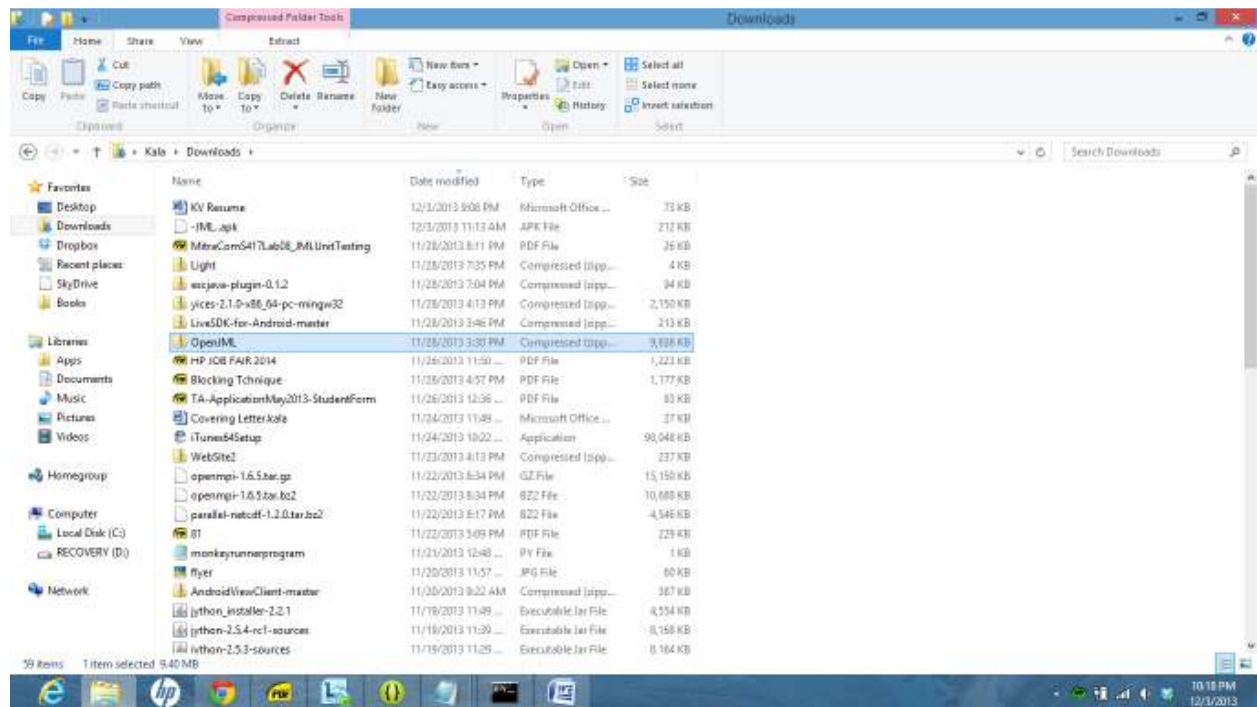
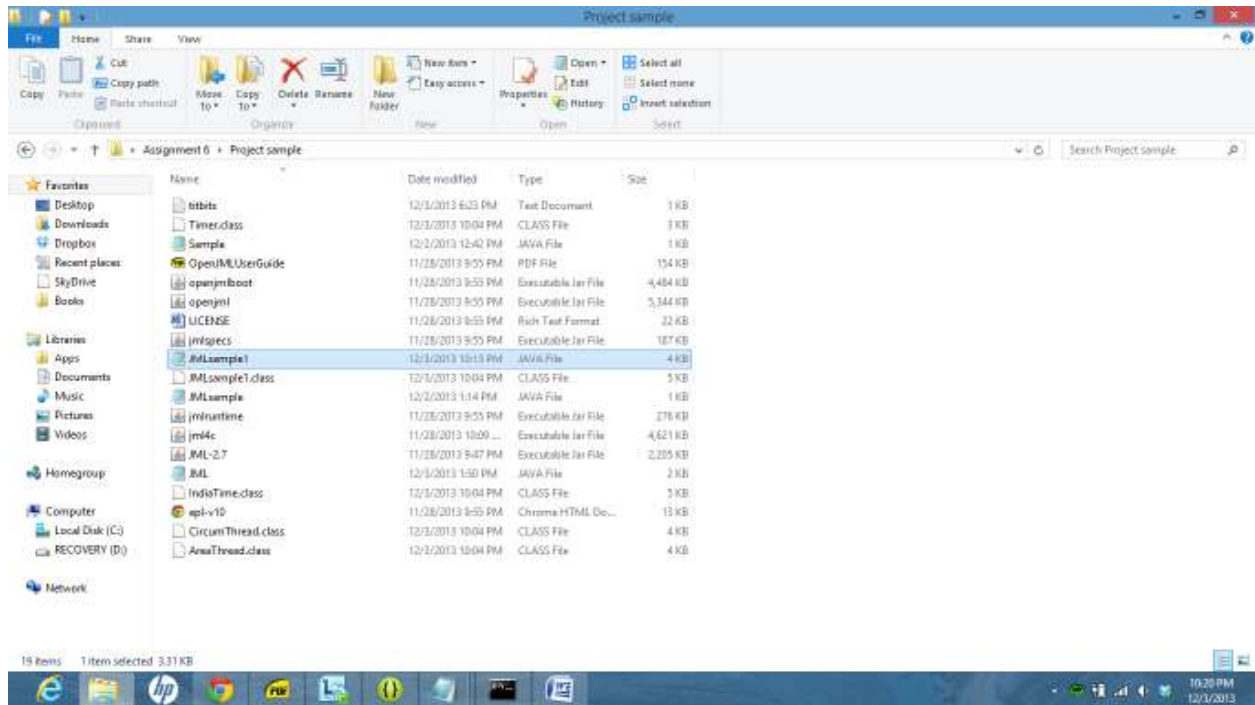


Steps to run JML for Multi-threaded Java application

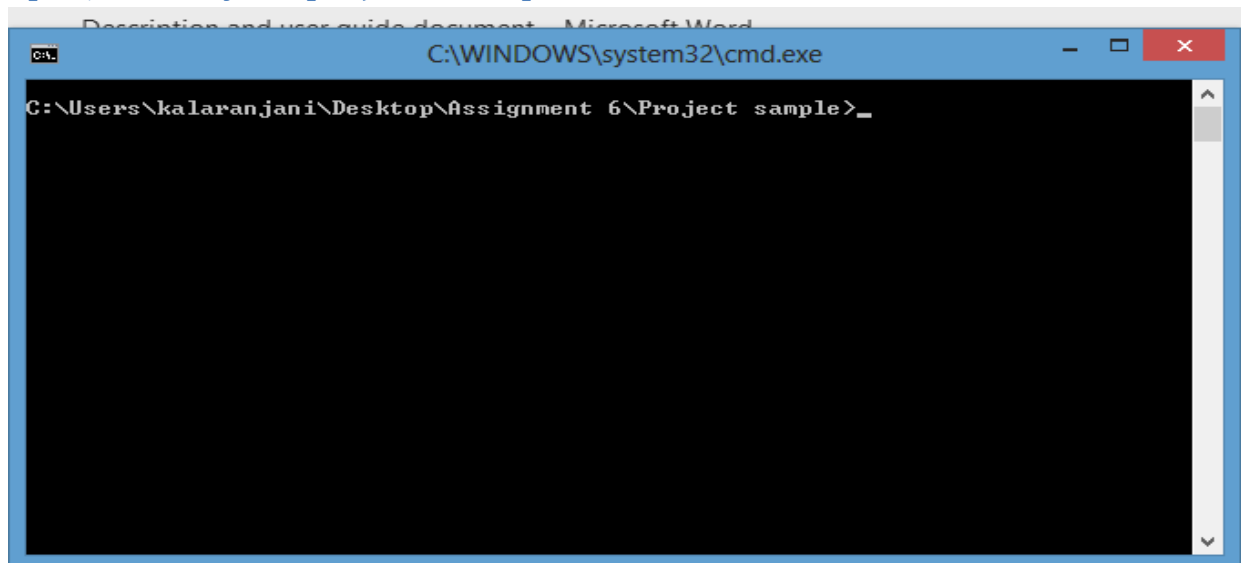
Step 1 : Download the OpenJML.zip from <http://openjml.org/> and extract them in the local path.



Step 2: Write a Java code of your application and place them in the same folder where the OpenJML is extracted.



Step 3 : Open the command prompt and traverse to the path where the OpenJML and your project file is placed.

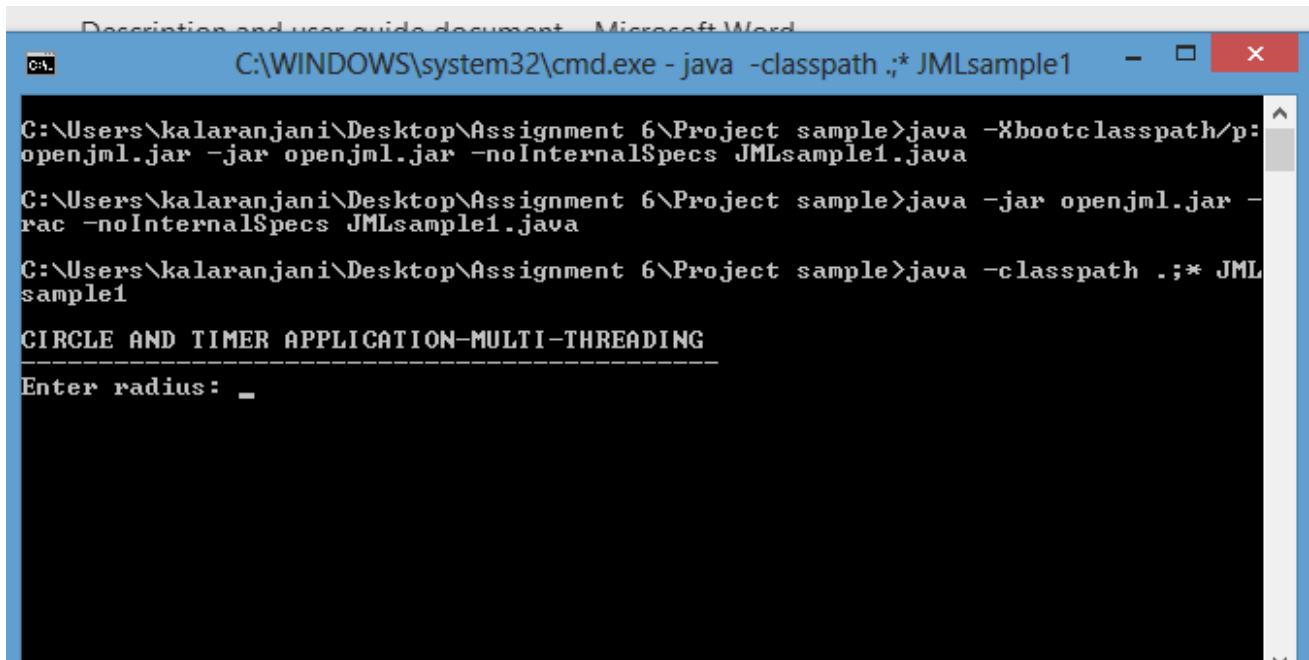


Step 4 : Execute the below commands for the JML test results.

```
java -Xbootclasspath/p:openjml.jar -jar openjml.jar -noInternalSpecs <<JMLsample1.java>>
```

```
java -jar openjml.jar -rac -noInternalSpecs <<JMLsample1.java>>
```

```
java -classpath .;* <<JMLsample1>>
```



```
C:\WINDOWS\system32\cmd.exe - java -classpath .;* JMLsample1

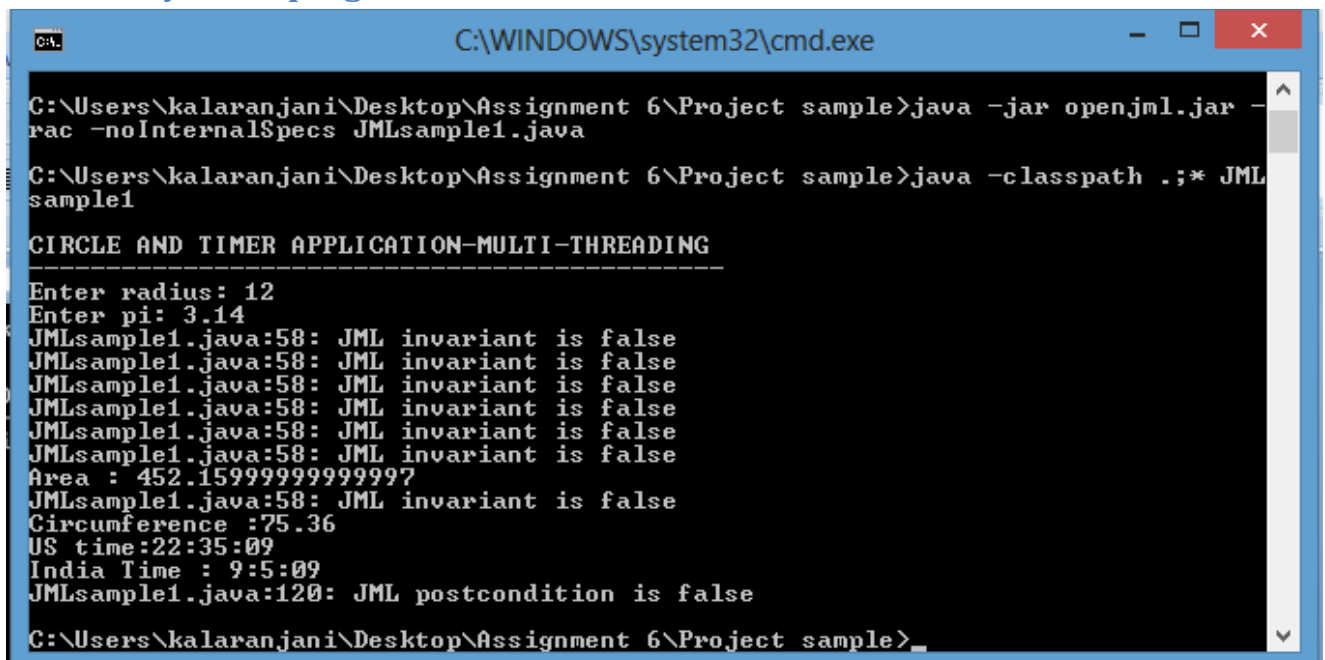
C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>java -Xbootclasspath/p:
openjml.jar -jar openjml.jar -noInternalSpecs JMLsample1.java

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>java -jar openjml.jar -
rac -noInternalSpecs JMLsample1.java

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>java -classpath .;* JML
sample1

CIRCLE AND TIMER APPLICATION-MULTI-THREADING
-----
Enter radius: _
```

Step 5 : Use various test inputs to verify the JML test scripts and thereby to test the validity of the program.



```
C:\WINDOWS\system32\cmd.exe

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>java -jar openjml.jar -
rac -noInternalSpecs JMLsample1.java

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>java -classpath .;* JML
sample1

CIRCLE AND TIMER APPLICATION-MULTI-THREADING
-----
Enter radius: 12
Enter pi: 3.14
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
Area : 452.15999999999997
JMLsample1.java:58: JML invariant is false
Circumference :75.36
US time:22:35:09
India Time : 9:5:09
JMLsample1.java:120: JML postcondition is false

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>_
```

```
sample1
CIRCLE AND TIMER APPLICATION-MULTI-THREADING
-----
Enter radius: -12
Enter pi: 3
JMLsample1.java:44: JML postcondition is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
Area : 432.0
JMLsample1.java:58: JML invariant is false
JMLsample1.java:70: JML postcondition is false
JMLsample1.java:82: JML precondition is false
JMLsample1.java:82: JML precondition is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
Circumference :-72.0
JMLsample1.java:85: JML invariant is false
JMLsample1.java:11: JML postcondition is false
```

```
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
JMLsample1.java:58: JML invariant is false
Area : 432.0
JMLsample1.java:58: JML invariant is false
JMLsample1.java:70: JML postcondition is false
JMLsample1.java:82: JML precondition is false
JMLsample1.java:82: JML precondition is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
JMLsample1.java:85: JML invariant is false
Circumference :-72.0
JMLsample1.java:85: JML invariant is false
JMLsample1.java:11: JML postcondition is false
US time:22:39:18
India Time : 9:9:18
JMLsample1.java:120: JML postcondition is false

C:\Users\kalaranjani\Desktop\Assignment 6\Project sample>
```