

Movie Theater Seating Challenge - 2020

Overview

Implement an algorithm for assigning seats within a movie theater to fulfill reservation requests. Assume the movie theater has the seating arrangement of 10 rows x 20 seats, as illustrated to the right.

Your homework assignment is to design and write a seat assignment program to maximize both customer satisfaction and customer safety. For the purpose of public safety, assume that a buffer of three seats and/or one row is required.

Input Description

You will be given a file that contains one line of input for each reservation request. The order of the lines in the file reflects the order in which the reservation requests were received. Each line in the file will be comprised of a reservation identifier, followed by a space, and then the number of seats requested. The reservation identifier will have the format: **R####**. See the **Example Input File Rows** section for an example of the input rows.

Output Description

The program should output a file containing the seating assignments for each request. Each row in the file should include the reservation number followed by a space, and then a comma-delimited list of the assigned seats. See the **Example Output File Rows** section for an example of the output file content.

Requirements

- Implement your solution using a programming language that you are comfortable with. We work in Java, but we are more interested in understanding how you think than in language specifics.
- The solution and tests should build and execute entirely via the command line.
- The command for executing the program should accept the complete path to the input file as an argument and should return the full path to the output file.
- Create a README file that documents your assumptions and includes instructions for building the solution and executing the tests.

We value your time, and anticipate that you will limit your investment in this exercise to 3 - 4 hours. Feel free to make trade-offs to save time, but consider how you would evolve your code to an ideal implementation. Your solution will be reviewed by engineers that you will be working with if you join the team. We are interested in seeing your software design, coding, and testing skills.

[[SCREEN]]

```
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A  sssssssssssssssssssss
B  sssssssssssssssssssss
C  sssssssssssssssssssss
D  sssssssssssssssssssss
E  sssssssssssssssssssss
F  sssssssssssssssssssss
G  sssssssssssssssssssss
H  sssssssssssssssssssss
I  sssssssssssssssssssss
J  sssssssssssssssssssss

1      ...      20
```

Example Input File Rows:

```
R001 2
R002 4
R003 4
R004 3
...
```

Example Output File Rows:

```
R001 I1,I2
R002 F16,F17,F18,F19
R003 A1,A2,A3,A4
R004 J4,J5,J6
....
```