**Problem Statement:** Co-relation of Attendance in classes and Placement.

**Problem Explained:**

The final goal of most students pursuing a professional degree course is “Placement in an organization of their choice to start a rewarding career”. Usually, students who perform well in their academics get placed relatively easier when compared to those whose academic performance is not up to the mark. Regularly attending classes is recommended for one to perform well in academics.

This problem statement sheds light on the impact of students attending classes on their performance in placement. While it is natural to expect a good attendance record would result in a higher probability of getting placed, there may be some exceptions. Students who have a good attendance percentage but have not had any success with placement can be identified. Appropriate help can be provided to such students to ensure that they get placed successfully. On the other hand, this will be an eye opener for those students who keep missing classes and hence they have not had any success at getting placed with any organization.

In this problem statement, while the student gets to see only his/her attendance records in courses in relation to the success or failure at getting placed, the faculty can see this data for all those courses that he/she is in-charge of and the placement data of the students taking those courses. The HoD gets to see this data for all the students of his/her department, and the Principal can see the data of students across all the departments of the institution.

**Selection Screen**

* Academic year (multi-select)
  + Mandatory/Optional: Mandatory
  + Default Value: Current academic year
  + List of Values: Yes
* Branch (Option available only to the Principal. For the other users – student, Faculty and HoD, it is limited to their respective branch only; for them, it should be defaulted from their user profile which they cannot change.)
  + Mandatory/Optional: Optional
  + Default Value: Spaces (as described above)
  + List of Values: Yes

**Detailed Procedure:**

1. Based on the entered selection criteria and for the courses selected, get the attendance percentage (*percentage*) from the collection *dhi\_student\_attendance*.
2. For each of the academic year selected, there can be multiple courses. For a student user, the attendance percentage of the student in those courses should be determined. For the faculty user, the percentage of attendance of the students in those subjects taught by that faculty member during the entered academic years should be calculated. The functionality for HoD and for Principal is an extension of that of the faculty member. Against the attendance percentage of the students in these courses, their placement data, if available, should be displayed.
3. For each of the students selected above, get the placement data (*companyName, salary*) from the collection *pms\_placement\_student\_details*. Note that a student may have had multiple placement offers. Details of each of such offers must be displayed.

**Presentation of Results:**

The initial selection screen has the following fields – *Academic Year*, *Branch*. The field *Academic Year* is a multi-select field. The value for the field *Branch* is defaulted from the user profile for Student, Faculty and HoD; the Principal gets to select any single value from the drop-down list.

Depending on the type of user, the results should be presented in the following ways.

Student:

* The placement information related to the student should be displayed in the top section of the screen. These details include the name of the company and the salary details. If the student has received multiple placement offers, then details of each of these offers should be displayed. If needed, this section of the screen should be made scrollable.
* The next section of the screen should display, using a bar graph, the attendance details (in terms of percentage value) of the student in the courses selected based on the selection criteria. One bar should be displayed along the x-axis for each such course, the length of which (along the y-axis) represents the percentage value of attendance.
* Hovering over the bar of any course should display the exact value of the attendance in that course.
* Clicking on the bar of any course should display the following details:
  + The number of classes conducted in that course and the number of classes attended by the student

Faculty:

* The faculty gets to see the placement information of his/her students per the entered selection criteria – as described further below.
* Based on the selection criteria, the courses taught by the faculty should be displayed using a bar graph. Two bars should be displayed along the x-axis for each course – the first bar being the average attendance of all the students taking that course as a percentage value, and the second bar being the percentage of students of that class who have been placed. If a student has received multiple placement offers, it still gets to be counted as one. The length of these bars along the y-axis displays the percentage values for these bars.
* Hovering over either of the bars of any course should display the exact values of these graphs – average of the students’ attendance in that course and the percentage value of those students who have been placed.
* Clicking on either of the bars of any course should display the following details in a pop-up window:
  + On the left-hand side, the number of classes conducted by the faculty for that course
  + On the right-hand side, the detailed placement information consisting of: Total number of students in the class, Total number of students placed, Total number of positions offered. For example, in a class of 50, if 35 get placed of which 10 receive 2 placement offers each, the placement data to be displayed should be:
    - Total number of students in the class = 50
    - Total number of students placed = 35
    - Total number of positions offered = 45 (35 + 10)

HoD:

* When the user happens to be an HoD, all the faculty members of the department who have taken one or more courses per the entered selection criteria are listed in the left panel.
* On selecting any of the faculty members listed in the left panel, the functionality of the program remains the same as that when a faculty member logs in.
* The scrollable list of faculty members names displayed in the left panel can be sorted in ascending/descending order of their names.

Principal:

* When the Principal logs in, the *Branch* field on the initial selection screen becomes available for input. On selecting a branch from the available list of values, the functionality will be like what is made available to the HoD user.

**List of attributes / Information needed to analyze the problem statement:**

dhi\_student\_attendance

* degreeId
* courseCode
* courseDeptId

students (can be more than 1)

* usn
* candidateId
* studentName
* totalNumberOfClasses
* presentCount
* absentCount
* academicYear
* termStartDate
* termEndDate

pms\_placement\_student\_details (can be more than 1 for a student – multiple placement opportunities)

* companyName
* salary
* academicYear

studentList (can be more than 1 for a particular company)

* regNo
* studentName

(Add other collections, documents and embedded objects that supplement the information that is provided by those listed above.)