

OOM Assignment 1

Note:

- Each question must minimally have the classes mentioned in the question, additional are always welcome
- No class attribute must be public. You may use getters and setters
- All class attributes and methods must have names that convey the work being done by them
- All class attributes and methods must have comments explaining what they do
- All classes must have necessary constructors
- There must be minimum code in the main function and main class. All codes must lie in the other classes.
- While you will make classes in the mechanism available as per your IDE, please pack all the classes in one file for submission to enable submission on the portal.

1. A student of this institute has a roll number, name and intelligence. After the foundation day week, the student is given a list of assignments. Each assignment belongs to a particular course and has a base marks. The marks obtained by a student for a particular assignment is always the base marks times the intelligence of the person. The assignment has a difficulty factor and an assignment can only be attempted by students whose intelligence is more than the assignment's difficulty factor. The assignments have a deadline that is given as a date (combination of day, month and year). The student attempts the assignment as per deadline, with the earliest approaching deadline first. In case of a tie, the assignment with a smaller assignment ID is attempted first.

Print the list of assignments submitted by the student in the same order as attempted by the student, the marks given in each assignment, and the total marks of the student. You must minimally implement a student class, a date class and an assignment class.

Input Format: First line is the number of test cases First line is the roll number, name of the student (single string without spaces) and intelligence separated by a space Second line is the total number of assignments, N Each subsequent line gives the assignment ID (string), course ID (string), deadline day, deadline month, deadline year, base marks and difficulty.	Output format The first line prints the roll number and student's name Then variable lines follow, one for each assignment. Each line prints the assignment ID, course ID and the marks obtained. The last line prints the total marks obtained.
Sample Input 1 IIT2016001 Owais 5 7 A0 IOOM332C 20 8 2017 10 1 A1 SMAT330C 5 9 2017 16 2 A2 ITOC330C 31 8 2017 20 7 A3 SMAT330C 25 8 2017 5 8 A4 IOPS332C 28 8 2017 8 4 A5 IOOM332C 10 9 2017 8 5 A6 EMIP332C 6 9 2017 10 6	Sample Output IIT2016001 Owais A0 IOOM332C 50 A4 IOPS332C 40 A1 SMAT330C 80 A5 IOOM332C 40 210

Explanation

Rank	Assignment No.	Course	Deadline	Base Marks	Difficulty	Attempted ($5 \geq \text{Difficulty}$)	Marks Obtained ($5 * \text{Base Marks}$)
1.	A0	IOOM332C	20-8-2017	10	1	Yes	50
2.	A3	SMAT330C	25-8-2017	5	8	No	-
3.	A4	IOPS332C	28-8-2017	8	4	Yes	40
4.	A2	ITOC330C	31-8-2017	20	7	No	-
5.	A1	SMAT330C	5-9-2017	16	2	Yes	80
6.	A6	EMIP332C	6-9-2017	10	6	No	-
7.	A5	IOOM332C	10-9-2017	8	5	Yes	40

2. For question 1, consider that there are m students. The students have a type. Type 0 student attempt assignments in the order of deadline, the nearest deadline first. Type 1 students attempt assignments in the order of maximum base marks, highest base marks first. Type 2 students attempt assignments in the alphabetical order of course ID. Course ID is unique and is used as a tie breaker for all cases.

A collection of all students constitutes a batch. Each assignment is applicable for all m students. Print the same details for all students of a batch.

You must minimally implement a student class, a date class, an assignment class and a batch class.

Input Format: First line is the number of test cases Next line is m , the number of students Next m lines have the roll number, name of the student (single string without spaces), intelligence and type separated by a space Next line is the total number of assignments, N Each subsequent line gives the assignment ID (string), course ID (string), deadline day, deadline month, deadline year, base marks and difficulty.	Output format For all m students: The first line prints the roll number and student's name Then variable lines follow, one for each assignment. Each line prints the assignment ID, course ID and the marks obtained. The last line prints the total marks obtained.
Sample Input 1 3 IIT2016001 Owais 5 0 LIT2016001 Sahil 7 1 IRM2016001 Adarsh 2 7 A0 IOOM332C 20 8 2017 10 1 A1 SMAT330C 5 9 2017 16 2 A2 ITOC330C 31 8 2017 20 7 A3 SMAT330C 25 8 2017 5 8 A4 IOPS332C 28 8 2017 8 4 A5 IOOM332C 10 9 2017 8 5 A6 EMIP332C 6 9 2017 10 6	Sample Output IIT2016001 Owais A0 IOOM332C 50 A4 IOPS332C 20 A1 SMAT330C 10 A5 IOOM332C 25 105 LIT2016001 Sahil A2 ITOC330C 140 A1 SMAT330C 112 A0 IOOM332C 70 A6 EMIP332C 70 A4 IOPS332C 56 A5 IOOM332C 56 504 IRM2016001 Adarsh A0 IOOM332C 30 A1 SMAT330C 48 78

Explanation

For IIT2016001 same as above

For LIT2016001

Rank	Assignment No.	Course	Deadline	Base Marks	Difficulty	Attempted (7 \geq Difficulty)	Marks Obtained (7* Base Marks)
1.	A2	ITOC330C	31-8-2017	20	7	Yes	140
2.	A1	SMAT330C	5-9-2017	16	2	Yes	112
3.	A0	IOOM332C	20-8-2017	10	1	Yes	70
4.	A6	EMIP332C	6-9-2017	10	6	Yes	70
5.	A4	IOPS332C	28-8-2017	8	4	Yes	56
6.	A5	IOOM332C	10-9-2017	8	5	Yes	56
7.	A3	SMAT330C	25-8-2017	5	8	No	-

For IRM2016001

Rank	Assignment No.	Course	Deadline	Base Marks	Difficulty	Attempted (3≥Difficulty)	Marks Obtained (3* Base Marks)
1.	A0	IOOM332C	20-8-2017	10	1	Yes	30
2.	A1	SMAT330C	5-9-2017	16	2	Yes	48
3.	A2	ITOC330C	31-8-2017	20	7	No	-
4.	A3	SMAT330C	25-8-2017	5	8	No	-
5.	A4	IOPS332C	28-8-2017	8	4	No	-
6.	A5	IOOM332C	10-9-2017	8	5	No	-
7.	A6	EMIP332C	6-9-2017	10	6	No	-

3. For question 2, assume that a plagiarism list is published. If a student plagiarizes in any assignment of a course X, he/she gets a zero in all assignments in the particular course X. So a student who plagiarizes in IOOM332C gets a zero in all IOOM332C assignments.

Input Format: First line is the number of test cases Next line is m , the number of students Next m lines have the roll number, name of the student (single string without spaces), intelligence and type separated by a space Next line is the total number of assignments, N Each subsequent line gives the assignment ID (string), course ID (string), deadline day, deadline month, deadline year, base marks and difficulty. The next line is P , the number of plagiarism lists Each of the P lines thereafter mention a roll number and an assignment ID, in which plagiarism occurred.	Output format For all m students: The first line prints the roll number and student's name Then variable lines follow, one for each assignment. Each line prints the assignment ID, course ID and the marks obtained. The last line prints the total marks obtained.
Sample Input 1 3 IIT2016001 Owais 5 0 LIT2016001 Sahil 7 1 IRM2016001 Adarsh 3 7 A0 IOOM332C 20 8 2017 10 1 A1 SMAT330C 5 9 2017 16 2 A2 ITOC330C 31 8 2017 20 7 A3 SMAT330C 25 8 2017 5 8 A4 IOPS332C 28 8 2017 8 4 A5 IOOM332C 10 9 2017 8 5 A6 EMIP332C 6 9 2017 10 6 2 LIT2016001 IOOM332C IRM2016001 IOOM332C	Sample Output IIT2016001 Owais A0 IOOM332C 50 A4 IOPS332C 20 A1 SMAT330C 10 A5 IOOM332C 25 105 LIT2016001 Sahil A2 ITOC330C 140 A1 SMAT330C 112 A0 IOOM332C 0 A6 EMIP332C 70 A4 IOPS332C 56 A5 IOOM332C 0 378 IRM2016001 Adarsh A0 IOOM332C 0 A1 SMAT330C 48 48

4. A course has three types of assignments possible.

- Type 0: A subjective assignment contains the name of the checker, the notes of the checker and total marks.
- Type 1: An objective assignment is characterized by the total number of correct and wrong answers. A correct answer gives a +4 and an incorrect answer gives a -1. Hence the total marks may be calculated.
- Type 2: A lab assignment is characterized by total time taken by the student, total penalty accumulated, language used, total correct marks. The marks given is the correct marks minus the penalty.

No other details related to any assignment are entered in the system. Print the total marks obtained by the student in each type of assignment. Minimally implement three types of assignment classes and a student class.

Input Format: First line is the number of test cases Next line is m , the number of students Next m lines have the roll number and name of the student (single string without spaces) separated by a space Next line is the total number of assignments, N Each subsequent line gives the assignment type and assignment ID (string) followed by extra information as per assignment. For type 0, next 3 inputs are name of checker, notes and total marks (each single string/integer) For type 1, next 2 inputs are number of correct and incorrect questions For type 2, next inputs are total time, total penalty, language used, total correct marks	Output format The first line prints the roll number and student's name The second line onwards prints all type 0 assignments and their marks, at the end followed by total marks The next line onwards prints all type 1 assignments and their marks, at the end followed by total marks The next line onwards prints all type 2 assignments and their marks, at the end followed by total marks
Sample Input 1 IIT2016001 Owais 7 A0 0 Utkarsh Good 15 A1 1 20 5 A2 2 120 5 Java 50 A3 0 Shubham Average 6 A4 2 150 3 Java 35 A5 1 15 7 A6 2 110 2 Java 20	Sample Output IIT2016001 Owais A0 15 A3 6 21 A1 75 A5 53 128 A2 45 A4 32 A6 18 95

Explanation

S. No.	Type	Assignment ID	Marks	Total Marks
1.	0	A0	15	21
2.	0	A3	6	
3.	1	A1	$20*4-5=75$	128
4.	1	A5	$15*4-7=53$	
5.	2	A2	$50-5=45$	95
6.	2	A4	$35-3=32$	
7.	2	A6	$20-2=18$	

5. A collection of all students constitutes a batch. Each assignment is applicable for all students. Print the same details for all students of a batch. You must also implement a batch class.

Input Format: First line is the number of test cases Next line is the roll number and name of the student (single string without spaces) separated by a space For every student henceforth Second line is the total number of assignments, N Each subsequent line gives the assignment type and assignment ID (string) followed by extra information as per assignment. For type 0, next 3 inputs are name of checker, notes and total marks (each single string/integer) For type 1, next 2 inputs are number of correct and incorrect questions	Output format For every student The first line prints the roll number and student's name The second line onwards prints all type 0 assignments and their marks, at the end followed by total marks The next line onwards prints all type 1 assignments and their marks, at the end followed by total marks
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For type 2, next inputs are total time, total penalty, language used, total correct marks	The next line onwards prints all type 2 assignments and their marks, at the end followed by total marks
Sample Input 1 2 IIT2016001 Owais LIT2016001 Sahil 7 A0 0 Utkarsh Good 15 A1 1 20 5 A2 2 120 5 Java 50 A3 0 Shubham Average 6 A4 2 150 3 Java 35 A5 1 15 7 A6 2 110 2 Java 20 3 A0 0 Utkarsh Poor 5 A1 1 10 15 A2 1 4 10	Sample Output IIT2016001 Owais A0 15 A3 6 21 A1 75 A5 53 128 A2 45 A4 32 A6 18 95 LIT2016001 Sahil A0 5 5 A1 25 A2 6 31 0

6. Repeat question 5 with the difference that (i) The first line of output is the grand total marks of all assignments combined. The next line prints the assignments in the same order as entered followed by the marks obtained.

Sample Output
IIT2016001 Owais
144
A0 15
A1 75
A2 45
A3 6
A4 32
A5 53
A6 18
LIT2016001 Sahil
36
A0 5
A1 25
A2 6