

# **Term Project – Part 2**

## **Graph Problem Solver**

**Assigned Query: 31**

**EECS 118**

**Team 4**

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### Assigned Query:

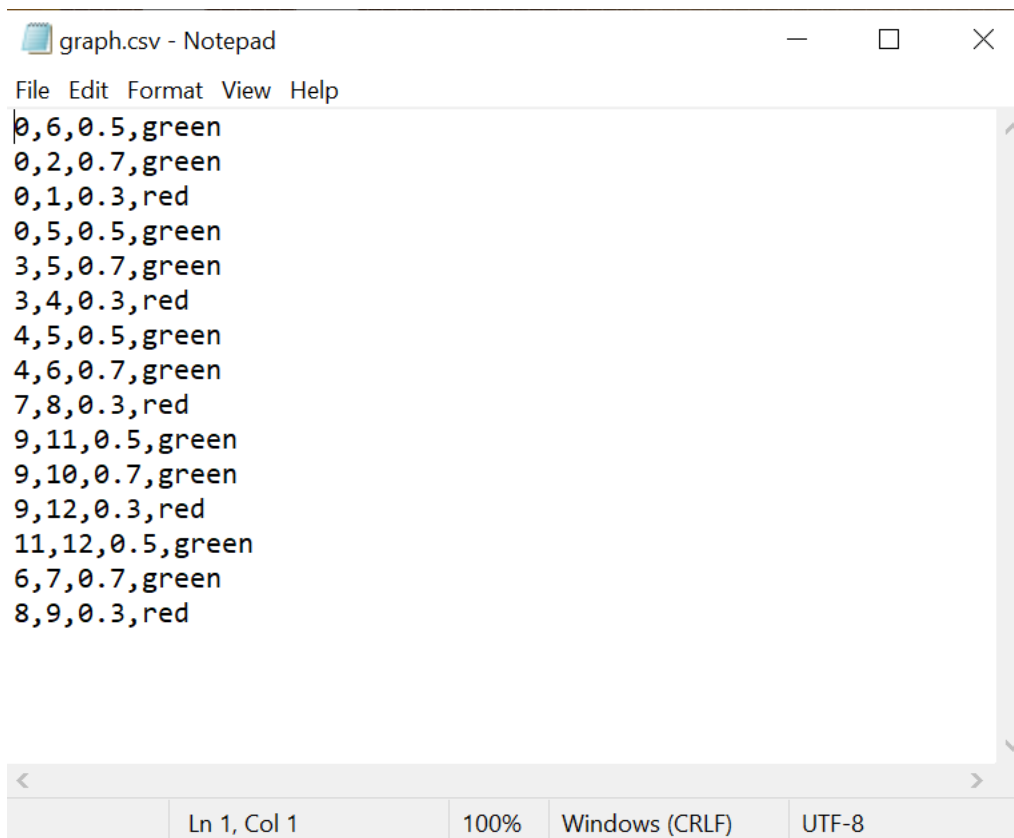
31 - find s where is\_path(s) and max\_degree(s, t, G) and color(s, COLOR, u) and t < C and u < D

-The interpretation of the above predicates is to find all the simple paths that have a max\_degree of less than C and the edges of color COLOR in the path to be less than D.

-The user has to input C, COLOR, D and the graph. The output will be all the simple paths that satisfy the above predicates.

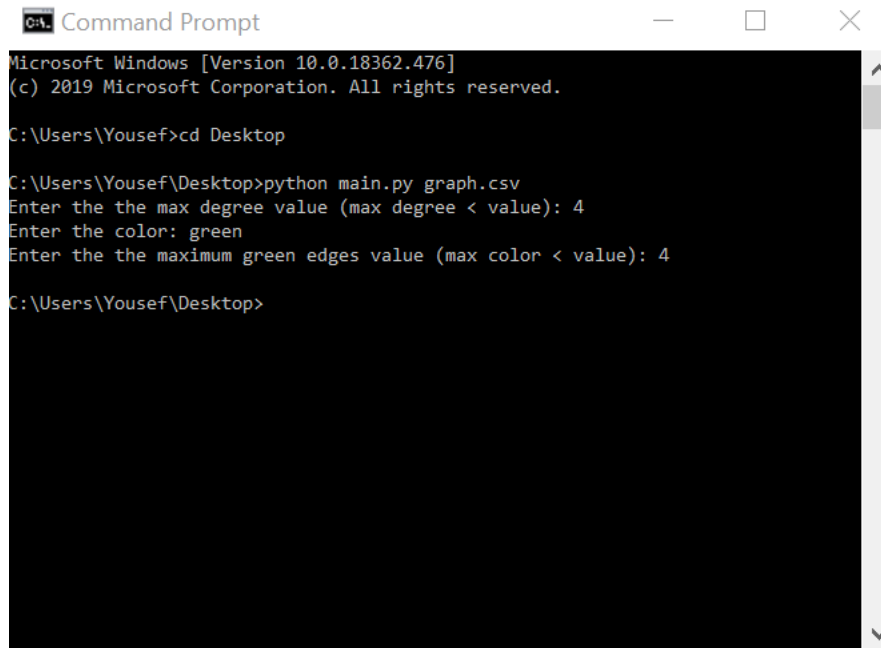
### Program Result:

#### Example Input Graph:



```
graph.csv - Notepad
File Edit Format View Help
0,6,0.5,green
0,2,0.7,green
0,1,0.3,red
0,5,0.5,green
3,5,0.7,green
3,4,0.3,red
4,5,0.5,green
4,6,0.7,green
7,8,0.3,red
9,11,0.5,green
9,10,0.7,green
9,12,0.3,red
11,12,0.5,green
6,7,0.7,green
8,9,0.3,red
Ln 1, Col 1 100% Windows (CRLF) UTF-8
```

Executing the program:



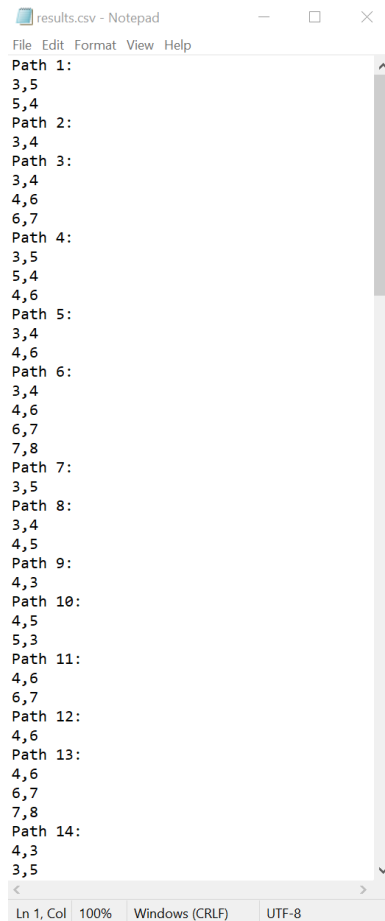
```
Command Prompt
Microsoft Windows [Version 10.0.18362.476]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Yousef>cd Desktop

C:\Users\Yousef\Desktop>python main.py graph.csv
Enter the the max degree value (max degree < value): 4
Enter the color: green
Enter the the maximum green edges value (max color < value): 4

C:\Users\Yousef\Desktop>
```

The output CSV file showing all paths that satisfy the predicate conditions:



```
results.csv - Notepad
File Edit Format View Help

Path 1:
3,5
5,4
Path 2:
3,4
Path 3:
3,4
4,6
6,7
Path 4:
3,5
5,4
4,6
Path 5:
3,4
4,6
Path 6:
3,4
4,6
6,7
7,8
Path 7:
3,5
Path 8:
3,4
4,5
Path 9:
4,3
Path 10:
4,5
5,3
Path 11:
4,6
6,7
Path 12:
4,6
Path 13:
4,6
6,7
7,8
Path 14:
4,3
3,5
```