|  |  |
| --- | --- |
| **Marks of PCM in C++** | |
| #include <iostream>  #include <vector>  #include <algorithm>  using namespace std;  // Define a class to represent marks  class Marks {  public:  int phy;  int chem;  int math;  // Constructor  Marks(int p, int c, int m) {  phy = p;  chem = c;  math = m;  }  // Method to compare for sorting  bool operator<(const Marks& other) const {  if (phy != other.phy) {  return phy < other.phy;  } else if (chem != other.chem) {  return chem > other.chem; // Sort chem descending if phy are equal  } else {  return math < other.math;  }  }  };  // Function to custom sort marks  void customSort(vector<int>& phy, vector<int>& chem, vector<int>& math) {  int n = phy.size();  vector<Marks> arr;  // Populate the vector of Marks objects  for (int i = 0; i < n; ++i) {  arr.emplace\_back(phy[i], chem[i], math[i]);  }  // Sort using overloaded < operator in Marks class  sort(arr.begin(), arr.end());  // Update original arrays with sorted values  for (int i = 0; i < n; ++i) {  phy[i] = arr[i].phy;  chem[i] = arr[i].chem;  math[i] = arr[i].math;  }  }  int main() {  const int N = 5;  vector<int> phy = {9, 5, 9, 8, 5};  vector<int> chem = {3, 4, 3, 7, 6};  vector<int> math = {15, 10, 11, 13, 12};  // Call custom sort function  customSort(phy, chem, math);  // Output sorted marks  for (int i = 0; i < N; ++i) {  cout << phy[i] << " " << chem[i] << " " << math[i] << endl;  }  return 0;  } | **Input Table (Before Sorting)**   | **Index** | **Phy** | **Chem** | **Math** | | --- | --- | --- | --- | | 0 | 9 | 3 | 15 | | 1 | 5 | 4 | 10 | | 2 | 9 | 3 | 11 | | 3 | 8 | 7 | 13 | | 4 | 5 | 6 | 12 |   **🧠 Sorting Rule Recap**   * ✅ Primary: **Phy ascending** * ✅ Secondary: **Chem descending** * ✅ Tertiary: **Math ascending**   **📊 Output Table (After Sorting)**   | **New Index** | **Phy** | **Chem** | **Math** | **Reason** | | --- | --- | --- | --- | --- | | 0 | 5 | 6 | 12 | Smallest phy; chem=6 > chem=4 | | 1 | 5 | 4 | 10 | Same phy as above, chem is lower so placed after | | 2 | 8 | 7 | 13 | Next higher phy | | 3 | 9 | 3 | 11 | Same phy as next, but math is smaller so comes first | | 4 | 9 | 3 | 15 | Same phy and chem as above, but math=15 > math=11, so placed after | |
| 5 6 12  5 4 10  8 7 13  9 3 11  9 3 15 | |