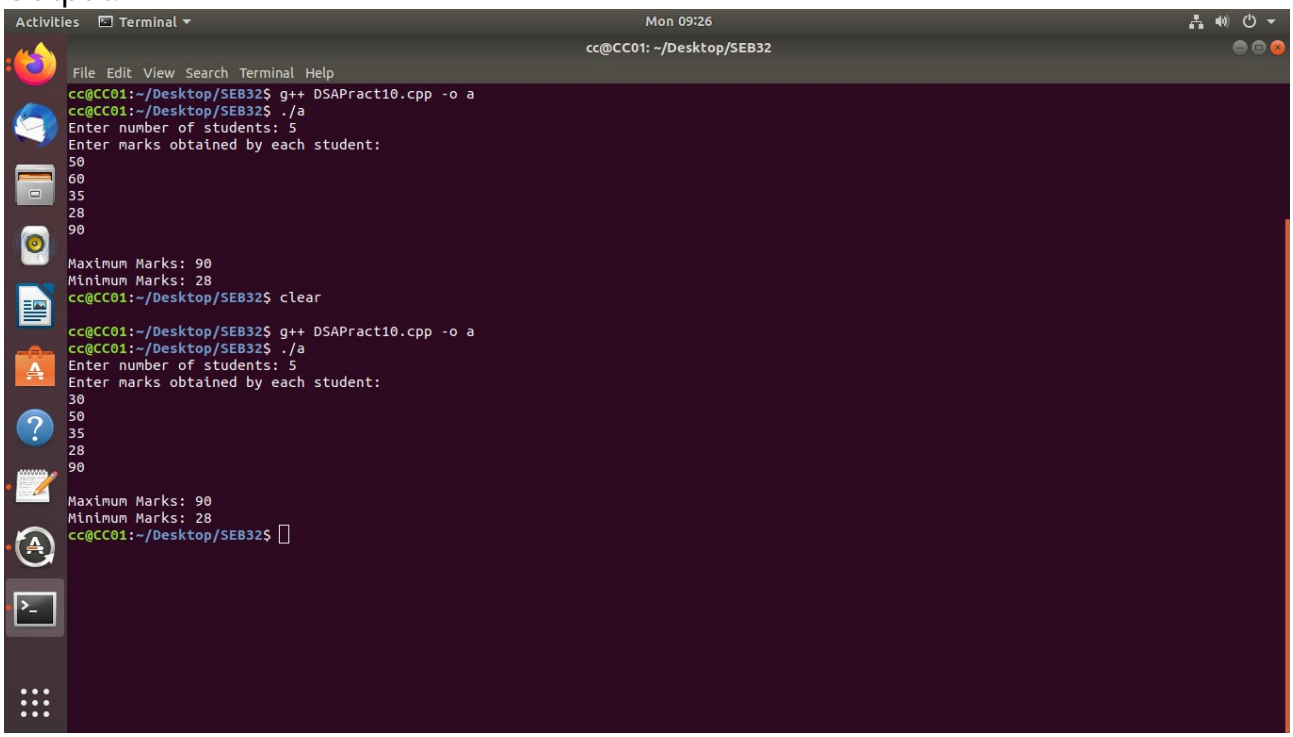
Assignment No.10

Problem Statement:
Read the marks obtained by students of second year in an online examination of particular subject. Find out maximum and minimum marks obtained in that subject. Use heap data structure. Analyze the algorithm.

Source Code:

```
#include <iostream>
#include <vector>
#include <queue> // For priority_queue

using namespace std;

int main()
{
   int n;
   cout << "Enter number of students: ";
   cin >> n;

   // Declare min-heap and max-heap
   priority_queue<int> maxHeap; // max-heap (default)
   priority_queue<int, vector<int>, greater<int>> minHeap; // min-heap

   cout << "Enter marks obtained by each student:\n";
   for (int i = 0; i < n; ++i) {
      int mark;
      cin >> mark;
      maxHeap.push(mark);
      minHeap.push(mark);
   }

   // Get maximum and minimum from top of heaps
   int maxMarks = maxHeap.top();
   int minMarks = minHeap.top();

   cout << "\nMaximum Marks: " << maxMarks << endl;
   cout << "Minimum Marks: " << minMarks << endl;

   return 0;
}
```

Output:


Activities
Terminal
Mon 09:26
cc@CC01: ~/Desktop/SEB32
File Edit View Search Terminal Help
cc@CC01:~/Desktop/SEB32$ g++ DSAPract10.cpp -o a
cc@CC01:~/Desktop/SEB32$ ./a
Enter number of students: 5
Enter marks obtained by each student:
50
60
35
28
90
Maximum Marks: 90
Minimum Marks: 28
cc@CC01:~/Desktop/SEB32$ clear
cc@CC01:~/Desktop/SEB32$ g++ DSAPract10.cpp -o a
cc@CC01:~/Desktop/SEB32$ ./a
Enter number of students: 5
Enter marks obtained by each student:
30
50
35
28
90
Maximum Marks: 90
Minimum Marks: 28
cc@CC01:~/Desktop/SEB32$