

Assignment 10

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Read the marks obtained by students of second year in an online examination of a particular subject. Find the maximum and minimum marks obtained in that subject using Heap data structure. Analyze the algorithm.

```
#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

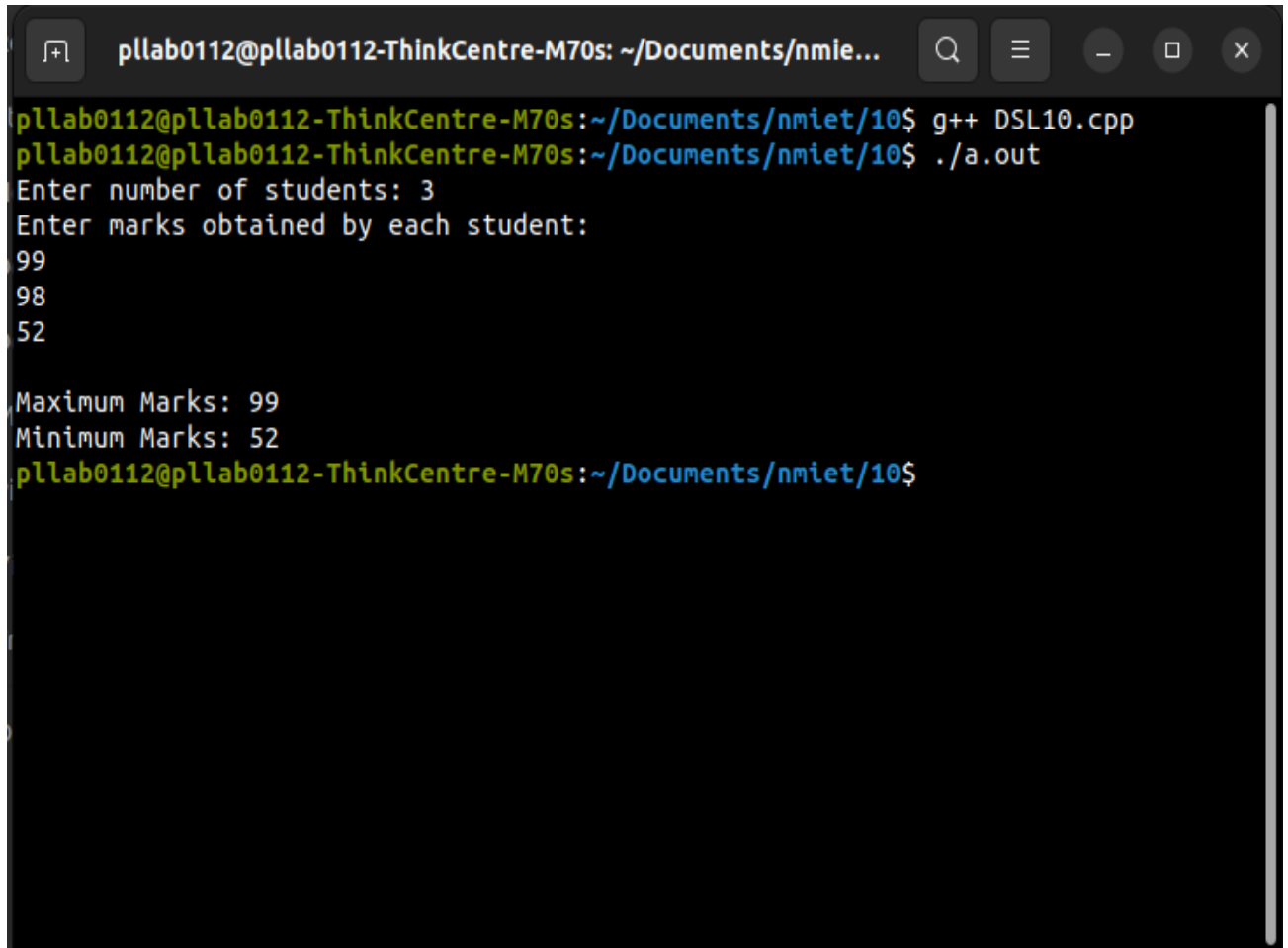
    cout << "Enter marks obtained by each student:\n";
    for (int i = 0; i < n; ++i) {
        int mark;
        cin >> mark;
        maxHeap.push(mark);
        minHeap.push(mark);
    }

    // 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

A terminal window with a dark background and light-colored text. The window title bar shows the user 'p1lab0112' on a machine named 'p1lab0112-ThinkCentre-M70s' in the directory '~/Documents/nmiet/10'. The terminal content shows the compilation of 'DSL10.cpp' using 'g++', followed by running the executable './a.out'. The program prompts for the number of students (3) and then for marks for each student (99, 98, 52). It then outputs the maximum mark (99) and minimum mark (52).

```
p1lab0112@p1lab0112-ThinkCentre-M70s: ~/Documents/nmiet/10$ g++ DSL10.cpp  
p1lab0112@p1lab0112-ThinkCentre-M70s:~/Documents/nmiet/10$ ./a.out  
Enter number of students: 3  
Enter marks obtained by each student:  
99  
98  
52  
  
Maximum Marks: 99  
Minimum Marks: 52  
p1lab0112@p1lab0112-ThinkCentre-M70s:~/Documents/nmiet/10$
```