

گزارش کار آزمایش سوم آزمایشگاه مهندسی نرم افزار



دانشکده مهندسی کامپیوتر

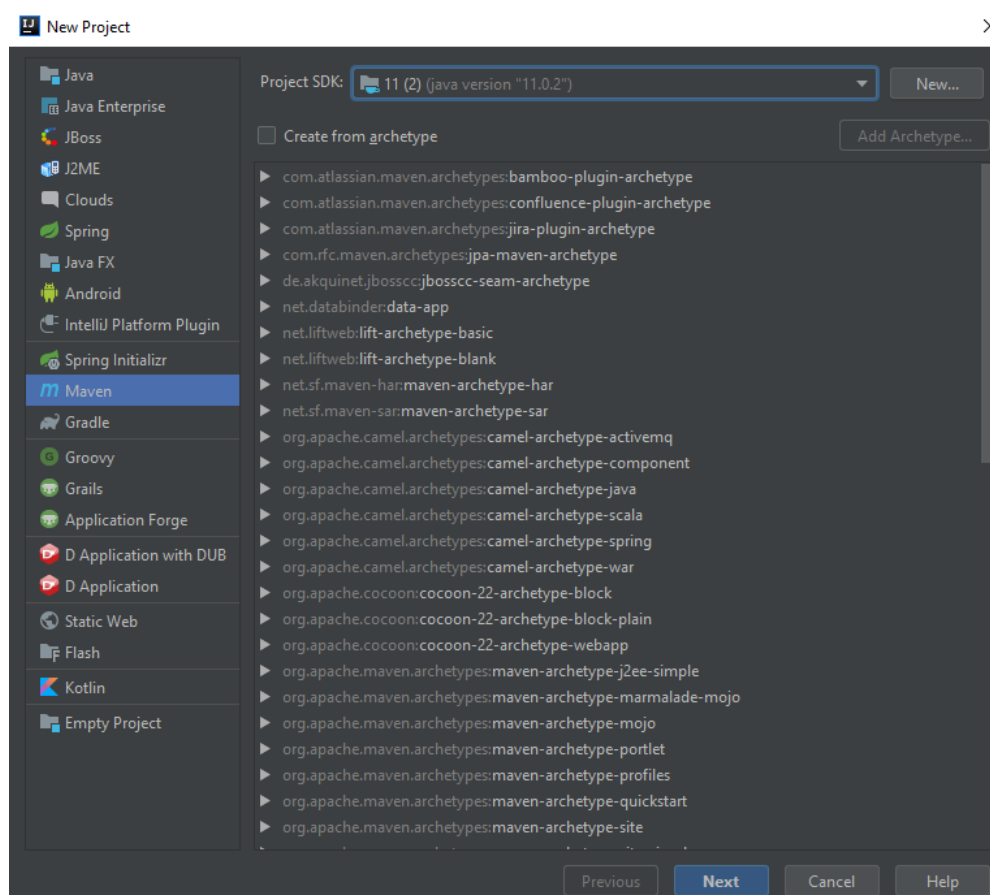
اعضای گروه:

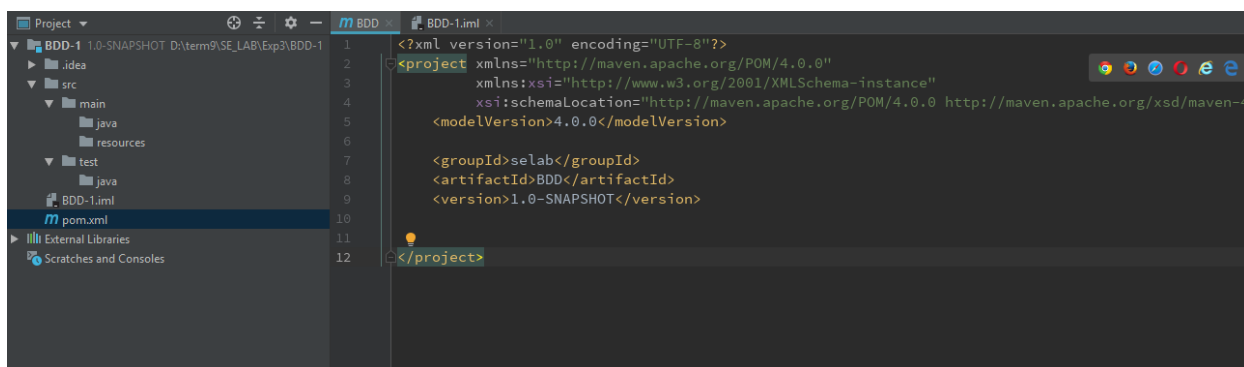
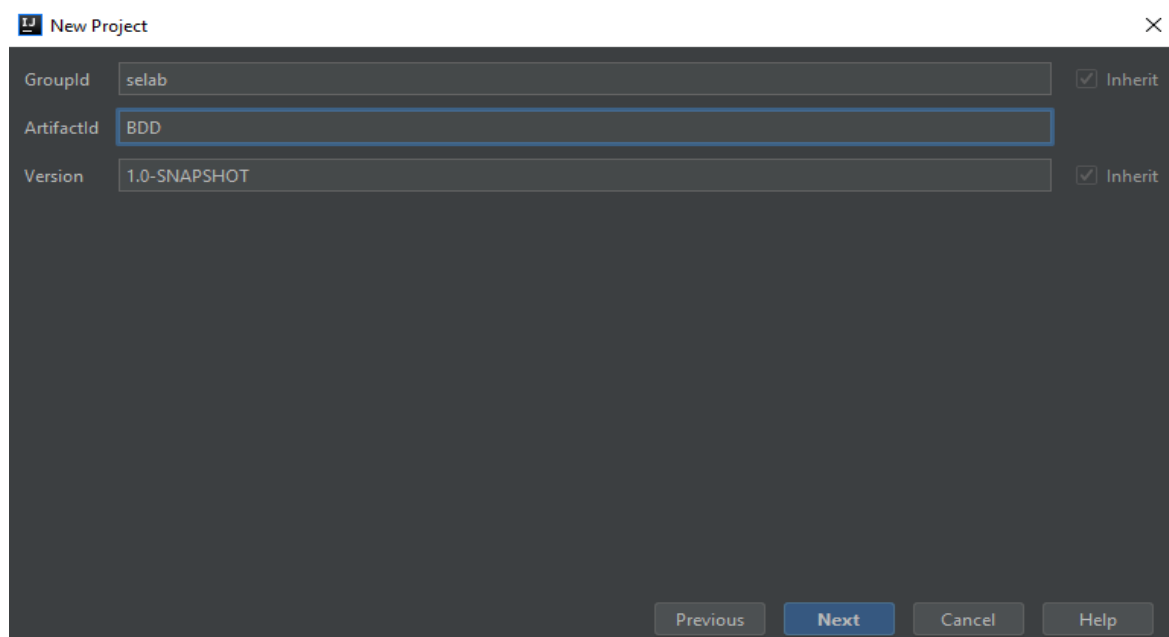
یاسمن شیخان 97101915

امیرحسین علی محمدی 97110166

سوال 1.

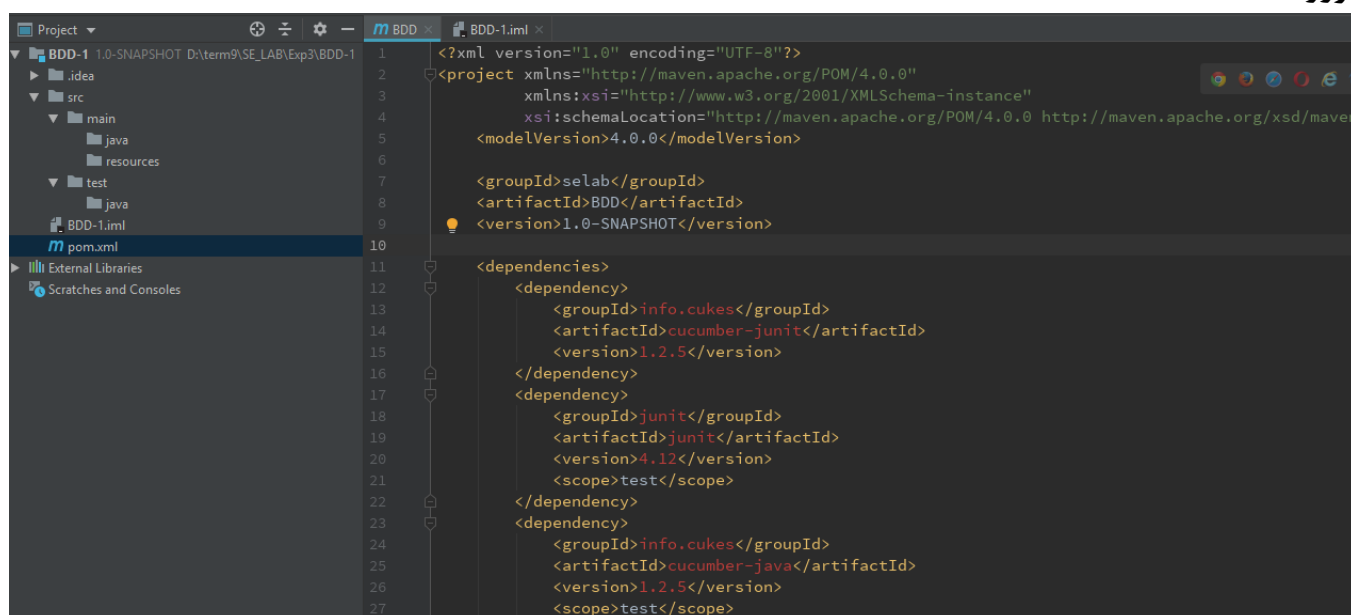
1.1 - مراحل ایجاد پروژه و ماژول جدید:



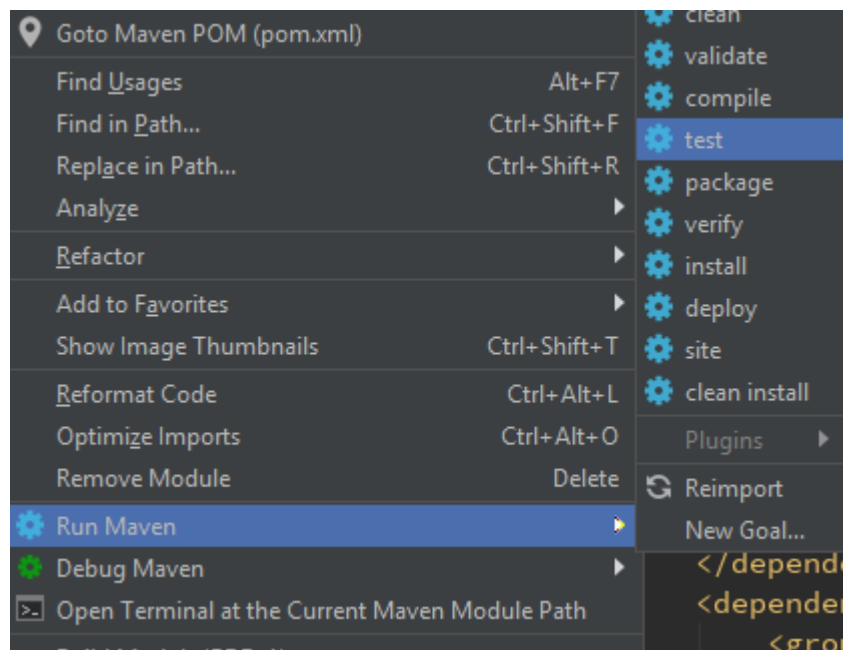
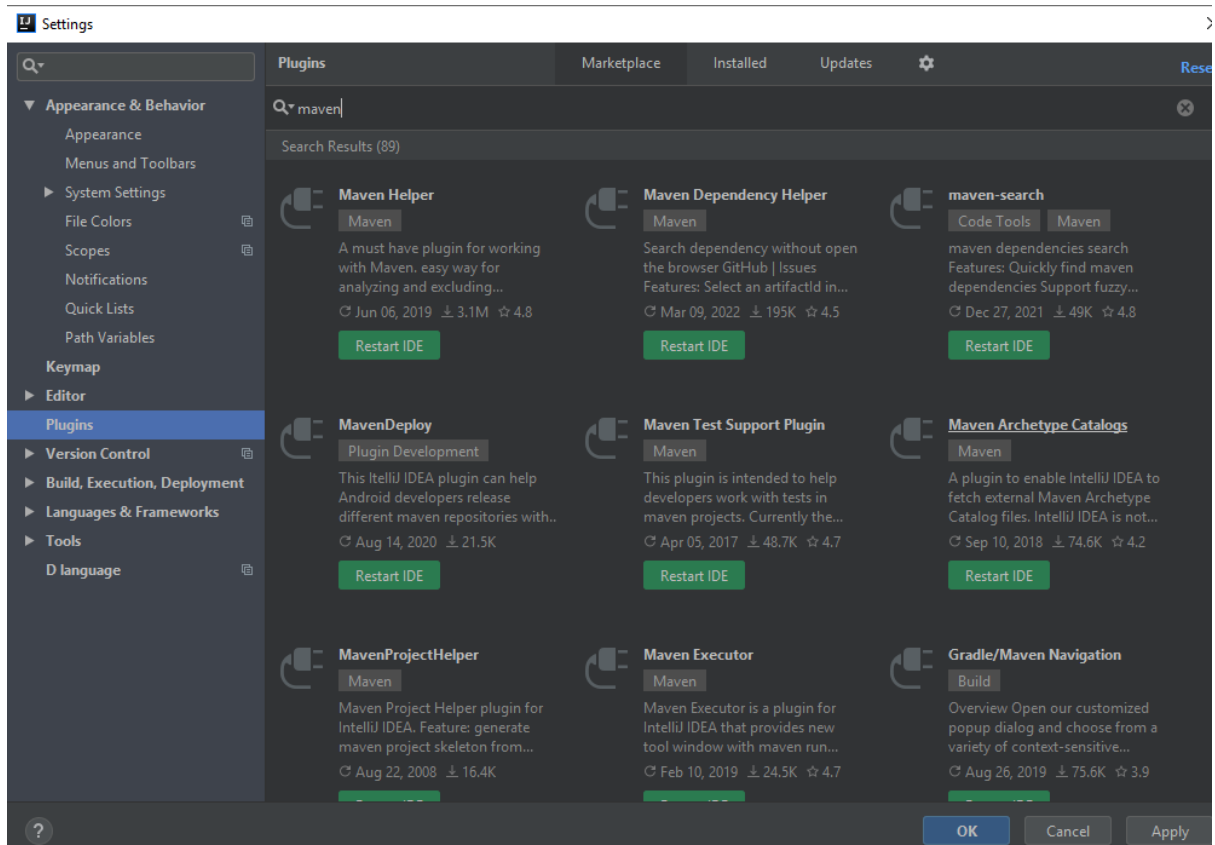


2.1 - افزودن dependency های مورد نیاز شامل JUnit و Cucumber به فایل pom.xml

پروژه:



3.1- اجرای Test->Maven از طریق navigation bar

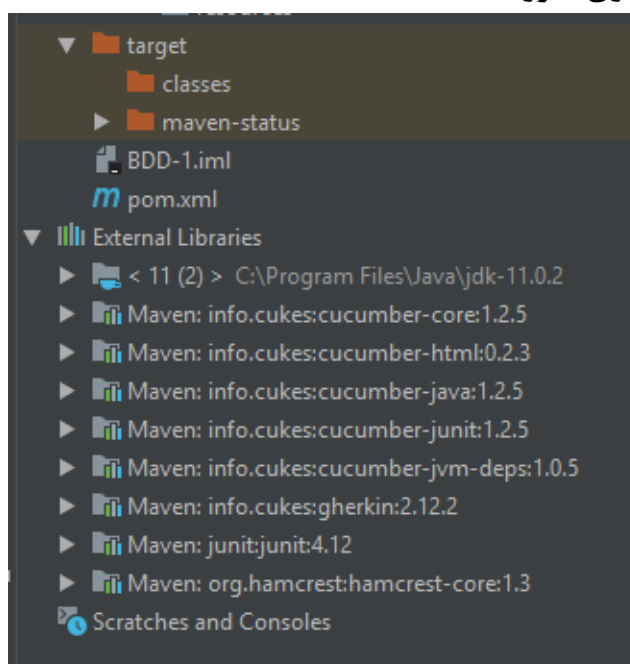


پیام :

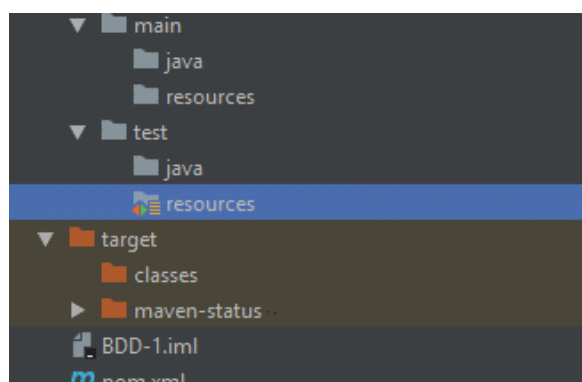
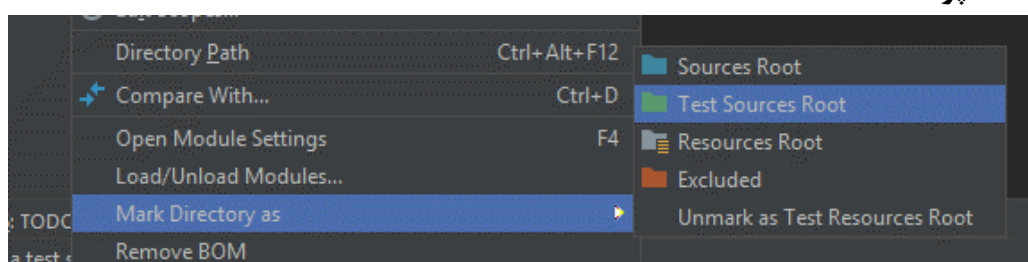
```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 01:10 min
[INFO] Finished at: 2022-11-17T20:23:01+03:30
[INFO] Final Memory: 11M/40M
[INFO] -----

Process finished with exit code 0
```

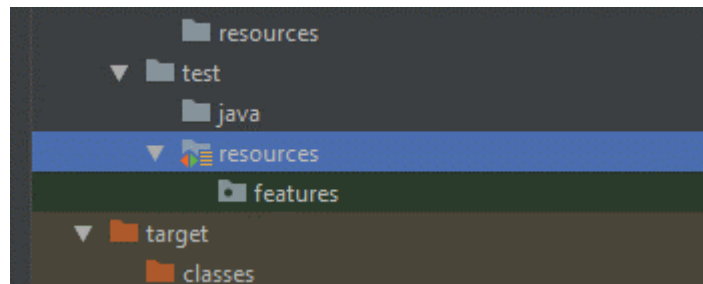
1. 4 و 5 – راه اندازی ملزومات:



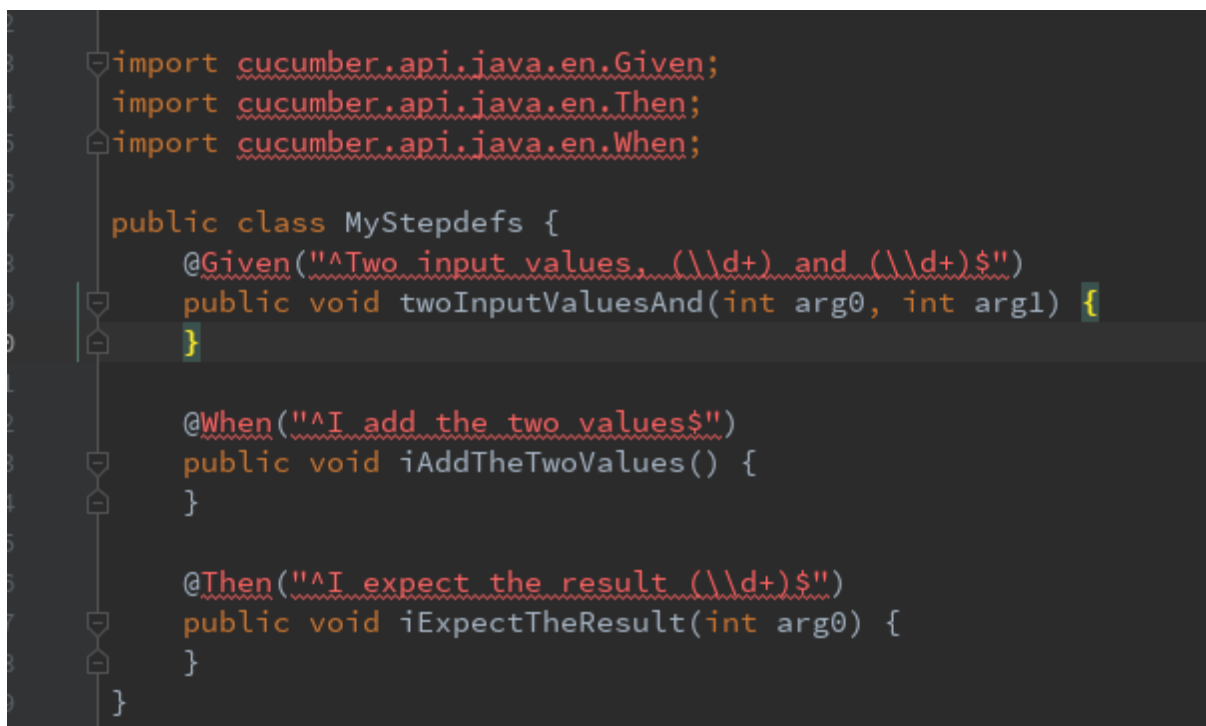
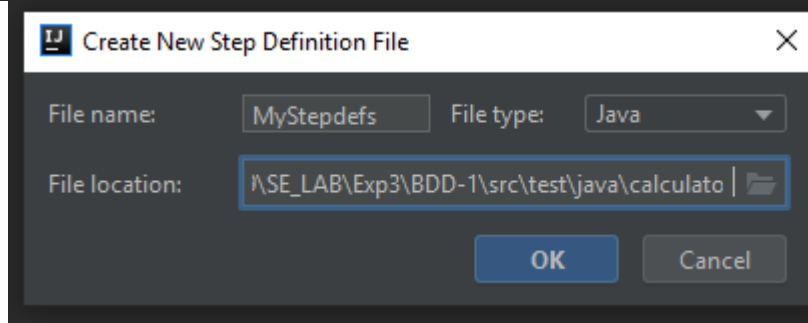
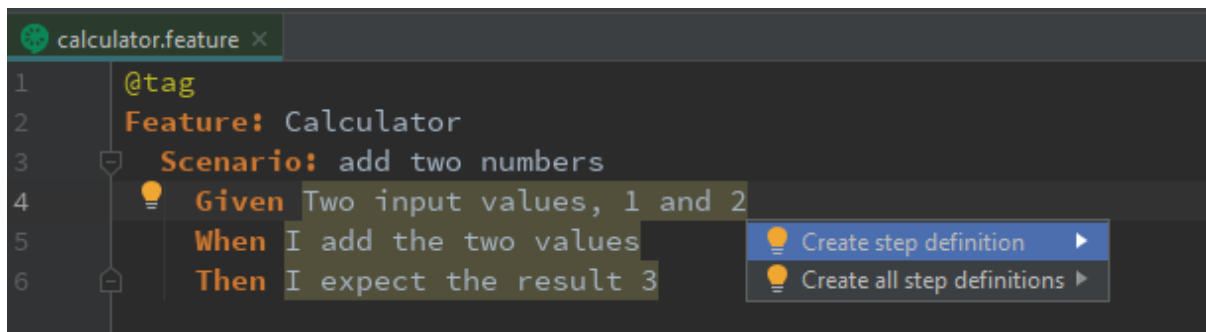
1. 6 – پوشه resources:



7.1 – پکیج calculator و پوشه features:



8.1 – نوشتن سناریوی جمع دو عدد در فایل calculator.feature:



بعد از اعمال تغییرات:

```
MyStepdefs.java x
1  import cucumber.api.java.Before;
2  import cucumber.api.java.en.Given;
3  import cucumber.api.java.en.Then;
4  import cucumber.api.java.en.When;
5  import org.junit.Assert;
6
7  public class MyStepdefs {
8      private Calculator calculator;
9      private int value1;
10     private int value2;
11     private int result;
12
13     @Before
14     public void before() {
15         calculator = new Calculator();
16     }
17
18     @Given("^Two input values, (\\d+) and (\\d+)$")
19     public void twoInputValuesAnd(int arg0, int arg1) {
20         value1 = arg0;
21         value2 = arg1;
22     }
23
24     @When("^I add the two values$")
25     public void iAddTheTwoValues() {
26         result = calculator.add(value1, value2);
27         System.out.print(result);
28     }
29 }
```

9.1 – با گزینه test -> meaven :

```
[INFO] -----
[INFO] BUILD FAILURE
[INFO] -----
[INFO] Total time: 5.774 s
[INFO] Finished at: 2022-11-17T21:25:56+03:30
[INFO] Final Memory: 9M/34M
[INFO] -----
[ERROR] Failed to execute goal org.apache.maven.plugins:maven-compiler-plugin:3.1:compile (default-compile) on project BDD:
[ERROR] Source option 5 is no longer supported. Use 6 or later.
[ERROR] Target option 1.5 is no longer supported. Use 1.6 or later.
[ERROR] -> [Help 1]
[ERROR]
[ERROR] To see the full stack trace of the errors, re-run Maven with the -e switch.
[ERROR] Re-run Maven using the -X switch to enable full debug logging.
[ERROR]
[ERROR] For more information about the errors and possible solutions, please read the following articles:
[ERROR] [Help 1] http://cwiki.apache.org/confluence/display/MAVEN/MojoFailureException
Process finished with exit code 1
```

افزودن نسخه بالاتر Meaven:

```
m BDD x
16      </dependency>
17      <dependency>
18          <groupId>junit</groupId>
19          <artifactId>junit</artifactId>
20          <version>4.12</version>
21          <scope>test</scope>
22      </dependency>
23      <dependency>
24          <groupId>info.cukes</groupId>
25          <artifactId>cucumber-java</artifactId>
26          <version>1.2.5</version>
27          <scope>test</scope>
28      </dependency>
29  </dependencies>
30
31  <properties>
32      <maven.compiler.source>1.8</maven.compiler.source>
33      <maven.compiler.target>1.8</maven.compiler.target>
34  </properties>
35
36
37  </project>
```

مجدداً test -> meven:

```
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ BDD ---
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 7.652 s
[INFO] Finished at: 2022-11-17T21:29:21+03:30
[INFO] Final Memory: 12M/44M
[INFO] -----
Process finished with exit code 0
```

10.1 – نتیجه اجرای سناریوی feature:

```
WARNING: All illegal access operations will be denied in a future release
3
1 Scenarios (1 passed)
3 Steps (3 passed)
0m2.591s

Process finished with exit code 0
```

11.1 – ایجاد کلاس RunnerTest.java:

```
RunnerTest.java x
1 package calculator;
2
3 import cucumber.api.junit.Cucumber;
4 import org.junit.runner.RunWith;
5
6 @RunWith(Cucumber.class)
7 public class RunnerTest {
8 }
```

خطا:

```
No features found at [classpath:calculator]
0 Scenarios
0 Steps
0m0.000s
```

12.1 – رفع خطا و نتیجه اجرا:

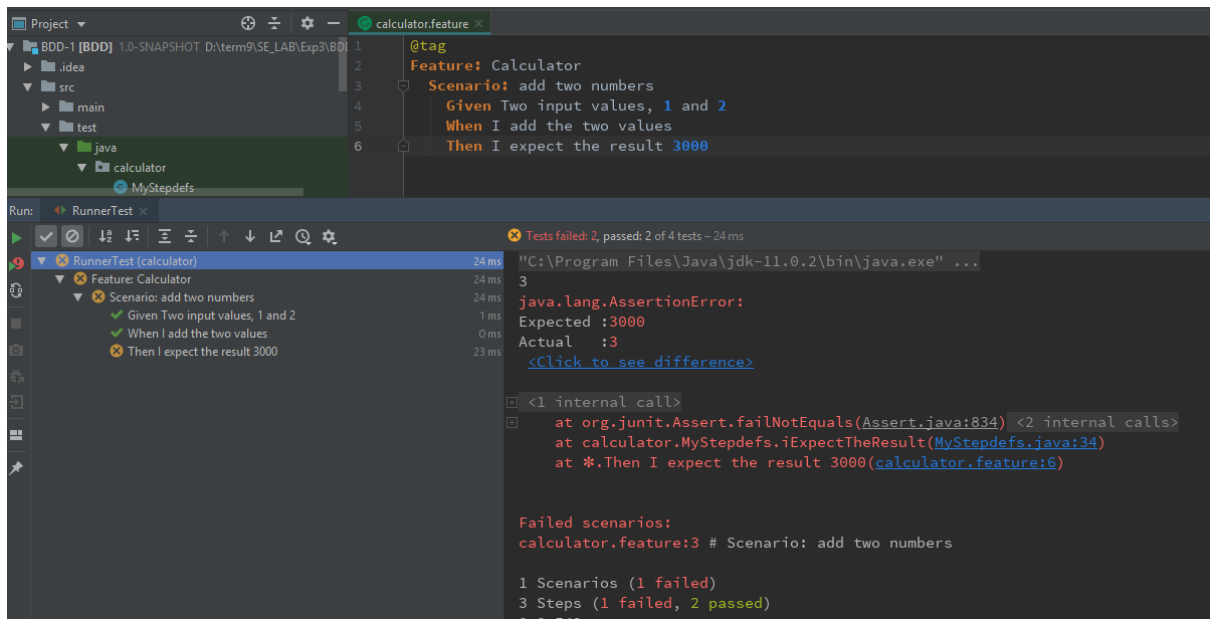
The screenshot shows an IDE with the following components:

- Project View:** Shows a project structure with folders for `src`, `main`, and `test`. Under `test`, there is a `java` folder containing `calculator`, `MyStepDefs`, and `RunnerTest`. There is also a `resources` folder containing a `features` folder.
- Code Editor:** Displays the `RunnerTest.java` file with the following code:

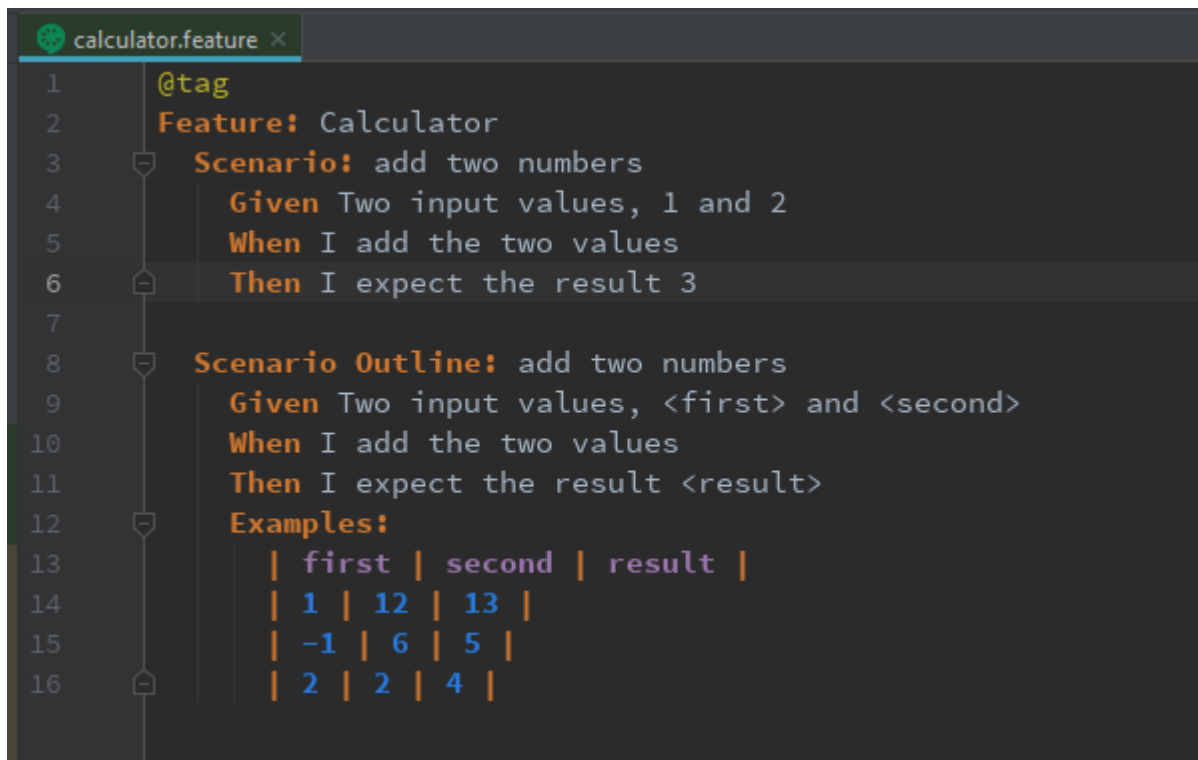
```
1 package calculator;
2
3 import cucumber.api.CucumberOptions;
4 import cucumber.api.junit.Cucumber;
5 import org.junit.runner.RunWith;
6
7 @CucumberOptions(features = "src/test/resources/features")
8 @RunWith(Cucumber.class)
9
10 public class RunnerTest {
11 }
```
- Run View:** Shows the execution results of the tests. It indicates that 3 tests passed in 2 ms. The details of the tests are as follows:

Test Name	Duration
RunnerTest (calculator)	2 ms
Feature: Calculator	2 ms
Scenario: add two numbers	2 ms
Given Two input values, 1 2 ms	
When I add the two value 0 ms	
Then I expect the result 3 0 ms	

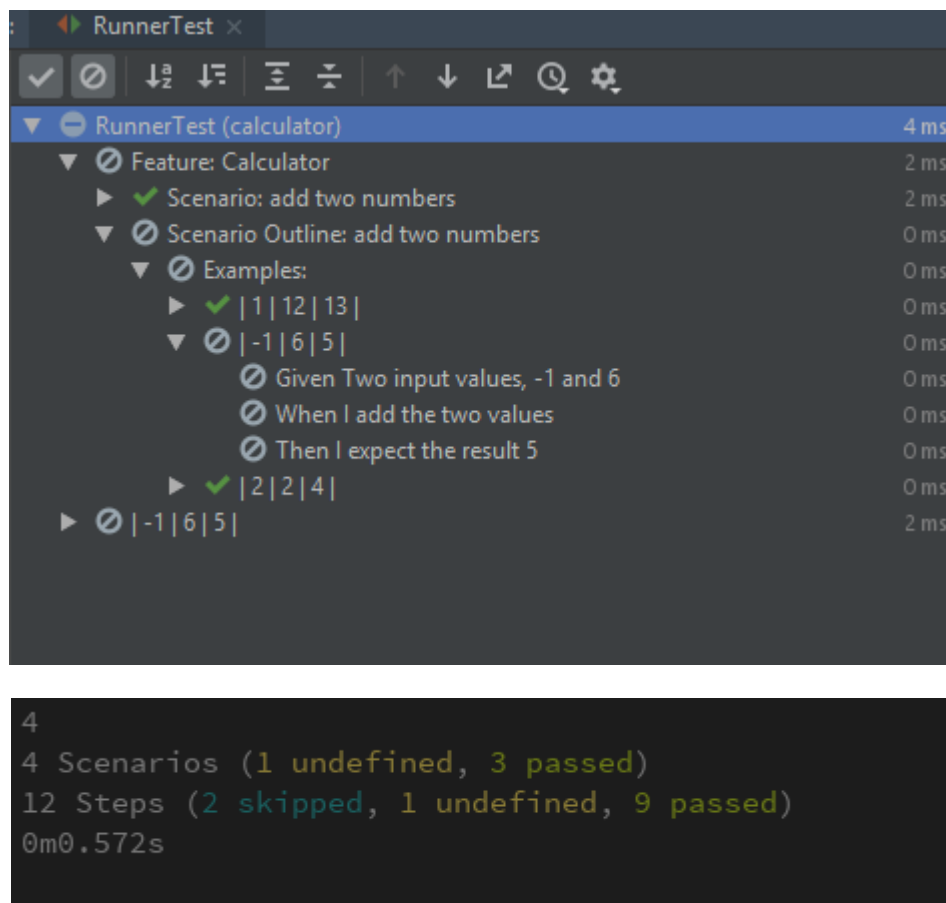
13.1 – تغییر فایل feature و نتیجه اجرای مجدد:



افزودن scenario outline:



نتیجه اجرای RunnerTest:



سوال 2:

- این موارد تست کدام اند؟
طبق تصویر بالا، تست دوم یعنی تست $5 + 1 = 6$ به مشکل undefined برمیخورد.
- علت بروز مشکل چیست؟
regex اعداد ورودی (+\d) است که به معنی چند عدد پشت سرهم است و علامت را در نظر نمیگیرد. یعنی اعداد صحیح منفی مثل 1- را شامل نمیشود. پس در تست دوم به undefined برمیخوریم.
- مشکل را با تغییر کد برطرف کنید.
رجکس ورودی را تغییر میدهم که هم اعداد منفی هم مثبت را قبول کند. داریم:

```
import org.junit.Assert;

public class MyStepdefs {
    private Calculator calculator;
    private int value1;
    private int value2;
    private int result;

    @Before
    public void before() { calculator = new Calculator(); }

    @Given("^Two input values, (\\d+ | -\\d+) and (\\d+ | -\\d+)$")
    public void twoInputValuesAnd(int arg0, int arg1) {
        value1 = arg0;
        value2 = arg1;
    }

    @When("^I add the two values$")
    public void iAddTheTwoValues() {
        result = calculator.add(value1, value2);
        System.out.print(result);
    }

    @Then("^I expect the result (\\d+ | -\\d+)$")
    public void iExpectTheResult(int arg0) { Assert.assertEquals(arg0, result); }
}
```

هر سه تست به درستی اجرا شدند.

سوال 3:

مشابه موارد example.com را برای این سوال نیز پیش میبریم. داریم:

نتیجه اجرای meaven->test:

```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 18.843 s
[INFO] Finished at: 2022-11-22T22:47:33+03:30
[INFO] Final Memory: 11M/44M
[INFO] -----

Process finished with exit code 0
|
```

رجکس ورودی مثل بخش قبل متناسب با اعداد صحیح مثبت یا منفی و رجکس خروجی متناسب اعداد اعشاری میباشد. رجکس خروجی را در تصویر زیر مشاهده میکنید.

```
@Then("I expect the result ([-?[1-9]\\d*|0).*\\d*)$")
public void iExpectTheResult(Double arg0) {
    Assert.assertEquals(arg0, result, delta: 0.001);
}
```

سناریوها:

calculator.feature ×

```
1  @tag
2  Feature: Calculator
3
4  Scenario: sqrt of division of two numbers
5      Given Two input values, 75 and 3
6      When I calculate sqrt of the division of the a by the b
7      Then I expect the result 5
8
9  Scenario Outline: sqrt of division of two numbers
10     Given Two input values, <first> and <second>
11     When I calculate sqrt of the division of the a by the b
12     Then I expect the result <result>
13     Examples:
14     | first | second | result |
15     | 4      | 1      | 2      |
16     | 36     | 4      | 3      |
17     | 0      | 1      | 0      |
18     | 0      | 0      | -1     |
19     | 75     | 3      | 5      |
20     | -25    | -1     | 5      |
21     | -162   | -2     | 9      |
22
```

first	second	result
4	1	2
36	4	3
0	1	0
0	0	-1
75	3	5
-25	-1	5
-162	-2	9

نتیجه اجرای مجدد و نهایی :meaven->test

```
BDD3 [test] x

8 Scenarios (8 passed)
24 Steps (24 passed)
0m1.042s

Tests run: 32, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 3.489 sec

Results :

Tests run: 32, Failures: 0, Errors: 0, Skipped: 0

[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 17.481 s
[INFO] Finished at: 2022-11-23T01:42:45+03:30
[INFO] Final Memory: 11M/44M
[INFO] -----

Process finished with exit code 0
```

نتیجه اجرای RunnerTest

Run: RunnerTest x

RunnerTest (calculator) 2 ms

- Feature: Calculator 2 ms
 - Scenario: sqrt of division of two numbers 1 ms
 - Scenario Outline: sqrt of division of two numbers 1 ms
 - Examples: 1 ms
 - | 4 | 1 | 2 | 0 ms
 - | 36 | 4 | 3 | 0 ms
 - | 0 | 1 | 0 | 1 ms
 - | 0 | 0 | -1 | 0 ms
 - | 75 | 3 | 5 | 0 ms
 - | -25 | -1 | 5 | 0 ms
 - | -162 | -2 | 9 | 0 ms
 - Given Two input values, -162 and -2 0 ms
 - When I calculate sqrt of the division of the a by the b 0 ms
 - Then I expect the result 9 0 ms