

GitHub link: <https://github.com/hnguy130/CSE-464-2025-hnguy130>

Compilation with mvn package:

```
CSE464_GraphManager -- 2511 - 144x41

Last login: Mon Mar  3 07:36:53 on ttys000
hodangkhoanguyen@MacBook-Pro-cua-Ho-8 ~ % cd "/Users/hodangkhoanguyen/Documents/ASU/junior/CSE 464/CSE-464-2025-hnguy130/CSE464_GraphManager"
hodangkhoanguyen@MacBook-Pro-cua-Ho-8 CSE464_GraphManager % mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< edu.asu:CSE464_GraphManager >-----
[INFO] Building CSE 464 Course Project 0.0.1-SNAPSHOT
[INFO]   from pom.xml
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- resources:3.3.1:resources (default-resources) @ CSE464_GraphManager ---
[INFO] Copying 0 resource from src/main/resources to target/classes
[INFO]
[INFO] --- compiler:3.11.0:compile (default-compile) @ CSE464_GraphManager ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- resources:3.3.1:testResources (default-testResources) @ CSE464_GraphManager ---
[INFO] Copying 0 resource from src/test/resources to target/test-classes
[INFO]
[INFO] --- compiler:3.11.0:testCompile (default-testCompile) @ CSE464_GraphManager ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- surefire:3.2.5:test (default-test) @ CSE464_GraphManager ---
[INFO] Using auto detected provider org.apache.maven.surefire.junit4.JUnit4Provider
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running GrapherTest
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.

-----
feature1 test
-----

Graph file to be parsed with: test.txt
Graph information written to: output1.txt
```

```
CSE464_GraphManager -- 2511 - 144x41

-----
feature2 test
-----

Graph file to be parsed with: test.txt
Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
Graph information written to: output2.txt

-----
feature3 test
-----

Graph file to be parsed with: test.txt
a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph
Node x doesn't exist in graph, adding node x
Node y as destination node doesn't exist in graph, adding node y
x -> y has been added to graph
Graph information written to: output3.txt
```

```
● ○ ● CSE464_GraphManager -- zsh -- 144x61

-----
feature4_DOT test
-----

Graph file to be parsed with: test.txt
Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph
Node x doesn't exist in graph, adding node x
x -> y has been added to graph
Graph in DOT format written to output4.txt

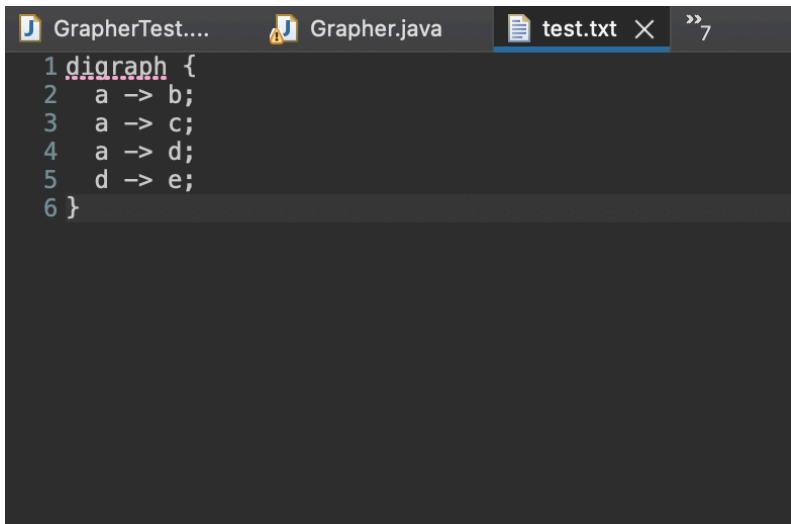
-----
feature4_PNG test
-----

Graph file to be parsed with: test.txt
Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph
Node x doesn't exist in graph, adding node x
x -> y has been added to graph
PNG generated at : output.png
[INFO] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.640 s -- in GrapherTest
```

```
● ○ ● CSE464_GraphManager -- zsh -- 117x17

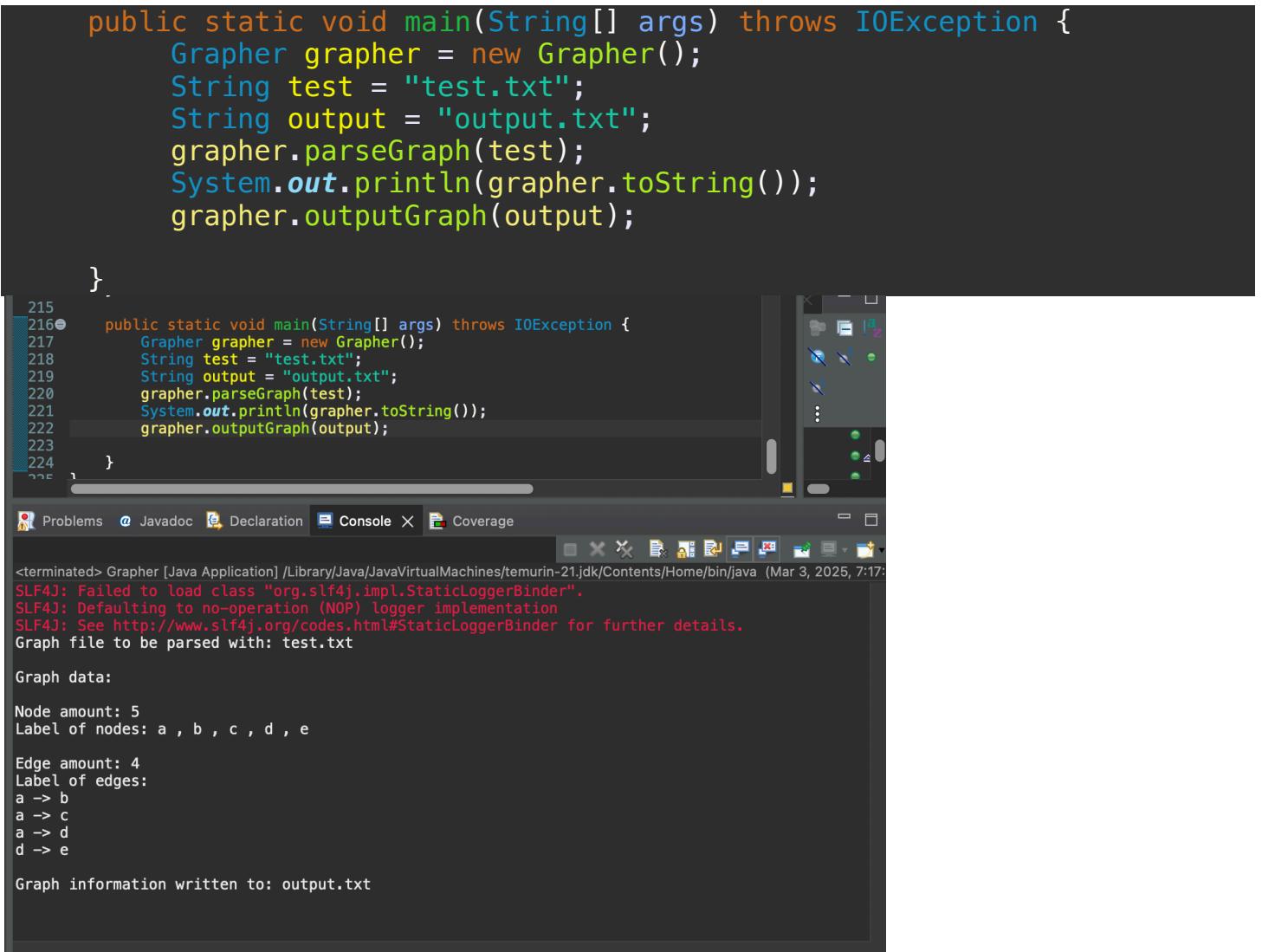
PNG generated at : output.png
[INFO] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.669 s -- in GrapherTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ CSE464_GraphManager ---
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.913 s
[INFO] Finished at: 2025-03-03T19:45:05-07:00
[INFO] -----
```

Test dot graph



```
GrapherTest.... Grapher.java test.txt »7
1 digraph {
2   a -> b;
3   a -> c;
4   a -> d;
5   d -> e;
6 }
```

feature 1 and compiling commands for copy paste:



```
public static void main(String[] args) throws IOException {
    Grapher grapher = new Grapher();
    String test = "test.txt";
    String output = "output.txt";
    grapher.parseGraph(test);
    System.out.println(grapher.toString());
    grapher.outputGraph(output);

}

215  public static void main(String[] args) throws IOException {
216    Grapher grapher = new Grapher();
217    String test = "test.txt";
218    String output = "output.txt";
219    grapher.parseGraph(test);
220    System.out.println(grapher.toString());
221    grapher.outputGraph(output);
222
223
224 }
```

Problems Javadoc Declaration Console Coverage

```
<terminated> Grapher [Java Application] /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java (Mar 3, 2025, 7:17:54 AM)
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Graph file to be parsed with: test.txt

Graph data:

Node amount: 5
Label of nodes: a , b , c , d , e

Edge amount: 4
Label of edges:
a -> b
a -> c
a -> d
d -> e

Graph information written to: output.txt
```

feature 2 and compiling commands for copy paste:

```
public static void main(String[] args) throws IOException {
    Grapher grapher = new Grapher();
    String test = "test.txt";
    String output = "output.txt";
    grapher.parseGraph(test);
    grapher.addNode("a");
    grapher.addNode("b");
    grapher.addNode("m");
    String[] nodes = {"a", "z", "y"};
    grapher.addNodes(nodes);
    System.out.println(grapher.toString());
    grapher.outputGraph(output);

}
```

The screenshot shows a Java application running in an IDE. The code in the editor is identical to the one above, with line numbers 215 through 230 visible. The console tab is active, displaying the following output:

```
215
216 public static void main(String[] args) throws IOException {
217     Grapher grapher = new Grapher();
218     String test = "test.txt";
219     String output = "output.txt";
220     grapher.parseGraph(test);
221     grapher.addNode("a");
222     grapher.addNode("b");
223     grapher.addNode("m");
224     String[] nodes = {"a", "z", "y"};
225     grapher.addNodes(nodes);
226     System.out.println(grapher.toString());
227     grapher.outputGraph(output);
228
229 }
230 }

Problems Javadoc Declaration Console Coverage <terminated> Grapher [Java Application] /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java (Mar 3, 2025, 7 SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder". SLF4J: Defaulting to no-operation (NOP) logger implementation SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Graph file to be parsed with: test.txt

Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
Graph data:
Node amount: 8
Label of nodes: a , b , c , d , e , m , y , z

Edge amount: 4
Label of edges:
a -> b
a -> c
a -> d
d -> e

Graph information written to: output.txt
```

feature 3 and compiling commands for copy paste:

```
public static void main(String[] args) throws IOException {
    Grapher grapher = new Grapher();
    String test = "test.txt";
    String output = "output.txt";
    grapher.parseGraph(test);
    grapher.addEdge("a", "b");
    grapher.addEdge("d", "e");
    grapher.addEdge("d", "f");
    grapher.addEdge("x", "y");
    System.out.println(grapher.toString());
    grapher.outputGraph(output);

}
```

The screenshot shows an IDE interface with a code editor and a terminal window.

Code Editor (Left):

```
215
216 public static void main(String[] args) throws IOException {
217     Grapher grapher = new Grapher();
218     String test = "test.txt";
219     String output = "output.txt";
220     grapher.parseGraph(test);
221     grapher.addEdge("a", "b");
222     grapher.addEdge("d", "e");
223     grapher.addEdge("d", "f");
224     grapher.addEdge("x", "y");
225     System.out.println(grapher.toString());
226     grapher.outputGraph(output);
227
228 }
229 }
```

Terminal Output (Right):

```
<terminated> Grapher [Java Application] /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java (Mar 3, 2025, 7:22:55 PM)
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Graph file to be parsed with: test.txt

a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph

Node x doesn't exist in graph, adding node x
Node y as destination node doesn't exist in graph, adding node y
x -> y has been added to graph

Graph data:

Node amount: 8
Label of nodes: a , b , c , d , e , f , x , y

Edge amount: 6
Label of edges:
a -> b
a -> c
a -> d
d -> e
d -> f
x -> y

Graph information written to: output.txt
```

feature 4_DOT and compiling commands for copy paste:

```
public static void main(String[] args) throws IOException {
    Grapher grapher = new Grapher();
    String test = "test.txt";
    String output = "output.png";
    grapher.parseGraph(test);
    grapher.addNode("a");
    grapher.addNode("b");
    grapher.addNode("m");
    String[] nodes = {"a", "z", "y"};
    grapher.addNodes(nodes);

    grapher.addEdge("a", "b");
    grapher.addEdge("d", "e");
    grapher.addEdge("d", "f");
    grapher.addEdge("x", "y");

    grapher.outputDOTGraph(output);
}
```

The screenshot shows an IDE interface with a code editor and a terminal window.

Code Editor Content:

```
216 public static void main(String[] args) throws IOException {
217     Grapher grapher = new Grapher();
218     String test = "test.txt";
219     String output = "output.txt";
220     grapher.parseGraph(test);
221     grapher.addNode("a");
222     grapher.addNode("b");
223     grapher.addNode("m");
224     String[] nodes = {"a", "z", "y"};
225     grapher.addNodes(nodes);
226
227     grapher.addEdge("a", "b");
228     grapher.addEdge("d", "e");
229     grapher.addEdge("d", "f");
230     grapher.addEdge("x", "y");
231
232     grapher.outputDOTGraph(output);
233 }
234 }
```

Terminal Output:

```
<terminated> Grapher [Java Application] /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java (Mar 3, 2025, 7:2
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
Graph file to be parsed with: test.txt

Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph
Node x doesn't exist in graph, adding node x
x -> y has been added to graph

Graph in DOT format written to output.txt
```

```
1 digraph {
2   a -> b;
3   a -> c;
4   a -> d;
5   d -> e;
6   d -> f;
7   m;
8   x -> y;
9   z;
10 }
```

Problems Javadoc Declaration Console Coverage

<terminated> Grapher [Java Application] /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java (Mar 3, 2025, 7:22)
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See <http://www.slf4j.org/codes.html#StaticLoggerBinder> for further details.
Graph file to be parsed with: test.txt

Duplicate node a
Duplicate node b
Node m has been added to graph
Duplicate node a
Node z has been added to graph
Node y has been added to graph
a -> b already exists
d -> e already exists
Node f as destination node doesn't exist in graph, adding node f
d -> f has been added to graph
Node x doesn't exist in graph, adding node x
x -> y has been added to graph
Graph in DOT format written to output.txt

feature 4_PNG and compiling commands for copy paste:

```
public static void main(String[] args) throws IOException {
    Grapher grapher = new Grapher();
    String test = "test.txt";
    String output = "output.png";
    grapher.parseGraph(test);
    grapher.addNode("a");
    grapher.addNode("b");
    grapher.addNode("m");
    String[] nodes = {"a", "z", "y"};
    grapher.addNodes(nodes);

    grapher.addEdge("a", "b");
    grapher.addEdge("d", "e");
    grapher.addEdge("d", "f");
    grapher.addEdge("x", "y");

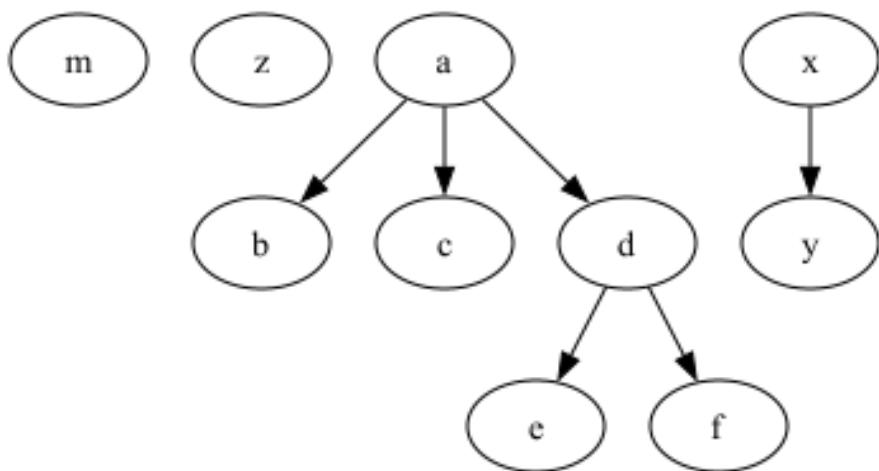
    grapher.outputGraphics(output);
}
```



```
214
215
216 public static void main(String[] args) throws IOException {
217     Grapher grapher = new Grapher();
218     String test = "test.txt";
219     String output = "output.png";
220     grapher.parseGraph(test);
221     grapher.addNode("a");
222     grapher.addNode("b");
223     grapher.addNode("m");
224     String[] nodes = {"a", "z", "y"};
225     grapher.addNodes(nodes);

226     grapher.addEdge("a", "b");
227     grapher.addEdge("d", "e");
228     grapher.addEdge("d", "f");
229     grapher.addEdge("x", "y");

230     grapher.outputGraphics(output);
231
232
233
234 }
```



```
output.txt X GrapherTest...
1 digraph {
2   a -> b;
3   a -> c;
4   a -> d;
5   d -> e;
6   d -> f;
7   m;
8   x -> y;
9   z;|
10 }
```