PIMPRI CHINCHWAD EDUCATION TRUST's.

PIMPRI CHINCHWAD COLLEGE OF ENGINEERING

(An Autonomous Institute)

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Class : SY BTech	**Acad. Yr. 2025-26**	**Semester : I**

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Department: Computer Engineering   **Division : A**

Course Name : Data Structures Laboratory   **Course Code:BCE23PC02**

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Assignment No. 1

Problem Statement: An education platform needs to rank students based on their exam scores to publish results and generate merit lists. Write a program for above scenario.

Source Code :

```cpp
#include <bits/stdc++.h>
using namespace std;

struct Student {
   string name;
   double score;
};

// Insertion sort: descending by score
void insertionSort(vector<Student>& a) {
   for (int i = 1; i < (int)a.size(); ++i) {
      Student key = a[i];
      int j = i - 1;
      // Insert key into sorted portion
      while (j >= 0 && a[j].score < key.score) {
         a[j + 1] = a[j];
         --j;
      }
      a[j + 1] = key;
```

```
        }
}

int main() {
    int n;
    cout << "Enter number of students: ";
    cin >> n;
    cin.ignore(numeric_limits<streamsize>::max(), '\n');

    vector<Student> students;
    for (int i = 0; i < n; ++i) {
        Student s;
        cout << "Enter name of student " << (i + 1) << ": ";
        getline(cin, s.name);
        cout << "Enter score of " << s.name << ": ";
        cin >> s.score;
        cin.ignore(numeric_limits<streamsize>::max(), '\n');
        students.push_back(s);
    }

    insertionSort(students);

    cout << "\nMerit List:\n";
    int rank = 1;
    double prevScore = -1;
    for (int i = 0; i < n; ++i) {
        if (i > 0 && students[i].score != prevScore) {
            rank = i + 1;
        }
        cout << "Rank " << rank << ": " << students[i].name
            << " — Score: " << students[i].score << "\n";
        prevScore = students[i].score;
    }

    return 0;
}
```

Screen Shot of Output :

```
PS D:\hariomprogramm\DSA> g++ pract.cpp -o pract
PS D:\hariomprogramm\DSA> ./pract
Enter number of students: 3


Enter name of student 1: Prathamesh

Enter score of student 1: 85


Enter name of student 2: Hariom

Enter score of student 2: 89


Enter name of student 3: Varad

Enter score of student 3: 78



=== Merit List (Descending Order) ===
1. Hariom - 89
2. Prathamesh - 85
3. Varad - 78
PS D:\hariomprogramm\DSA>
```

Conclusion:

Thus, we have successfully implemented the C++ program to sort the student data according to their scores in exam using insertion sort to help the educational platform.