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In this homework, I implemented Dijkstra's algorithm for finding shortest path in graph. Due to lack of comparison (because only Dijkstra's was implemented), there is no time-complexity graph.

If we need to talk about Dijkstra's algorithm. Its complexity is (number of vertices)^2. However, unlike my implementation, This algorithm can be implemented using priority queue and its complexity is (number of vertices) + (number of edges) * log(number of vertices). Dijkstra's algorithm does not need target node as a input to work properly. It can not handle negative edges.

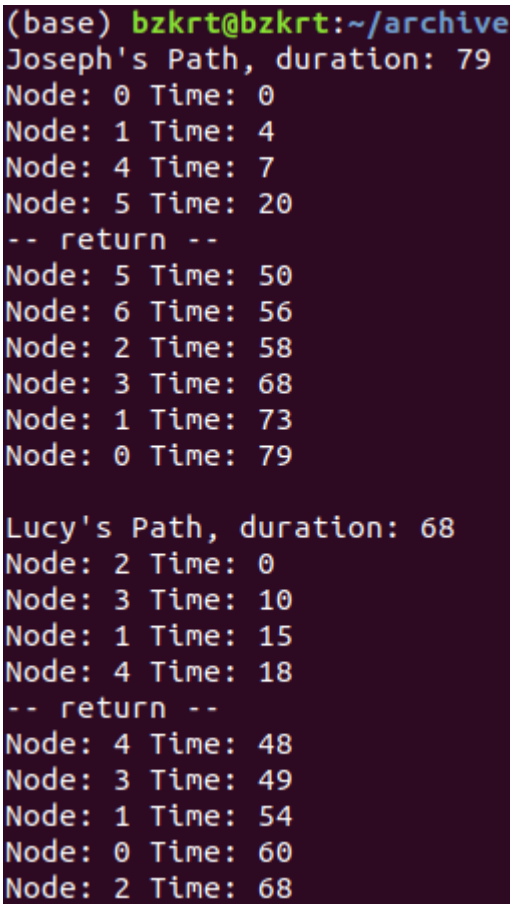
In my implementation, there is 3 library that i coded which are graph.h, Path_Finder.h, utils.h.

-graph.h contains methods to create graph from input txt and holds information about graph.

-Path_Finder.h is where Dijkstra's algorithm is. It basically do everything about finding path according to input start and end points.

-utils.h includes necessary functions and class to simulate scenario and create appropriate outputs.

Results:
test1.txt



test2.txt:

```
(base) bzkrt@bzkrt:~/archive/analisy
Joseph's Path, duration: 78
Node: 0 Time: 0
Node: 2 Time: 5
Node: 1 Time: 7
Node: 6 Time: 11
Node: 7 Time: 13
Node: 9 Time: 21
-- return --
Node: 9 Time: 59
Node: 10 Time: 62
Node: 6 Time: 67
Node: 3 Time: 68
Node: 1 Time: 75
Node: 0 Time: 78

Lucy's Path, duration: 91
Node: 3 Time: 0
Node: 10 Time: 8
Node: 6 Time: 13
Node: 7 Time: 15
Node: 8 Time: 18
Node: 11 Time: 20
Node: 15 Time: 25
-- return --
Node: 15 Time: 53
Node: 16 Time: 62
Node: 14 Time: 70
Node: 5 Time: 81
Node: 10 Time: 85
Node: 6 Time: 90
Node: 3 Time: 91
```

test3.txt:

```
(base) bzkrt@bzkrt:~/archive/ana
Joseph's Path, duration: 84
Node: 0 Time: 0
Node: 3 Time: 4
Node: 2 Time: 13
Node: 4 Time: 18
Node: 6 Time: 31
-- return --
Node: 6 Time: 61
Node: 3 Time: 65
Node: 5 Time: 71
Node: 1 Time: 78
Node: 0 Time: 84

Lucy's Path, duration: 66
Node: 2 Time: 0
Node: 4 Time: 5
Node: 5 Time: 10
Node: 1 Time: 17
-- return --
Node: 1 Time: 47
Node: 0 Time: 53
Node: 3 Time: 57
Node: 2 Time: 66
```

test4.txt:

```
(base) bzkrt@bzkrt:~/archive/ana
Joseph's Path, duration: 62
Node: 4 Time: 0
Node: 1 Time: 7
Node: 2 Time: 11
Node: 5 Time: 14
-- return --
Node: 5 Time: 44
Node: 7 Time: 53
Node: 6 Time: 56
Node: 4 Time: 62

Lucy's Path, duration: 66
Node: 0 Time: 0
Node: 3 Time: 5
Node: 6 Time: 10
Node: 5 Time: 16
Node: 7 Time: 25
-- return --
Node: 7 Time: 55
Node: 6 Time: 58
Node: 0 Time: 66
```

test5.txt:

```
(base) bzkrt@bzkrt:~/a
No solution!
```