**OOM Assignment 2**

**Part 1 Version 1**

A time table for this institute has the following slots for taking classes: 9-10, 10-11, 11:15-12:15, 12:15-1:15, 3-4, 4-5, and 5-6. The time table spans from Monday to Friday. Make the time table for 1 batch.

Each course has a number of slots with durations. Like IOOM332C has 2 slots in the time table, one for 2 hours and one for 1 hour. The slots must be strictly such that the entire duration of the slot must be available as continuous. So a 2 hour class cannot be taken as 10:00-11:00 and 11:15-12:15. The theory, labs and tutorials are entered as separate courses with different course codes.

The allocation of time table for every course happens in a prioritized manner. All courses have a priority which is an integer. The lower is the numeric priority value, the more is the importance of the course. You first allocate the first slot associated with the highest priority course. Then you allocate the first slot associated with the second highest priority course and so on till all courses have one slot filled up. Then you allocate the 2nd slot associated with every course in the same order of priority, and so on.

Every slot has a preference, which is both in terms of the time of the day that a course should preferably run (primary) and the day on which the course should run (secondary). The day preference is specified by a string 143 means that the preference is 1 (Monday), followed by 4 (Thursday), followed by 3(Wednesday), and thereafter any day which are all equally good. The time preference is specified by a string where every 4 consecutive integers denote a time so a preference 090010001115 means, in increasing order of preference, the slots, 09:00-10:00, 10:00-11:00, 11:15-12:15, and so on.

While allocating a course, you first try to find the best slot available as per the primary and secondary time and day preferences. If none of the preferences are available, then the allocation takes place so as to balance the workload, and the day of the week with the least number of working hours is selected (primary), in the preference order from Monday to Friday (secondary). The selection of time is done so as to have classes as early as possible, and the first feasible and available slot is selected.

If a course cannot be allocated due to no available slots, then, it is notionally added on a Saturday. The Saturday courses have no time specified and are taken as per the wish of the instructor. All Saturday courses should be appended in a sorted order, sorted by course code.

**Input:**

The first input is the number of test cases. Each test case starts with the number of courses for the batch followed by the details of all courses.

Each course specifies the course code, name of the course, instructor’s name, course priority and the number of slots needed by the course. These details are followed by the details of each slot.

The slot details include the duration, day preference and time preference. NIL means no preference.

**Output:**

Print the time table in the format “Monday”, “Tuesday”… “Saturday” in separate lines. Each line additionally prints in the increasing order of time slot the time followed by the course details. Saturday courses are sorted as per course code. Blank means no courses for the particular day.

**Sample Input**

|  |  |
| --- | --- |
| Number of test cases | 1 |
| Number of courses | 9 |
| **Details of SMAT330C** | SMAT330C Maths Anand 3 2 |
| Details for 1st slot | 1 12 09001000 |
| Details for 2nd slot | 2 23 09001000 |
| **Details of IOOM332C** | IOOM332C ObjectOrientedMethodologies Vyas 1 2 |
| Details for 1st slot | 1 145 10000300 |
| Details for 2nd slot | 2 145 10000300 |
| **Details of IOOM332C-Lab** | IOOM332C-Lab ObjectOrientedMethodologiesLab Kala 2 1 |
| Details for 1st slot | 3 12 1000 |
| **Details of ITOC330C** | ITOC330C TheoryOfComputation Manish 5 2 |
| Details for 1st slot | 2 NIL 1115 |
| Details for 2nd slot | 1 NIL 1115 |
| **Details of ITOC330C-Tut** | ITOC330C-Tutorial TheoryOfComputationTutorial Manish 9 1 |
| Details for 1st slot | 2 NIL NIL |
| **Details of EMIP332C** | EMIP332C Microprocessor Arun 6 2 |
| Details for 1st slot | 1 NIL NIL |
| Details for 2nd slot | 2 NIL NIL |
| **Details of EMIP332C-Lab** | EMIP332C-Lab MicroprocessorLab Arun 8 1 |
| Details for 1st slot | 3 1 NIL NIL |
| **Details of IOPS332C** | IOPS332C OperatingSystem Jagpreet 4 2 |
| Details for 1st slot | 2 24 030012151115 |
| Details for 2nd slot | 1 24 030012151115 |
| **Details of IOPS332C-Lab** | IOPS332C-Lab OperatingSystemLab Jagpreet 7 1 |
| Details for 1st slot | 3 NIL NIL |

**Sample Output**

Monday

9:00-10:00 SMAT330C Maths Anand

10:00-11:00 IOOM332C ObjectOrientedMethodologies Vyas

3:00-6:00 IOOM332C-Lab ObjectOrientedMethodologiesLab Kala

Tuesday

9:00-11:00 ITOC330C-Tutorial TheoryOfComputationTutorial Manish

12:15-1:15 IOPS332C OperatingSystem Jagpreet

3:00-5:00 IOPS332C OperatingSystem Jagpreet

Wednesday

9:00-11:00 SMAT330C Maths Anand

11:15-1:15 ITOC330C TheoryOfComputation Manish

3:0-5:00 IOOM332C ObjectOrientedMethodologies Vyas

Thursday

9:00-10:00 EMIP332C Microprocessor Arun

11:15-1:15 EMIP332C Microprocessor Arun

3:00-6:00 EMIP332C-Lab MicroprocessorLab Arun

Friday

11:15-12:15 ITOC330C TheoryOfComputation Manish

3:00-6:00 IOPS332C-Lab OperatingSystemLab Jagpreet

Saturday

**Explanation**

Allocations to be done:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Course** | **Priority** | **Slot Duration** | **Day Preference** | **Time Preference** |
|  | SMAT330C | 3 | 1 | M, T | 09:00, 10:00 |
|  | SMAT330C | 3 | 2 | T, W | 09:00, 10:00 |
|  | IOOM332C | 1 | 1 | M, Th, F | 10:00, 03:00 |
|  | IOOM332C | 1 | 2 | M, Th, F | 10:00, 03:00 |
|  | IOOM332C-Lab | 2 | 3 | M, T | 10:00 |
|  | ITOC330C | 5 | 2 | NIL | 11:15 |
|  | ITOC330C | 5 | 1 | NIL | 11:15 |
|  | ITOC330C-Tut | 9 | 2 | NIL | NIL |
|  | EMIP332C | 6 | 1 | NIL | NIL |
|  | EMIP332C | 6 | 2 | NIL | NIL |
|  | EMIP332C-Lab | 8 | 3 | M NIL | NIL |
|  | IOPS332C | 4 | 2 | T, Th | 03:00, 12:15, 1115 |
|  | IOPS332C | 4 | 1 | T, Th | 03:00, 12:15, 11:15 |
|  | IOPS332C-Lab | 7 | 3 | NIL | NIL |

Allocations in the order of priority:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Course** | **Priority** | **Slot Duration** | **Day Preference** | **Time Preference** |
|  | IOOM332C | 1 | 1 | M, Th, F | 10:00, 03:00 |
|  | IOOM332C-Lab | 2 | 3 | M, T | 10:00 |
|  | SMAT330C | 3 | 1 | M, T | 09:00, 10:00 |
|  | IOPS332C | 4 | 2 | T, Th | 03:00, 12:15, 1115 |
|  | ITOC330C | 5 | 2 | NIL | 11:15 |
|  | EMIP332C | 6 | 1 | NIL | NIL |
|  | IOPS332C-Lab | 7 | 3 | NIL | NIL |
|  | EMIP332C-Lab | 8 | 3 | M | NIL |
|  | ITOC330C-Tut | 9 | 2 | NIL | NIL |
|  | IOOM332C | 1 | 2 | M, Th, F | 10:00, 03:00 |
|  | SMAT330C | 3 | 2 | T, W | 09:00, 10:00 |
|  | IOPS332C | 4 | 1 | T, Th | 03:00, 12:15, 11:15 |
|  | ITOC330C | 5 | 1 | NIL | 11:15 |
|  | EMIP332C | 6 | 2 | NIL | NIL |

**Time Table** Numbers in () point to the S.No. in the table

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **9:00-10:00** | **10:00-11:00** |  | **11:15-12:15** | **12:15-1:15** |  | **3:00-4:00** | **4:00-5:00** | **5:00-6:00** |
| **M** | SMAT330C (3) | IOOM332C (1) |  |  |  |  | IOOM332C-Lab (2) | | |
| **T** | ITOC330C-Tut (9) | |  |  | IOPS332C (12) |  | IOPS332C (4) | |  |
| **W** | SMAT330C (11) | |  | ITOC330C (5) | |  | IOOM332C (10) | |  |
| **Th** | EMIP332C (6) |  |  | EMIP332C (14) | |  | EMIP332C-Lab (8) | | |
| **F** |  |  |  | ITOC330C (13) |  |  | IOPS332C-Lab (7) | | |
| **S** |  |  |  |  |  |  |  |  |  |