Advanced Programming
Lab Assignment 1
IIIT-Delhi. 3ʳᵈ August 2017. Due by 11:59pm on 3ʳᵈ Aug 2017

No extensions will be provided. Any submission after the deadline will not be evaluated. If you see an ambiguity or inconsistency in a question, please seek a clarification from the teaching staff.

Plagiarism: All submitted homeworks are expected to be the result of your individual effort. You should never misrepresent someone else's work as your own. In case any plagiarism case is detected, it will be dealt very seriously and the assignment marks will also be nullified.

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You have to design a hostel allocation system (no GUI required). Given a set of applicants, you are required to return a list of shortlisted applicants as per the number of rooms available in the hostel. Sharing a room is not allowed. The shortlisting is done based on the following rules:
1. The one with higher distance of home from college is allotted first. If distance is same then room is allotted to the applicant who registered first i.e. whose name come first in the allotment list.
2. 50% of rooms are reserved for PhD applicants.
   50% of rooms are reserved for PG applicants.
   In case of odd number of rooms, PhD applicants will get the extra room.
3. If rooms are still available after allotting to PhD and PG applicants, then the remaining rooms are allotted to UG students.

It is guaranteed that number of applicants registered for hostel allocation is greater than the number of rooms available in hostel.

Input:
First line contains two numbers 'n' and 'm' denoting number of applicants registered for hostel allocation and number of rooms in hostel respectively.
Next n lines contain information about applicants i.e. the allotment list. Applicant information consist of name, roll number, program, and distance of college from home.

Output:
Print the list of shortlisted applicants. Output should be in the same order as in the allotment list.

Note: No inbuilt library or function is allowed.

Example:
Input:
7 4
Madhur MT1454 PG 28
Shabad MT1754 PG 40
Rani 1454 PhD 28
Megha MT1554 PG 32
Jay 2015054 UG 33

Seema MT1704 PG 35
Ajay 2015031 UG 33

Output:
Shabad MT1754 PG 40
Rani 1454 PhD 28
Jay 2015054 UG 33
Seema MT1704 PG 35

Ensure proper code documentation