Orbitz Coding Test

Problem description

This coding test is composed of three computational tasks. To complete these three tasks, you will refer to an input file flights.txt. This file represents a number of airports and available flights between them. An example input file is shown below:

flights.txt

```
A,B,5
B,C,3
A,C,6
C,D,8
D,A,2
```

As shown above, airports are represented by single-digit letters. In the above file, you can see airports A, B, C, and D. On the first line, "A,B,5" means that there is a flight from airport A to airport B that takes 5 hours. This does NOT necessarily mean that there is a flight from B to A. There will be a flight from B to A only if it appears in this file (in the form B,A,#). On the second line, you see a flight from airport B to airport C that takes 3 hours. And so on.

A second input file tasks.txt will provide you with the three inputs for the three tasks you must complete (each input on its own line). An example input file is shown below:

tasks.txt

```
A,D
A,2
A
```

You must write a program to complete the following three tasks:

1. Given a starting airport and an ending airport, list the quickest flight path between them.
   a. The starting and ending airports for this task are taken from the <u>first</u> line of tasks.txt.
   b. Example input from above file: A,D
   c. Solution according to given flights.txt configuration: A,C,D
2. Given a starting airport and a number of flights, list all the airports (in alphabetical order) that may be reached by taking exactly that many flights.
   a. The starting airport and number of flights are taken from the <u>second</u> line of tasks.txt.
   b. Example input from above file: A,2
   c. Solution according to given flights.txt configuration: C,D

3. Find the longest-duration round trip flight path to/from an airport. This flight path must not visit any airport more than once, other than the starting/ending airport.
    a. The starting/ending airport is taken from the <u>third</u> line of tasks.txt.
    b. Example input from above file: A
    c. Solution according to given flights.txt configuration: A,B,C,D,A

Your solutions to these tasks must be printed out to a file named solutions.txt, one line per solution. An example corresponding to the above solutions is shown below:

solutions.txt

```
A,C,D
C,D
A,B,C,D,A
```

We have included a sample flights.txt and tasks.txt with which you may test your program. However, upon submission, we will be testing your program on multiple different/larger versions of flights.txt and for different versions of tasks.txt, so make sure your solution is flexible enough to handle different inputs and covers all special cases (edge cases).

Make sure your output is formatted exactly as described, or it will be determined incorrect. As shown in the above examples, input is comma-delimited, no spaces, with each flight or task appearing on its own line. Output should be formatted accordingly, as well.

<u>Additional details</u>

- You must submit a .zip archive as an email attachment to <u>OrbitzCodingTest@gmail.com</u>
- Email subject line and .zip folder name should both be Firstname_Lastname_Schoolname
- The .zip archive must contain
    o A README file that includes:
        ▪ Instructions on how to compile/run your program
        ▪ A brief description of your implementation
        ▪ Your name, email, phone number, and school
    o All source files in a src/ directory
    o Output (solutions.txt) file in an out/ directory
- Therefore, the zip directory structure should look like:
    o Firstname_Lastname_Schoolname.zip
        ▪ README
        ▪ src/
            • <source files>
        ▪ out/
            • <output file>
- Your program will be evaluated for correctness, performance (space and time efficiency), and code quality.
- You must not share the details of this test with anyone, nor enlist anyone for assistance.