

## Features Implementation

I have written MyGraph.java file in which I have implemented the features:

- Feature 1:
  1. `parseGraph(string filepath)` : Creates the Graph empty object and use DOTImporter to update graph with dot file.
  2. `toString()` : It will generate the output of the graph as number of nodes, label of the node, number of edges, and source -> target edges for all the edges.
  3. `outputGraph(String filepath)` : It will write the string information generated by `toString`, into the output.txt file.
- Feature 2:
  1. `addNode(String label)` : add the label into the graph and return boolean value as true if node is added into the graph and return true if node not found, else return false.
  2. `addNodes(String [] label)` : add the labels into the graph if not found else do nothing
- Feature 3:
  1. `addEdge(String srcLabel, String dstLabel)` : add the edges between srcLabel to dstLabel if not exists, else return false in case if edge exists
- Feature 4:
  1. `outputDOTGraph(String path)` : Calls the DOTExporter to export the graph into dot file.
  2. `outputGraphics(String path, String format)` : Call the graphviz utility to generate the output graphic file

I have written MyGraphTest.java file in which I have implemented 8 unit tests:

1. **testFeature1Parse** : parse the input.dot file and compare the output.txt file with expected1.txt file content.
2. **testAddNodeNegativeCase** : parse the input.dot file and try to add node a and it should return false.
3. **testAddNodePositiveCase** : parse the input.dot file and try to add node i and it should return true.
4. **testAddNodes** : parse the input.dot file and try to add nodes {l,j,k } checks the expected2.txt file content
5. **testAddEdgeNegativeCase** : parse the input.dot file and try to add edge c -> d and it should return false.
6. **testAddEdgePositiveCase** : parse the input.dot file and try to add edge c -> e and it should return true.
7. **testOutputDotGraph** : parse the input.dot file and try to write the graph to dot file and read the dot file again and compare that the previous graph string content should match with generated dotgraph string content.
8. **testOutputGraphics**: parse the input.dot file and try to write dot executable by ProcessBuilder and run the code and checks if file is generated and not null.

```
➔ Project1 git:(main) x mvn clean
[INFO] Scanning for projects...
[INFO] -----< asu-cse-464:CSE-464-Project1 >-----
[INFO] Building CSE-464-Project1 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO] --- clean:3.2.0:clean (default-clean) @ CSE-464-Project1 ---
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.162 s
[INFO] Finished at: 2025-03-03T20:05:12-07:00
[INFO] -----
➔ Project1 git:(main) x
```

```
➔ Project1 git:(main) x find .
.
./output2.txt
./output1.txt
./DS_Store
./expected1.txt
./pom.xml
./expected2.txt
./input.dot
./.gitignore
./output.png
./output.dot
./.idea
./.idea/encodings.xml
./.idea/jarRepositories.xml
./.idea/vcs.xml
./.idea/.gitignore
./.idea/workspace.xml
./.idea/misc.xml
./.idea/compiler.xml
./src
./src/test
./src/test/java
./src/test/java/MyGraphTest.java
./src/main
./src/main/java
./src/main/java/MyGraph.java
➔ Project1 git:(main) x
```

```
➔ Project1 git:(main) x mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< asu-cse-464:CSE-464-Project1 >-----
[INFO] Building CSE-464-Project1 1.0-SNAPSHOT
[INFO]   from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.3.0:resources (default-resources) @ CSE-464-Project1 ---
[INFO] skip non existing resourceDirectory /Users/sanjayk/Dropbox/Work/Current/Sunanda/CSE464/GitHub/CSE-464-2025-stumma10/Project1/src/main/resources
[INFO]
[INFO] --- compiler:3.10.1:compile (default-compile) @ CSE-464-Project1 ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /Users/sanjayk/Dropbox/Work/Current/Sunanda/CSE464/GitHub/CSE-464-2025-stumma10/Project1/target/classes
[INFO]
[INFO] --- resources:3.3.0:testResources (default-testResources) @ CSE-464-Project1 ---
[INFO] skip non existing resourceDirectory /Users/sanjayk/Dropbox/Work/Current/Sunanda/CSE464/GitHub/CSE-464-2025-stumma10/Project1/src/test/resources
[INFO]
[INFO] --- compiler:3.10.1:testCompile (default-testCompile) @ CSE-464-Project1 ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /Users/sanjayk/Dropbox/Work/Current/Sunanda/CSE464/GitHub/CSE-464-2025-stumma10/Project1/target/test-classes
[INFO]
[INFO] --- surefire:2.22.2:test (default-test) @ CSE-464-Project1 ---
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running MyGraphTest
[INFO] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.113 s - in MyGraphTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- jar:3.3.0:jar (default-jar) @ CSE-464-Project1 ---
[INFO] Building jar: /Users/sanjayk/Dropbox/Work/Current/Sunanda/CSE464/GitHub/CSE-464-2025-stumma10/Project1/target/CSE-464-Project1-1.0-SNAPSHOT.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 2.037 s
[INFO] Finished at: 2025-03-03T20:05:27-07:00
[INFO] -----
➔ Project1 git:(main) x
```