Department of Computer Science & Engineering
Institute of Technology, Nirma University
Semester IV (B.Tech CSE)
Programming for Scientific Computing (2CS404)

Assignment for Sessional Examination

Max Marks: 40

Instructions:

1. All questions are compulsory.
2. Question wise marks have been specified.
3. Assume suitable data /information if required.

A government wants to automate the admission process in all engineering colleges. A government collected all relevant data and store it in CSV file. The format of the CSV file is mentioned below.

College_details.csv file has information of courses offered by colleges:

```
CollegeCode, CSE, IT, ME, EE, EC, IC, CH, Civil, Auto
C0001, 240, 120, 240, 60, 60, 60, 60, 0, 0
```

The first line in the file is header, which have title of the columns like college code and short form of engineering branches. In this file, from second line onwards, the college code and no of seats available for each engineering branch is mentioned.

Constrains:

CollegeCode	First character is C and remaining 4 characters are 4 digit randomly generated number
No of seat for each branch	Select values from below list [0,60,120,180,240]

Second file is studentdetails.csv which has information about the students result and their enrolment key.

```
Enrollmentno, sub1, sub2, sub3, sub4, sub5
E0001, 87,98,65,50,78,86
```

As per sample given in above image, the first line is header of each column and second line has student detail like student enrolment key and 5 subject marks.

Enrollmentno	First character is E and remaining 4 characters are 4 digit randomly generated number
Marks	Generate the random number from the range of 40 to 100

Third file has choice_filling.csv which has student admission choice details that includes enrolment number, college code and short form of branch. Format for the same is given below.

Enrollmentno, choice1, choice2, choice3, choice4, choice5, choice6, choice7, choice8, choice9, choice10
E0001, C0001-CE, C0002-CE, C0003-CE, C0004-CE, C0010-CE, C0050-CE, C0001-IT, C0002-IT, C0003-IT, C0004-IT

As per sample given in above image, the first line has title of each value and second line onwards, the choice data of each students is stored, which includes the student's enrolment key and 10 preferable CollegeID-Branch code in which he/she likes to take admission. While giving a choice details, students have to provide CollegeID and short form of Branch. Verify that college code is available in college details file. Also, verify which ever the branch choice given by student is offered by college or not.

Considering the above scenario and give the answers of following questions:

1. Generate the college_details.csv and studentdetails.csv file. Make alteast 50 colleges entries and 5000 students data. **[Marks: 05]**
2. Give rank to the students so that admission process will be performed in proper sequence. Use any mechanism to give rank to the students. **[Marks: 05]**
3. Generate the choice filling CSV file for first 200 students and try to give them admission in their preferable college and branch. Every day, the admission process of 200 students is carried out by the system. **[Marks: 10]**
4. At the end of first day admission process, generate day1_college_status.csv file, which has a details of available seats in all the colleges that will available for admission process on day 2. Perform the step 3 and step 4 iteratively until entire admission process get over. **[Marks: 10]**
5. If any students did not get any admission as per choice on particular day, generate the choice details one more time based on the available seats which execute on next day. **[Marks: 05]**
6. Once all the admission process is complete, give the status of colleges and show in table that how many seat remain vacant in each branch of college. **[Marks: 05]**