CAP 5625: Introduction to Artificial Intelligence
Project-1 Part-1

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1. Project details

Project has been implemented and tested in Matlab R2016a. As part of deliverables .m files and a readme has been included in the package. Following are the brief steps to run the project:

- Extract all code files from the package
- Start Matlab and open CreateGraph.m file
- Update the current folder path to the path where all code files are extracted
- Hit “Run” button and follow instructions on the command prompt

2. Environment details

Following is the system configuration used to implement the A-Star project:

- Operating System: Windows 10
- Matlab: R2016a

3. File Details

Zip file contains following files as part of package:

- AStar.m
- ConnectionsReading.m
- CreateGraph.m
- CreateGraphEntities.m
- Euclidean.m
- Exclusion.m
- LocationReading.m
- TracePath.m
- ValidateData.m
- connections.txt
- locations.txt

4. Steps to execute A-Star

Following are the steps to run the code.

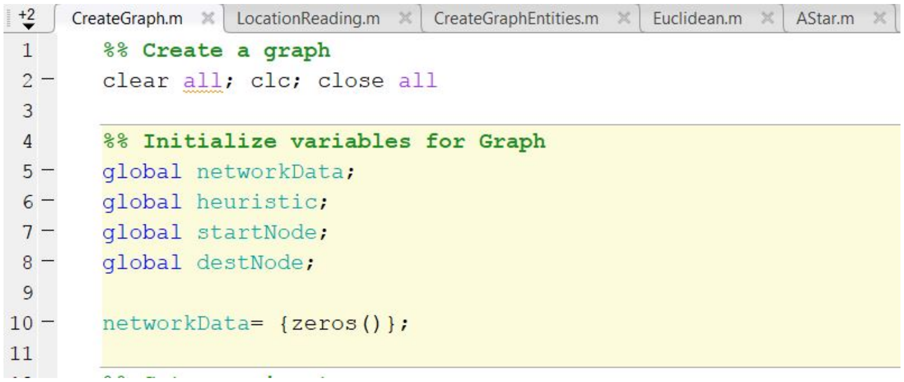
1. Open CreateGraph.m file in matlab editor and select the tab this file opened in; as shown in figure 1 on the following page.

2. Click “Run” button or use F5 key to execute the code as shown in figure 2 on the next page.

3. On command window enter the start node name and hit Enter key. Start node name should match as that of in connections and location file. As shown in figure 3 on page 3.

4. On command window enter the destination node name and hit Enter key. Destination node name should match as that of in connections and location file. As shown in figure 3 on page 3.

5. Enter the heuristic needs to be used. Press 1 or 2 and hit Enter. As shown in figure 4 on page 3.



```
%% Create a graph
clear all; clc; close all

%% Initialize variables for Graph
global networkData;
global heuristic;
global startNode;
global destNode;

networkData= {zeros()};

```

Figure 1: Select Tab

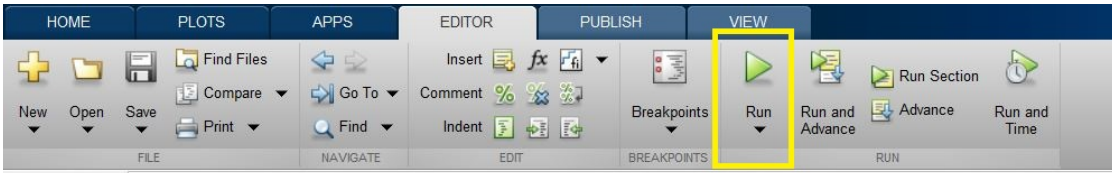


Figure 2: Run/F5

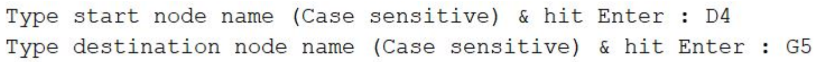
6. Browse window should be displayed to select connections.txt. Window title describes which file is expected. Choose .txt file which contains connection details. The file contents need to be of the same format as that of sample file, shared in the package. As shown in figure 5a.

7. Another browse window should be displayed to select locations. Window title describes which file is expected. Choose .txt file which contains location details. The file contents need to be of the same format as that of sample file, shared in the package. As shown in figure 5b.

8. Prompt to decide on to exclude few nodes or not will get displayed. Press 1 or 0 and hit enter. As shown in figure 6 on the next page.

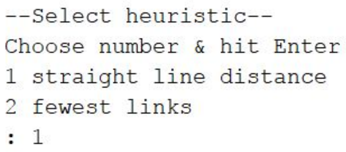
9. If 0 is entered then path from start node to destination node should get displayed on the prompt. Else prompt to enter node to be excluded is shown. Node name should match as that of in connections and location file. Enter only one node name at a time and hit Enter. Follow the instructions to add more node names to exclude. Once done enter 0 to exit node exclusion step.

10. Path from start node to destination node should get displayed. As shown in figure 7 on the following page.



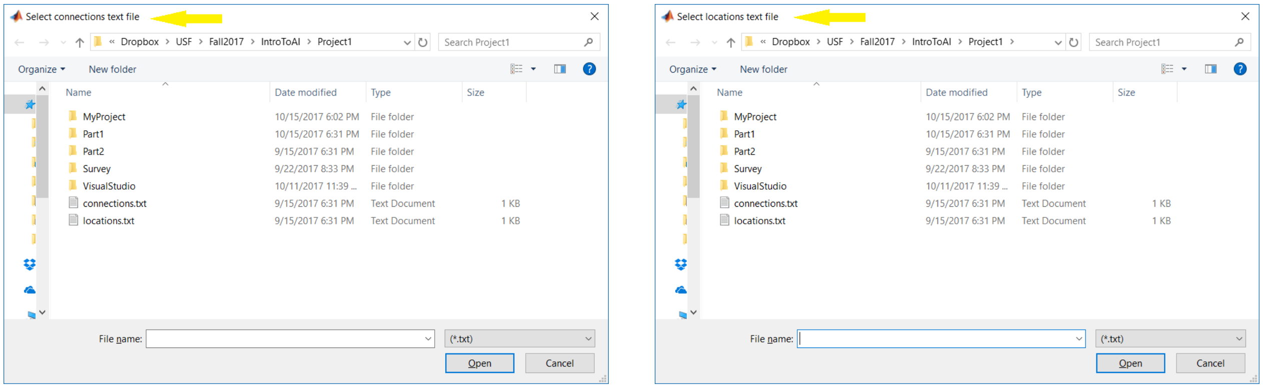
```
Type start node name (Case sensitive) & hit Enter : D4
Type destination node name (Case sensitive) & hit Enter : G5
```

Figure 3: Select Nodes



```
--Select heuristic--
Choose number & hit Enter
1 straight line distance
2 fewest links
: 1
```

Figure 4: Heuristic



Select connections text file
« Dropbox › USF › Fall2017 › IntroToAI › Project1
Search Project1
Organize
New folder
File name:
(*.txt)
Open
Cancel
Select locations text file
« Dropbox › USF › Fall2017 › IntroToAI › Project1 ›
Search Project1
Organize
New folder
File name:
(*.txt)
Open
Cancel

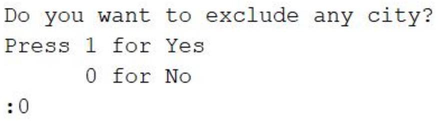
Name	Date modified	Type	Size
MyProject	10/15/2017 6:02 PM	File folder	
Part1	10/15/2017 6:31 PM	File folder	
Part2	9/15/2017 6:31 PM	File folder	
Survey	9/22/2017 8:33 PM	File folder	
VisualStudio	10/11/2017 11:39 ...	File folder	
connections.txt	9/15/2017 6:31 PM	Text Document	1 KB
locations.txt	9/15/2017 6:31 PM	Text Document	1 KB

(a) Connections

Name	Date modified	Type	Size
MyProject	10/15/2017 6:02 PM	File folder	
Part1	10/15/2017 6:31 PM	File folder	
Part2	9/15/2017 6:31 PM	File folder	
Survey	9/22/2017 8:33 PM	File folder	
VisualStudio	10/11/2017 11:39 ...	File folder	
connections.txt	9/15/2017 6:31 PM	Text Document	1 KB
locations.txt	9/15/2017 6:31 PM	Text Document	1 KB

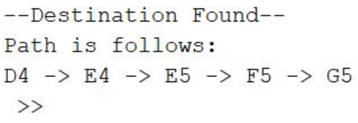
(b) Locations

Figure 5: File Selection



```
Do you want to exclude any city?
Press 1 for Yes
      0 for No
:0
```

Figure 6: Node Exclusion



```
--Destination Found--
Path is follows:
D4 -> E4 -> E5 -> F5 -> G5
 >>
```

Figure 7: Path