOT
package: com.knoldus
Y: : Y
[INFO] -----
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.4
[INFO] -----
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: modify-string
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: packageInPathFormat, Value: com/knoldus
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: modify-string
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Project created from Archetype in dir: /home/knoldus/stringmanipulation/modify-string
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 59.118 s
[INFO] Finished at: 2023-02-24T00:17:59+05:30
[INFO] -----
```

We are adding **<packaging>pom</packaging>** in POM.xml file of modify-string because we have to create some more submodules of it.



The screenshot shows a code editor window titled 'pom.xml' with the path '~/.stringmanipulation/modify-string'. The file content is as follows:

```
18
19
20 </parent>
21
22
23 <groupId>com.knoldus</groupId>
24
25
26 <artifactId>modify-string</artifactId>
27
28
29 <version>1.0-SNAPSHOT</version>
30
31
32 <packaging>pom</packaging>
33
34
35 <name>modify-string</name>
36
37
38 <!-- FIXME change it to the project's website -->
39
```

Line 32, which contains the code `<packaging>pom</packaging>`, is highlighted in orange. The status bar at the bottom indicates 'Bracket match found on line: 32', 'XML', 'Tab Width: 8', 'Ln 32, Col 3', and 'INS'.

- Step 5: Use **cd modify-string** to get into that module and create 2 more submodules using **mvn archetype:generate**. And name them **string-api** and **string-impl** respectively.

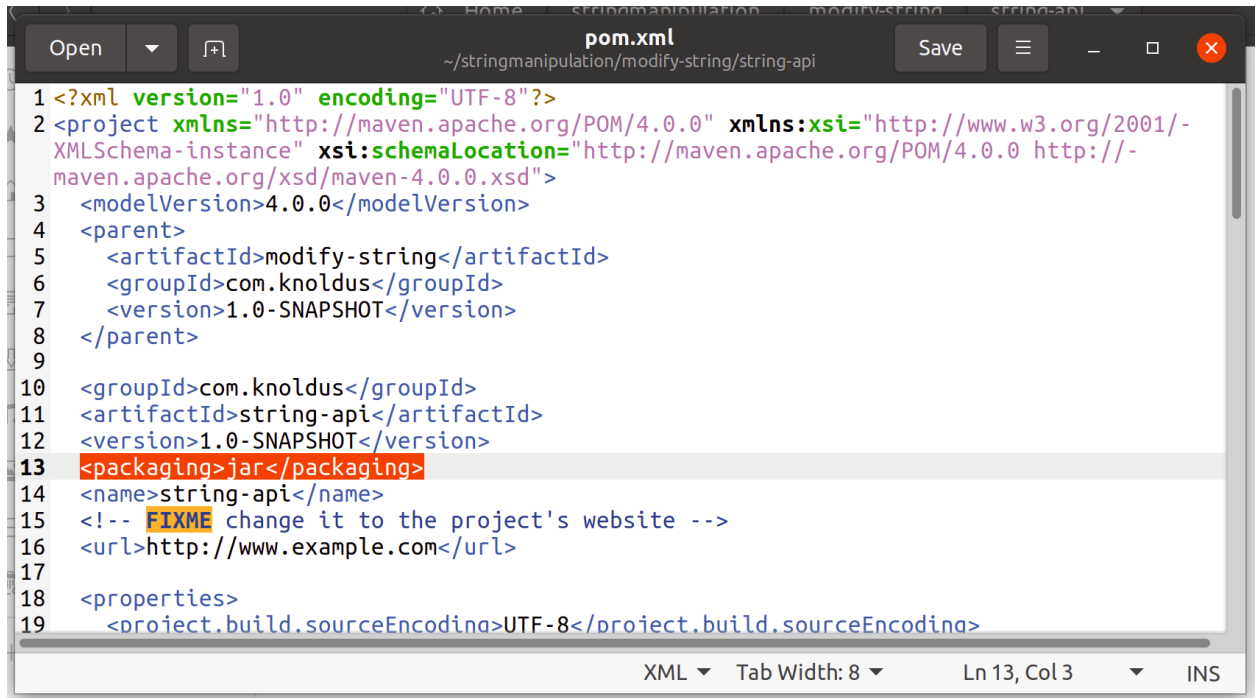
```
Activities Terminal Feb 24 00:36 knoldus@knoldus-Vostro-3590: ~/stringmanipulation/modify-string

3225: remote -> za.co.absa.hyperdrive:component-archetype_2.11 (-)
3226: remote -> za.co.absa.hyperdrive:component-archetype_2.12 (-)
Choose a number or apply filter (format: [groupId]:artifactId, case sensitive contains): 2007: 2007
Choose org.apache.maven.archetypes:maven-archetype-quickstart version:
1: 1.0-alpha-1
2: 1.0-alpha-2
3: 1.0-alpha-3
4: 1.0-alpha-4
5: 1.0
6: 1.1
7: 1.3
8: 1.4
Choose a number: 8: 8
Define value for property 'groupId': com.knoldus
Define value for property 'artifactId': string-api
Define value for property 'version' 1.0-SNAPSHOT: : 1.0-SNAPSHOT
Define value for property 'package' com.knoldus: : com.knoldus
Confirm properties configuration:
groupId: com.knoldus
artifactId: string-api
version: 1.0-SNAPSHOT
package: com.knoldus
Y: : Y
[INFO] -----
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.4
[INFO] -----
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: string-api
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: packageInPathFormat, Value: com/knoldus
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: string-api
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Project created from Archetype in dir: /home/knoldus/stringmanipulation/modify-string/string-api
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 57.272 s
[INFO] Finished at: 2023-02-24T00:36:29+05:30
[INFO] -----
knoldus@knoldus-Vostro-3590: ~/stringmanipulation/modify-string$
```

```
Activities Terminal Feb 24 00:38 knoldus@knoldus-Vostro-3590: ~/stringmanipulation/modify-string

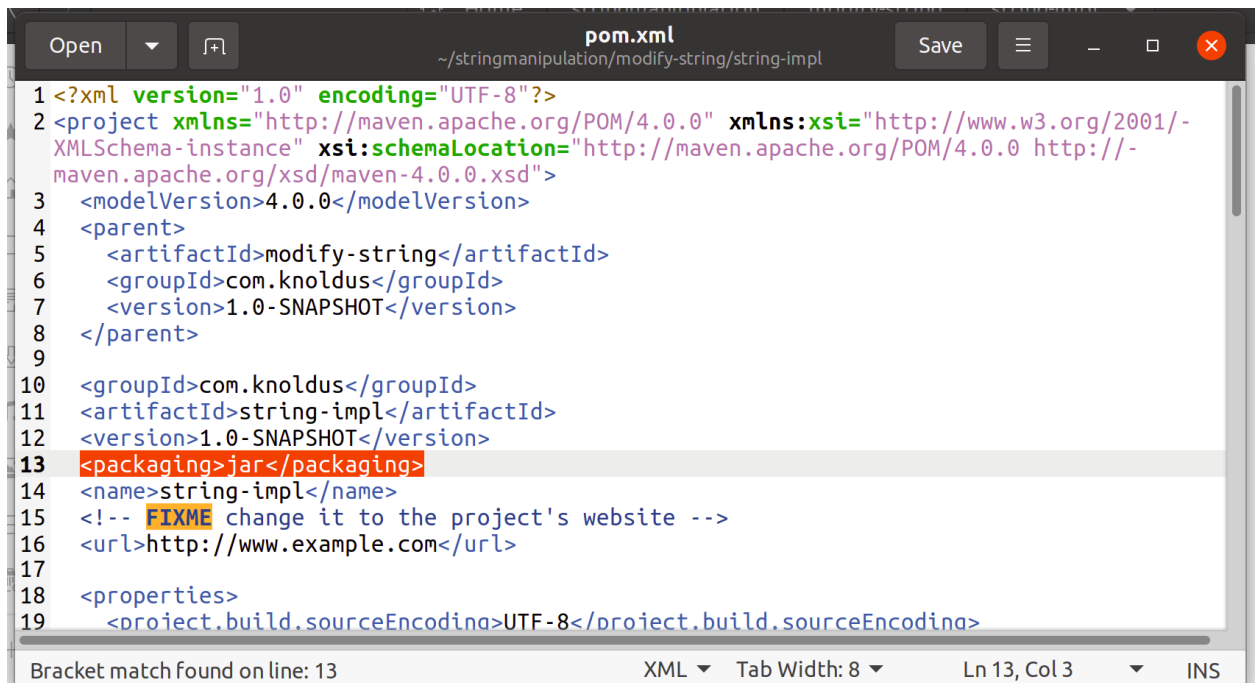
2: 1.0-alpha-2
3: 1.0-alpha-3
4: 1.0-alpha-4
5: 1.0
6: 1.1
7: 1.3
8: 1.4
Choose a number: 8: 8
Define value for property 'groupId': com.knoldus
Define value for property 'artifactId': string-impl
Define value for property 'version' 1.0-SNAPSHOT: : 1.0-SNAPSHOT
Define value for property 'package' com.knoldus: : com.knoldus
Confirm properties configuration:
groupId: com.knoldus
artifactId: string-impl
version: 1.0-SNAPSHOT
package: com.knoldus
Y: : Y
[INFO] -----
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.4
[INFO] -----
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: string-impl
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: packageInPathFormat, Value: com/knoldus
[INFO] Parameter: package, Value: com.knoldus
[INFO] Parameter: groupId, Value: com.knoldus
[INFO] Parameter: artifactId, Value: string-impl
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Project created from Archetype in dir: /home/knoldus/stringmanipulation/modify-string/string-impl
[INFO] -----
[INFO] Reactor Summary for modify-string 1.0-SNAPSHOT:
[INFO]
[INFO] modify-string ..... SUCCESS [ 48.897 s]
[INFO] string-api ..... SKIPPED
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 49.213 s
[INFO] Finished at: 2023-02-24T00:37:53+05:30
[INFO] -----
knoldus@knoldus-Vostro-3590: ~/stringmanipulation/modify-string$
```

You can edit their POM.xml file by adding
<packaging>jar</packaging> or by default it will be jar.



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/-
  XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://-
  maven.apache.org/xsd/maven-4.0.0.xsd">
3   <modelVersion>4.0.0</modelVersion>
4   <parent>
5     <artifactId>modify-string</artifactId>
6     <groupId>com.knoldus</groupId>
7     <version>1.0-SNAPSHOT</version>
8   </parent>
9
10  <groupId>com.knoldus</groupId>
11  <artifactId>string-api</artifactId>
12  <version>1.0-SNAPSHOT</version>
13  <packaging>jar</packaging>
14  <name>string-api</name>
15  <!-- FIXME change it to the project's website -->
16  <url>http://www.example.com</url>
17
18  <properties>
19    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
```

XML Tab Width: 8 Ln 13, Col 3 INS

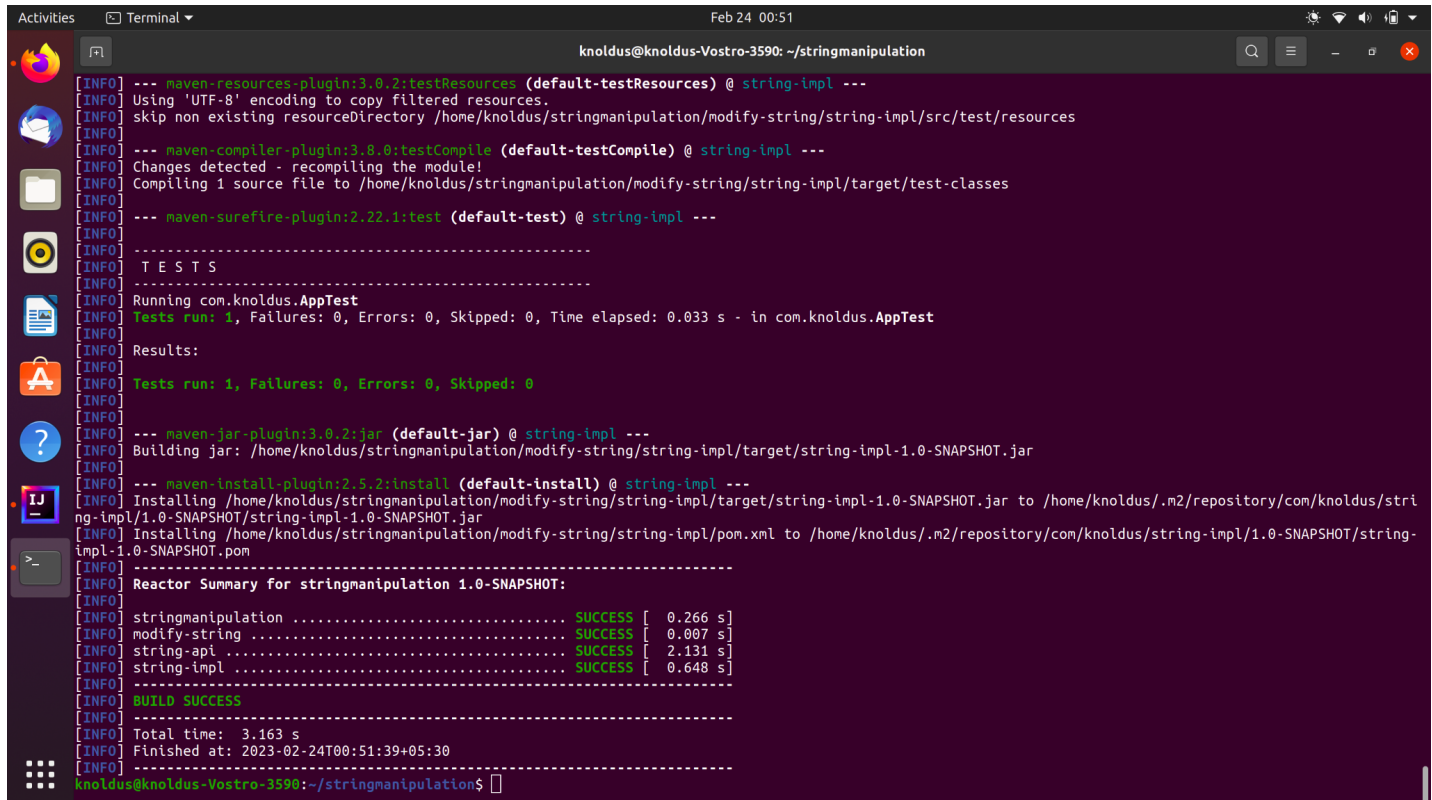


```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/-
  XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://-
  maven.apache.org/xsd/maven-4.0.0.xsd">
3   <modelVersion>4.0.0</modelVersion>
4   <parent>
5     <artifactId>modify-string</artifactId>
6     <groupId>com.knoldus</groupId>
7     <version>1.0-SNAPSHOT</version>
8   </parent>
9
10  <groupId>com.knoldus</groupId>
11  <artifactId>string-impl</artifactId>
12  <version>1.0-SNAPSHOT</version>
13  <packaging>jar</packaging>
14  <name>string-impl</name>
15  <!-- FIXME change it to the project's website -->
16  <url>http://www.example.com</url>
17
18  <properties>
19    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
```

Bracket match found on line: 13 XML Tab Width: 8 Ln 13, Col 3 INS

Mark directories as **Source root** and **test source root** manually.

BUILD SUCCESSFUL



```
Activities Terminal Feb 24 00:51
knoldus@knoldus-Vostro-3590: ~/stringmanipulation

[INFO] --- maven-resources-plugin:3.0.2:testResources (default-testResources) @ string-impl ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /home/knoldus/stringmanipulation/modify-string/string-impl/src/test/resources
[INFO] --- maven-compiler-plugin:3.8.0:testCompile (default-testCompile) @ string-impl ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /home/knoldus/stringmanipulation/modify-string/string-impl/target/test-classes
[INFO] --- maven-surefire-plugin:2.22.1:test (default-test) @ string-impl ---
[INFO]
[INFO] T E S T S
[INFO]
[INFO] Running com.knoldus.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.033 s - in com.knoldus.AppTest
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ string-impl ---
[INFO] Building jar: /home/knoldus/stringmanipulation/modify-string/string-impl/target/string-impl-1.0-SNAPSHOT.jar
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ string-impl ---
[INFO] Installing /home/knoldus/stringmanipulation/modify-string/string-impl/target/string-impl-1.0-SNAPSHOT.jar to /home/knoldus/.m2/repository/com/knoldus/string-impl/1.0-SNAPSHOT/string-impl-1.0-SNAPSHOT.jar
[INFO] Installing /home/knoldus/stringmanipulation/modify-string/string-impl/pom.xml to /home/knoldus/.m2/repository/com/knoldus/string-impl/1.0-SNAPSHOT/string-impl-1.0-SNAPSHOT.pom
[INFO]
[INFO] Reactor Summary for stringmanipulation 1.0-SNAPSHOT:
[INFO]
[INFO] stringmanipulation ..... SUCCESS [ 0.266 s]
[INFO] modify-string ..... SUCCESS [ 0.007 s]
[INFO] string-api ..... SUCCESS [ 2.131 s]
[INFO] string-impl ..... SUCCESS [ 0.648 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 3.163 s
[INFO] Finished at: 2023-02-24T00:51:39+05:30
[INFO]
knoldus@knoldus-Vostro-3590:~/stringmanipulation$
```

Now Open the project and work on the project structure created through Terminal.

