

## Programing Assignment #1 - README

CSCE 625 - Artificial Intelligence  
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1. The source code I turned in is named "Search.java". Open a Command Prompt, enter the folder where "Search.java" is located. Compile with command "javac Search.java"(shown in Figure 1). Files named "Search.class" and "Vertices.class" should be generated(shown in Figure 2).



Figure 1

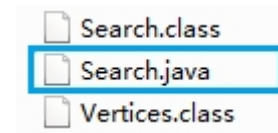


Figure 2

2. Then you need a graph to test with. Put the graph data in the same folder. You can either use "data.txt" or any other name as the graph's name(for example, "ATM.graph data file") (shown in Figure 3). The inside of the graph data should look like Figure 4.

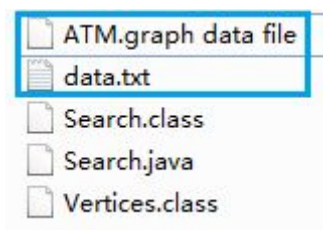


Figure 3

```
vertices: 275
0 1 1
1 1 2
2 1 3
...
edges: 641
0 17 18
1 37 38
2 56 57
...
```

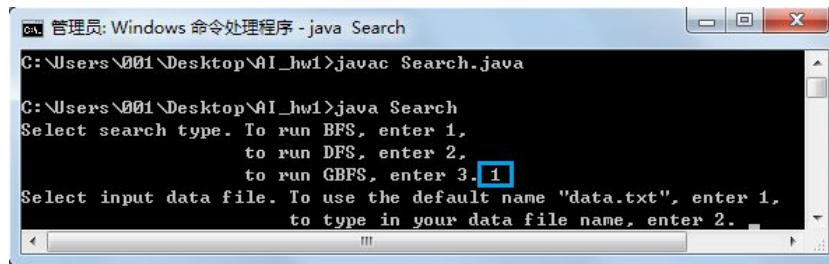
Figure 4

3. Then run with command "java Search". It should show you three selections(shown in Figure 5).



Figure 5

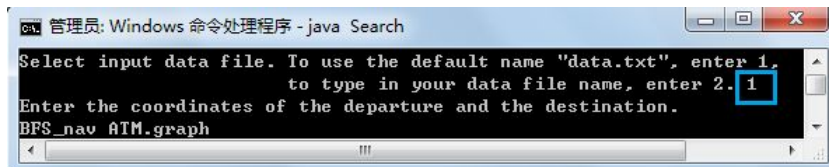
4. If you want to run BFS, you can type 1 and press enter. Then it should request you to select a graph(shown in Figure 6). If your graph data is named "data.txt", you can enter 1 and press enter(shown in Figure 7). If your graph data is name "ATM.graph data file", you need to enter 2 and press enter, then type in "ATM.graph data file"(without qoutation) and press enter(shown in Figure 8).



```
管理员: Windows 命令处理程序 - java Search
C:\Users\001\Desktop\AI_hw1>javac Search.java

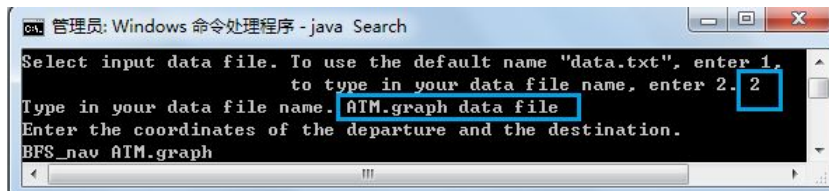
C:\Users\001\Desktop\AI_hw1>java Search
Select search type. To run BFS, enter 1,
                        to run DFS, enter 2,
                        to run GBFS, enter 3. 1
Select input data file. To use the default name "data.txt", enter 1,
                        to type in your data file name, enter 2.
```

Figure 6



```
管理员: Windows 命令处理程序 - java Search
Select input data file. To use the default name "data.txt", enter 1,
                        to type in your data file name, enter 2. 1
Enter the coordinates of the departure and the destination.
BFS_nav ATM.graph
```

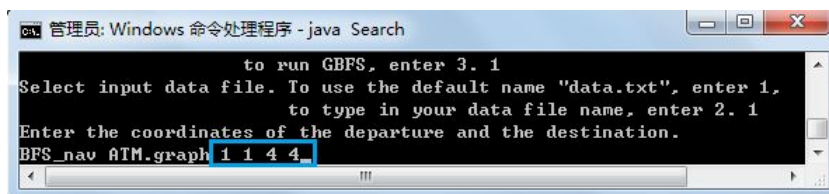
Figure 7



```
管理员: Windows 命令处理程序 - java Search
Select input data file. To use the default name "data.txt", enter 1,
                        to type in your data file name, enter 2. 2
Type in your data file name. ATM.graph data file
Enter the coordinates of the departure and the destination.
BFS_nav ATM.graph
```

Figure 8

5. Then you enter the coordinates of the departure and the destination, then press enter(shown in Figure 9).



```
管理员: Windows 命令处理程序 - java Search
                        to run GBFS, enter 3. 1
Select input data file. To use the default name "data.txt", enter 1,
                        to type in your data file name, enter 2. 1
Enter the coordinates of the departure and the destination.
BFS_nav ATM.graph 1 1 4 4
```

Figure 9

6. Then BFS will work and show you the result both in this window(shown in Figure 10), and create a file named "BFS\_Search.txt"(shown in Figure 11). If the file named "BFS\_Search.txt" already exists, the new result will be appended, not erase the original content.

```
管理员: Windows 命令处理程序
274 20 20
edges: 641
vertices=275, edges=641
start=(1,1), goal=(4,4), vertices: 0 and 62 iter=1, frontier=
epth=0, dist2goal=4.2
push 1 (1,2)
push 20 (2,1)
push 21 (2,2)
iter=2, frontier=2, popped=1 (1,2), depth=1, dist2goal=3.6
push 2 (1,3)
push 22 (2,3)
iter=3, frontier=3, popped=20 (2,1), depth=1, dist2goal=3.6
push 40 (3,1)
push 41 (3,2)
iter=4, frontier=4, popped=21 (2,2), depth=1, dist2goal=2.8
push 42 (3,3)
iter=5, frontier=4, popped=2 (1,3), depth=2, dist2goal=3.2
push 3 (1,4)
push 23 (2,4)
iter=6, frontier=5, popped=22 (2,3), depth=2, dist2goal=2.2
push 43 (3,4)
iter=7, frontier=5, popped=40 (3,1), depth=2, dist2goal=3.2
push 59 (4,1)
push 60 (4,2)
iter=8, frontier=6, popped=41 (3,2), depth=2, dist2goal=2.2
push 61 (4,3)
iter=9, frontier=6, popped=42 (3,3), depth=2, dist2goal=1.4
push 62 (4,4)

vertex 0 (1,1)
vertex 21 (2,2)
vertex 42 (3,3)
vertex 62 (4,4)

search algorithm = BFS
total iterations = 9
max frontier size= 7
vertices visited = 16/275
path length = 3

C:\Users\001\Desktop\AI_hw1>
```

Figure 10

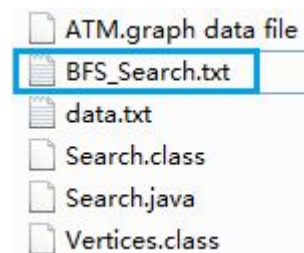


Figure 11

7. If you select DFS or GBFS, it will generate "DFS\_Search.txt" and "GBFS\_Search.txt", separately(shown in Figure 12).

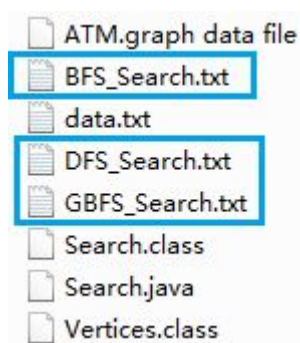


Figure 12