

PROJECT – 2

It's a Small World

SUBJECT NAME= Advanced Algorithm

SUBJECT CODE= CPSC 535

INSTRUCTOR= Prof. Doina Bein

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SUMMARY:

We developed a unique algorithm to implement the "It's a Small World" program. In this project, we read input from the files Test1.txt, Test2.txt, Test3.txt, Test4.txt, and Test5.txt, each of which contains a list of 'n' casts, the first two of which are the most significant, i.e., casts [0] and casts [1]. If these two casts, casts [0] and casts [1], have at least one string in common, then the output is the shortest connection is 1 with the name of the common cast. If the two casts, casts [0] and casts [1], do not have any string in common, the algorithm looks for another cast in the list of n casts, such that casts [0] and 'itr' have a string in common, and casts [1] and 'itr' have a string in common, where itr is iterator pointing to the cast then, it prints the output as the shortest connection as 2 along with the whole cast. Otherwise, it prints that the shortest connection is greater than 2 or there is no connection when there is nothing in common.

65 lines (53 sloc) | 2.78 KB

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535-project2

🔗 It's a small world

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Problem definition: The project is to design an algorithm that calculates the shortest connection between movie casts. The first two casts on the list are the most important, such that if there is at least one string in common, the shortest connection is 1. If those two casts have no strings in common, then look for another cast in the list of casts that has a string in common, and the shortest connection is 2. Otherwise, the shortest connection is more than 2 or there is no connection.

PSEUDO CODE:

- Input the name of the file that contains the CAST. CAST is in a text file where every line in the file is a cast
- Initialize a casts list that contains a list of casts
- Read the file line-by-line.
 - Strip the newline and split every line by a comma(,)
 - For each actor in the list of actors
 - Strip leading and trailing whitespaces from it
 - append it to the actors list
 - append the actors list to the casts list
- if casts list is empty or length of casts < 2 then
 - print Number of casts must be greater than 2
 - exit the execution
- else
 - find a common actor between the first cast and second cast
 - if a common actor is found then
 - print shortest connection = 1
 - else
 - for every cast j in casts
 - find a common actor between cast j and the first cast and find a common actor between cast j and the second cast
 - if found:
 - print shortest connection = 2
 - else
 - print shortest connection > 2 or no connection

HOW TO RUN THE CODE:

Step-1: Open Visual Studio Code

Step-2: Either install [Python 3](#) or its extension.

Step-3: Open the main.py file.

Step-4: Run the code(main.py file) using the run button or using the below command:

```
python3 main.py
```

Step-5: Enter the filename contained in our folder (e.g., Test1.txt).

Step-6: The console prints the output.

Note: To test for other cases, please create a file and pass the name of the file while running the main.py file.

The format of the file will be as follows:

number of casts (e.g., 4)

1st cast

2nd cast

3rd cast

4th cast

For, e.g., The file Test1.txt contains:

5 lines (5 sloc) | 494 Bytes

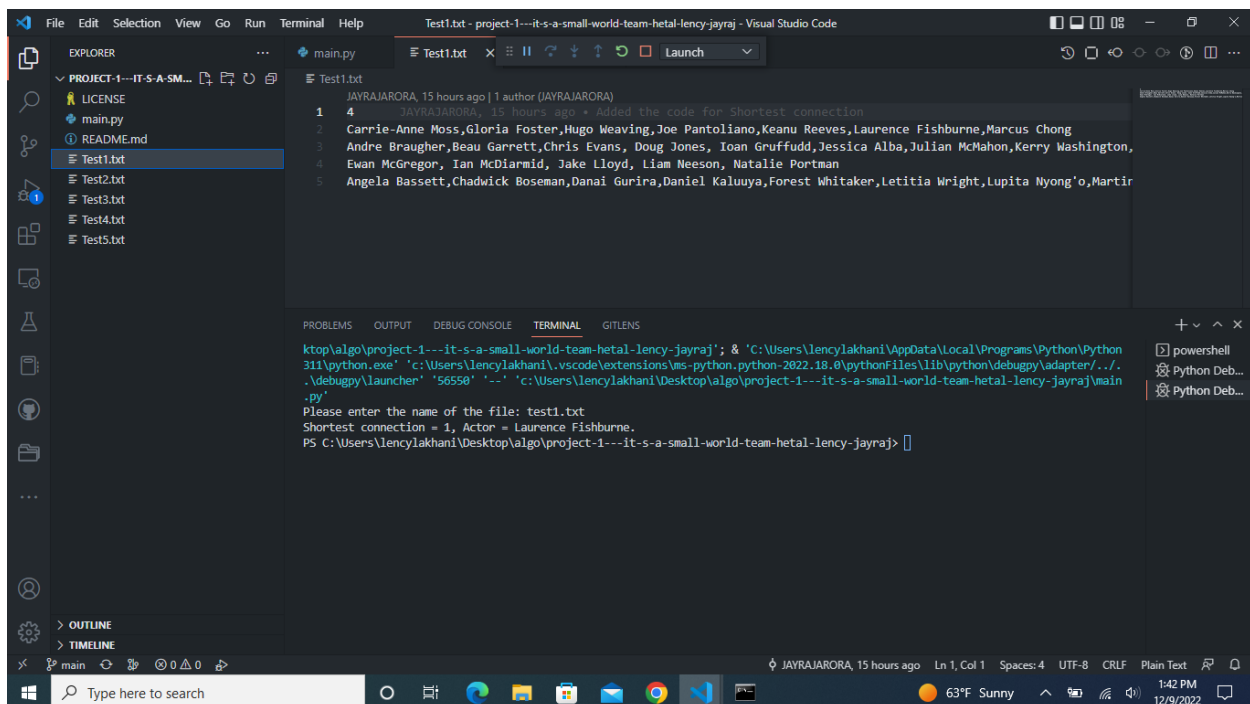
Raw Blame



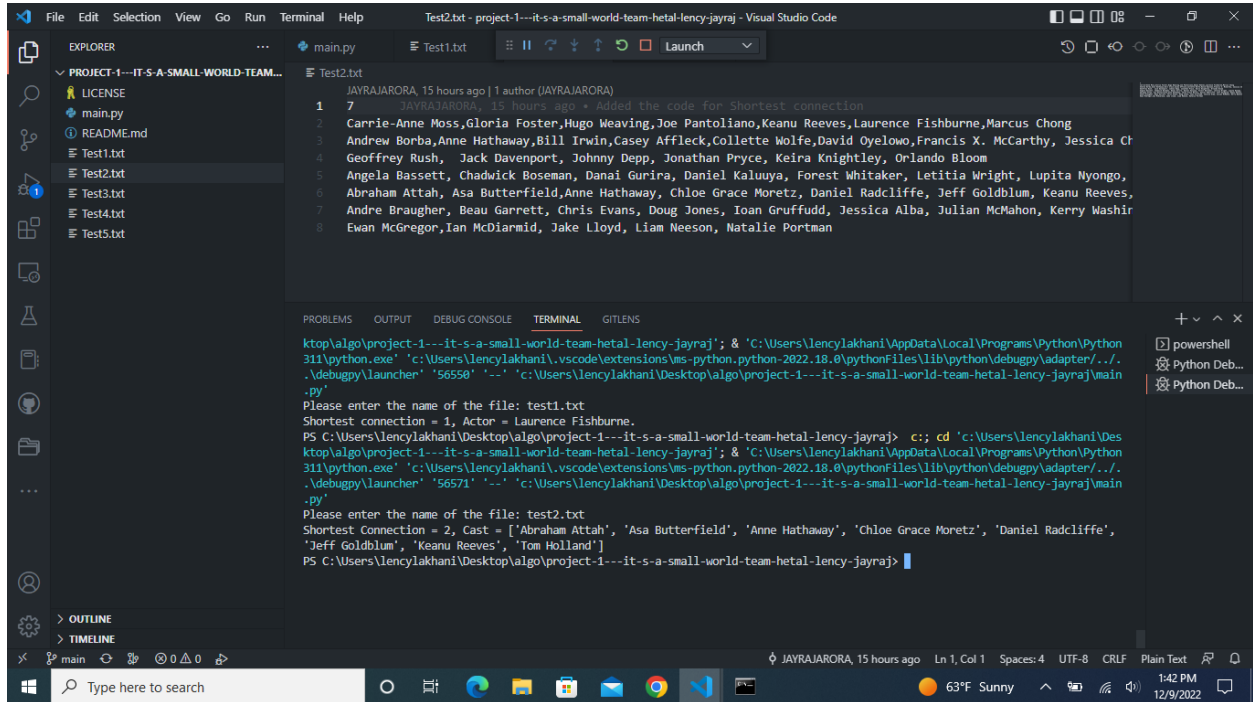
```
1 4
2  Carrie-Anne Moss,Gloria Foster,Hugo Weaving,Joe Pantoliano,Keanu Reeves,Laurence Fishburne,Marcus Chong
3  Andre Braugher,Beau Garrett,Chris Evans, Doug Jones, Ioan Gruffudd,Jessica Alba,Julian McMahon,Kerry Washington,Laurence Fishburne,Michael Chiklis
4  Ewan McGregor, Ian McDiarmid, Jake Lloyd, Liam Neeson, Natalie Portman
5  Angela Bassett,Chadwick Boseman,Danai Gurira,Daniel Kaluuya,Forest Whitaker,Letitia Wright,Lupita Nyong'o,Martin Freeman,Michael B. Jordan,Sterling K. Brown, Winston Duke
```

SCREENSHOT FOR TEST FILES:

EXAMPLE 1:



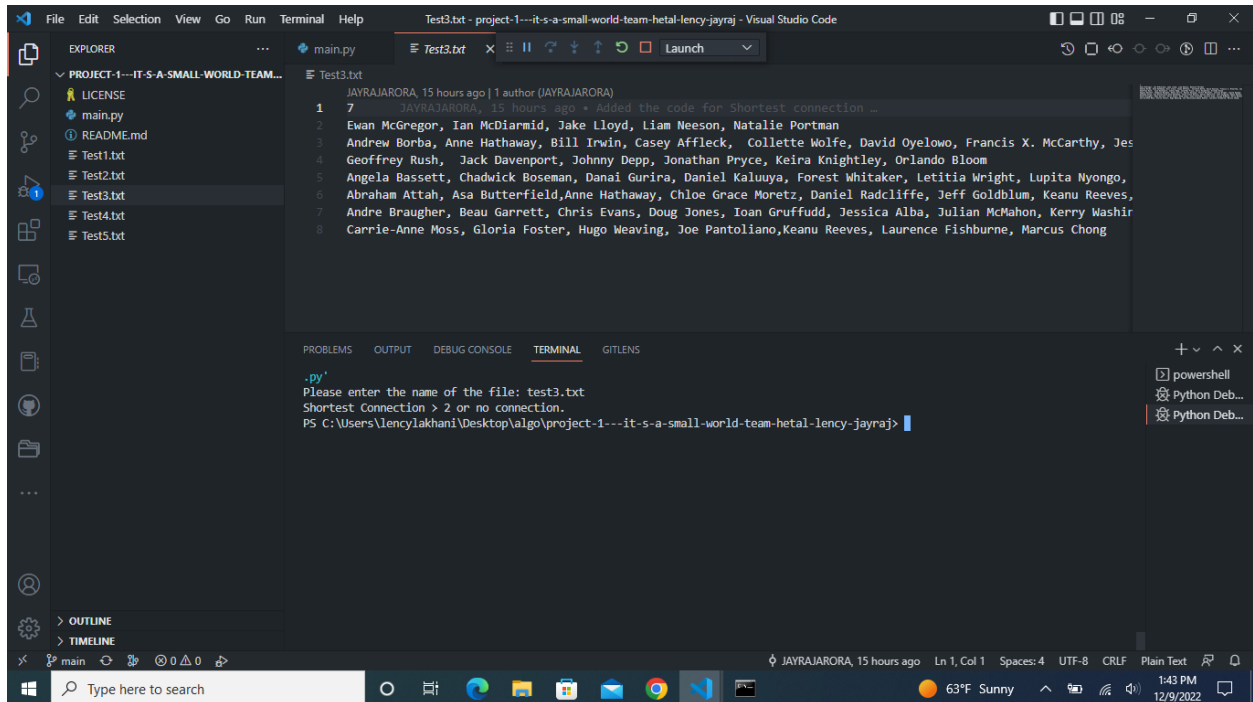
EXAMPLE 2:



The screenshot shows the Visual Studio Code interface with a project named "PROJECT-1---IT-S-A-SMALL-WORLD-TEAM-HETAL-LENCY-JAYRAJ". The Explorer panel on the left shows files: LICENSE, main.py, README.md, Test1.txt, Test2.txt, Test3.txt, Test4.txt, and Test5.txt. The main editor displays the content of Test2.txt, which is a list of names: Carrie-Anne Moss, Gloria Foster, Hugo Weaving, Joe Pantoliano, Keanu Reeves, Laurence Fishburne, Marcus Chong, Andrew Borba, Anne Hathaway, Bill Irwin, Casey Affleck, Collette Wolfe, David Oyelowo, Francis X. McCarthy, Jessica Chastain, Geoffrey Rush, Jack Davenport, Johnny Depp, Jonathan Pryce, Keira Knightley, Orlando Bloom, Angela Bassett, Chadwick Boseman, Danai Gurira, Daniel Kaluuya, Forest Whitaker, Letitia Wright, Lupita Nyong'o, Abraham Attah, Asa Butterfield, Anne Hathaway, Chloe Grace Moretz, Daniel Radcliffe, Jeff Goldblum, Keanu Reeves, Andre Braugher, Beau Garrett, Chris Evans, Doug Jones, Ioan Gruffudd, Jessica Alba, Julian McMahon, Kerry Washington, and Ewan McGregor, Ian McDiarmid, Jake Lloyd, Liam Neeson, Natalie Portman.

The TERMINAL panel at the bottom shows the execution of a Python script. The prompt is "Please enter the name of the file: test1.txt". The user enters "test1.txt". The script then prints "Shortest connection = 1, Actor = Laurence Fishburne." and "Shortest Connection = 2, Cast = ['Abraham Attah', 'Asa Butterfield', 'Anne Hathaway', 'Chloe Grace Moretz', 'Daniel Radcliffe', 'Jeff Goldblum', 'Keanu Reeves', 'Tom Holland']".

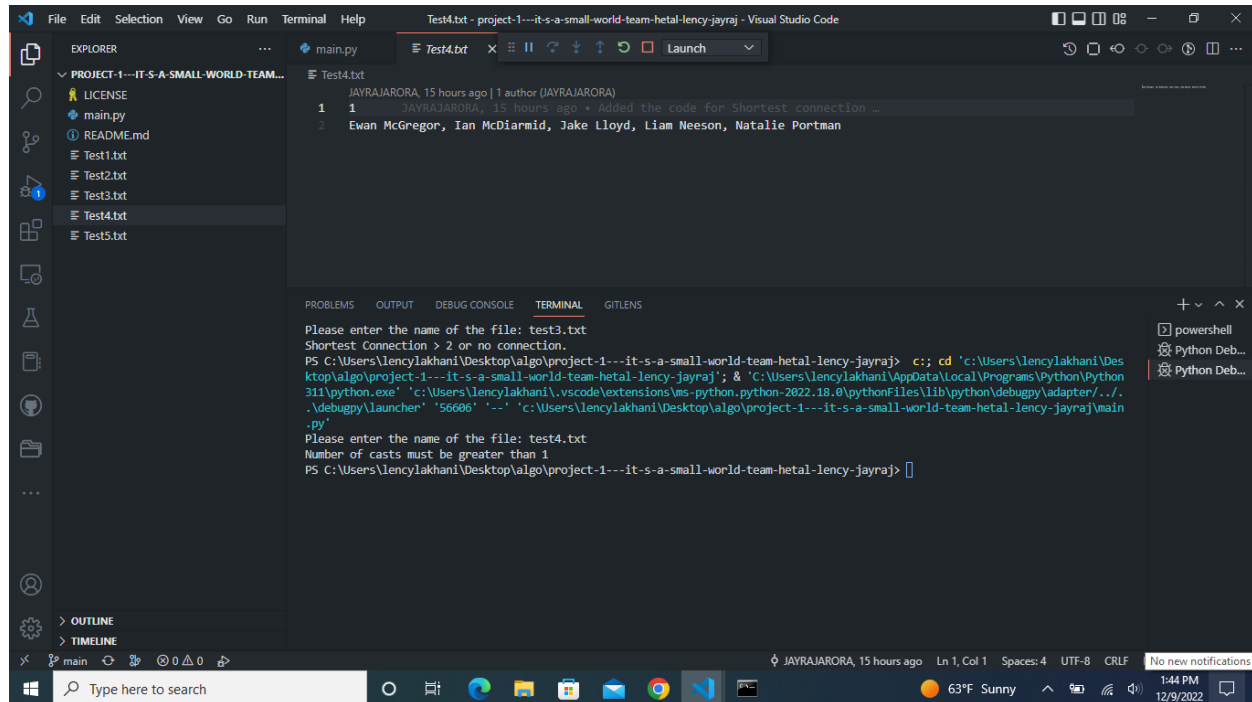
EXAMPLE 3:



The screenshot shows the Visual Studio Code interface with the same project as Example 2. The Explorer panel shows files: LICENSE, main.py, README.md, Test1.txt, Test2.txt, Test3.txt, Test4.txt, and Test5.txt. The main editor displays the content of Test3.txt, which is a list of names: Ewan McGregor, Ian McDiarmid, Jake Lloyd, Liam Neeson, Natalie Portman, Andrew Borba, Anne Hathaway, Bill Irwin, Casey Affleck, Collette Wolfe, David Oyelowo, Francis X. McCarthy, Jessica Chastain, Geoffrey Rush, Jack Davenport, Johnny Depp, Jonathan Pryce, Keira Knightley, Orlando Bloom, Angela Bassett, Chadwick Boseman, Danai Gurira, Daniel Kaluuya, Forest Whitaker, Letitia Wright, Lupita Nyong'o, Abraham Attah, Asa Butterfield, Anne Hathaway, Chloe Grace Moretz, Daniel Radcliffe, Jeff Goldblum, Keanu Reeves, Andre Braugher, Beau Garrett, Chris Evans, Doug Jones, Ioan Gruffudd, Jessica Alba, Julian McMahon, Kerry Washington, Carrie-Anne Moss, Gloria Foster, Hugo Weaving, Joe Pantoliano, Keanu Reeves, Laurence Fishburne, Marcus Chong.

The TERMINAL panel at the bottom shows the execution of a Python script. The prompt is "Please enter the name of the file: test3.txt". The user enters "test3.txt". The script then prints "Shortest Connection > 2 or no connection."

EXAMPLE 4:

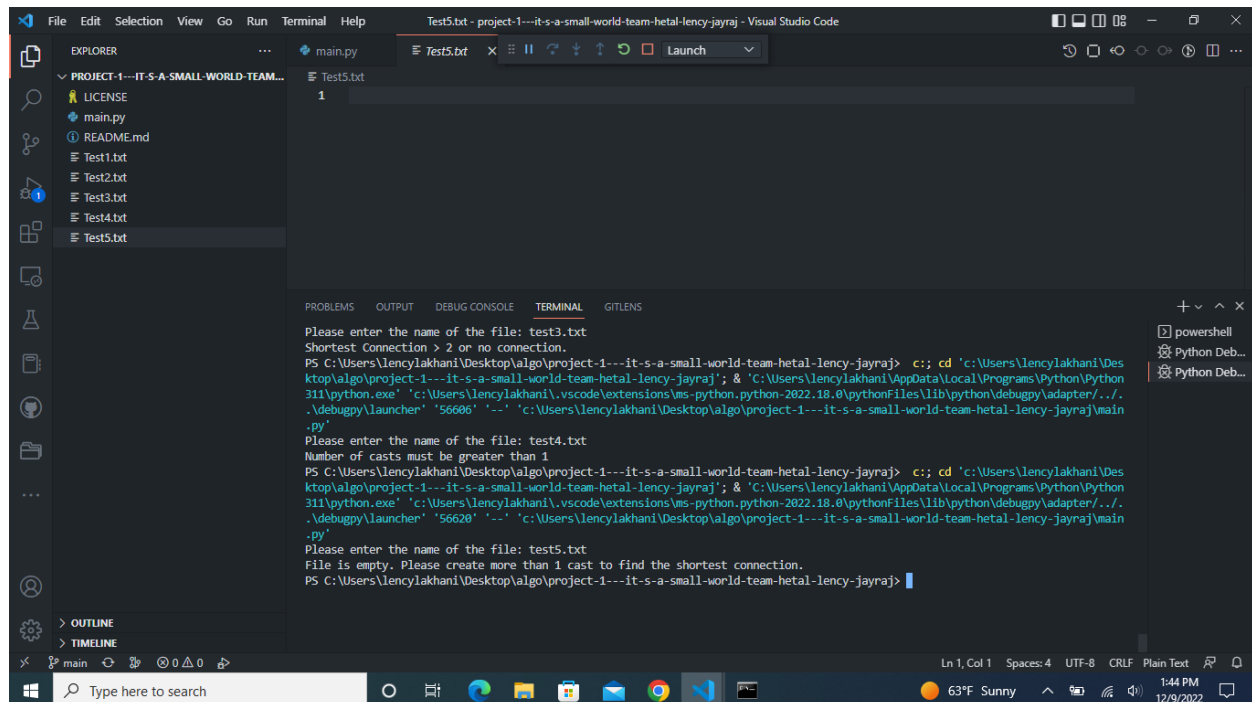


```
Test4.txt - project-1---it-s-a-small-world-team-hetal-lency-jayraj - Visual Studio Code
main.py Test4.txt
1 1
2 Ewan McGregor, Ian McDiarmid, Jake Lloyd, Liam Neeson, Natalie Portman

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL GITLENS

Please enter the name of the file: test3.txt
Shortest Connection > 2 or no connection.
PS C:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj> c:: cd 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj'; & 'C:\Users\lencylakhani\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\lencylakhani\.vscode\extensions\ms-python.python-2022.18.0\pythonFiles\lib\python\debugpy\adapter\..\..\debugpy\launcher' '56606' '-.' 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj\main.py'
Please enter the name of the file: test4.txt
Number of casts must be greater than 1
PS C:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj> []
```

EXAMPLE 5:



```
Test5.txt - project-1---it-s-a-small-world-team-hetal-lency-jayraj - Visual Studio Code
main.py Test5.txt
1 1

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL GITLENS

Please enter the name of the file: test3.txt
Shortest Connection > 2 or no connection.
PS C:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj> c:: cd 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj'; & 'C:\Users\lencylakhani\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\lencylakhani\.vscode\extensions\ms-python.python-2022.18.0\pythonFiles\lib\python\debugpy\adapter\..\..\debugpy\launcher' '56606' '-.' 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj\main.py'
Please enter the name of the file: test4.txt
Number of casts must be greater than 1
PS C:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj> c:: cd 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj'; & 'C:\Users\lencylakhani\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\lencylakhani\.vscode\extensions\ms-python.python-2022.18.0\pythonFiles\lib\python\debugpy\adapter\..\..\debugpy\launcher' '56620' '-.' 'c:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj\main.py'
Please enter the name of the file: test5.txt
File is empty. Please create more than 1 cast to find the shortest connection.
PS C:\Users\lencylakhani\Desktop\algo\project-1---it-s-a-small-world-team-hetal-lency-jayraj> []
```