Problem Statement

Treasure Hunt competition is going to be conducted for students which involves a series of clues hidden in various places. Participants must solve the first clue to discover the location of the next clue, and they continue finding and solving clues until they reach the final one.

There are two groups(G1 & G2) with 10 participants per group and each group is given 10 clues in 10 different locations, at each clue location there will be a participant to solve the clue riddle…

Now they need your help in placing the participants in two groups and with respect to their clue locations…(Name & student ID(SID) will be given)….

a. Group1 (G1) – Participants with SID's starts from 0 to 4
b. Group2 (G2) – Participants with SID's starts from 5 to 9
    1. Arrange G1 participants in ascending order and place them accordingly to their clue locations from 1 to 10.
    2. Arrange G2 participants in descending order and place them accordingly to their clue locations from 1 to 10.
    3. Figure out the participant details, placed at 7^{th} & 3^{rd} clue locations for both G1 & G2 groups.

Requirements:

1. Formulate an efficient recursive algorithm using Divide and Conquer techniques to perform the above tasks.
2. Read the input from a file **inputPS02.txt**.
3. You will output your answers to a file **outputPS0.txt.**
4. Make sure proper exception handling is written for the code.
5. Analyze the time complexity for requirement 1.
6. Implement the above problem statement using Python 3.7

Sample Input

The input file will contain the initial set of data followed by additional rows of instructions as shown below

StudentID, Student name

3543, A

1091, J
8393, K
2383, P
3664, M
6804, Y
9172, G
5362, V
0477, H
4448, L

5003, C
7910, Q
8080, U
6421, T
5019, I
3765, F
4341, N
1011, Z
5892, S
1316, B

Note that the input/output data shown here is only for understanding and testing, the actual file used for evaluation will be different.

Sample Output

G1: (In ascending order)
Student ID, name

1. 0477, H
2. 1011, Z
3. 1091, J
4. 1316, B
5. 2383, P
6. 3543, A
7. 3664, M
8. 3765, F
9. 4341, N
10. 4448, L

Group G2: (In descending order)
Student ID, name

1. 9172, G
2. 8393, K
3. 8080, U
4. 7910, Q
5. 6804, Y
6. 6421, T
7. 5892, S
8. 5362, V
9. 5019, I
10. 5003, C

Student Details, Placed in clue location

Group G1:
1091, J, 3rd clue location
3664, M, 7th

Group G2:
8080, U,
3rd

5892, S, 7th

Note that the input/output data shown here is only for understanding and testing, the actual file used for evaluation will be different.

Display the output in outputPS02.txt.