Github Repository: [EbenTowne/CSE464-EbenTowne (github.com)](github.com)
Shared with the following TAs and Graders:
- TA Liangyi Huang: liangyigrade/mehuangliang+grade@gmail.com
- Grader Kavya Chandrika Vempalli: kavyachandrikavempalli
- Grader Adwaith Chittavally Dugge Gowda: adwaithcd

Project outline states the professor should be invited as a collaborator, but there is no profile for the professor to add to the lost of Github collaborators

How to run my code:
- Download the zip file, either from Canvas or Github.
- Navigate to the repository folder on terminal (via "cd CSE464-EbenTowne-master" command).
- Run "mvn package" to compile and run the unit tests for the code.
    - Can also run "mvn test" to run unit tests.
- **Expected Output:**

```
Edge "1->g" has been added
[INFO] Tests run: 7, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.155 s -- in GraphTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 7, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] ------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------
[INFO] Total time:  1.580 s
[INFO] Finished at: 2024-10-09T11:03:24-07:00
[INFO] ------------------------------------------------------------
ebentowne@CSE340:~/CSE464-EbenTowne-master$ S
```

When running "mvn package" or "mvn test", each unit test will run and will print out the status/output of each unit test's execution. The printed information will print before the expected output listed above.

parseGraph(String filepath):

```
Graph initialized
Graph has been successfully parsed
```

toString():

```
Graph initialized
Graph has been successfully parsed
Node List:
a
b
c
d
e

Edge List:
a -> b
a -> c
b -> d
c -> d
c -> e
e -> a
a -> d
Total edge count: 7
```

outputGraph():

```
Graph initialized
Graph has been successfully parsed
Node List:
a
b
c
d
e

Edge List:
a -> b
a -> c
b -> d
c -> d
c -> e
e -> a
a -> d
Total edge count: 7
Output successfully written to output.txt
```

addNode(String label) and addNodes(String[] labels):

```
Graph initialized
Graph has been successfully parsed
Node added: v
Node added: x
Node added: y
Node added: z
List of nodes have been added successfully
```

addEdge(String srcLabel, String dstLabel):

addNode is also tested in the addEdge unit test when either the source node and/or the destination node are not present in the list of nodes

```
Graph initialized
Graph has been successfully parsed
Source node 'b' has been added
Destination node 'c' has been added
Edge 'b->c' has been added
Node added: f
Source node 'f' has been added
Node added: g
Destination node 'g' has been added
Edge 'f->g' has been added
[INFO] Tests run: 7  Failures: 0  Error
```

outputDOTGraph(String path):

```
Graph initialized
Graph has been successfully parsed
DOT Graph has been created and written to output.dot
```

outputGraphics(String path, String format):

Only supports .png files

```
Graph initialized
Graph has been successfully parsed
DOT Graph Image has been successfully created and written to output.png
```

removeNode(String label):

```
Graph initialized
Graph has been successfully parsed
Node added: z
Removing node z
Attempting to remove node that does not exist:
Node t does not exist
```

removeNodes(String[] label):

```
Graph initialized
Graph has been successfully parsed
Adding nodes x, y, and z
Node added: x
Node added: y
Node added: z
List of nodes have been added successfully
Removing nodes x, y, and z
Removing node x
Removing node y
Removing node z
Adding nodes x, y, and z
Node added: x
Node added: y
Node added: z
List of nodes have been added successfully
Removing nodes u, w, x, y, and z
Node does not exist
```

removeEdge(String srcLabel, String dstLabel):

```
Graph initialized
Graph has been successfully parsed
Removing edge a->d
Attempting to remove an edge that does not exist:
Edge t->u does not exist
```

Path GraphSearch(Node src, Node dst, Algorithm algo):

```
Graph initialized
Graph has been successfully parsed
Path Found (BFS): a->c->f
Path Found (DFS): a->d->g->h->f
Node added: z
Source node 'z' has been added
Destination node 'a' has been added
Edge 'z->a' has been added
Path was not found between d and a using BFS
Path was not found between d and a using DFS

Process finished with exit code 0
```

List of merges made to master (main branch):
- https://github.com/EbenTowne/CSE464-EbenTowne/pull/3 (merging dfs to master)
- https://github.com/EbenTowne/CSE464-EbenTowne/pull/1 (merging bfs to master)

Image and link showing successful continuous integration:
- https://github.com/EbenTowne/CSE464-EbenTowne/actions/runs/11486773719/job/32249719188