Assignment No.4

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Batch: C
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TITLE:-
Write a program that implements a simple task scheduler using a singly linked list.Each node in the linked list represents a task with its priority and execution time.Tasks are scheduled based on their priority, with higher priority tasks being executed first.

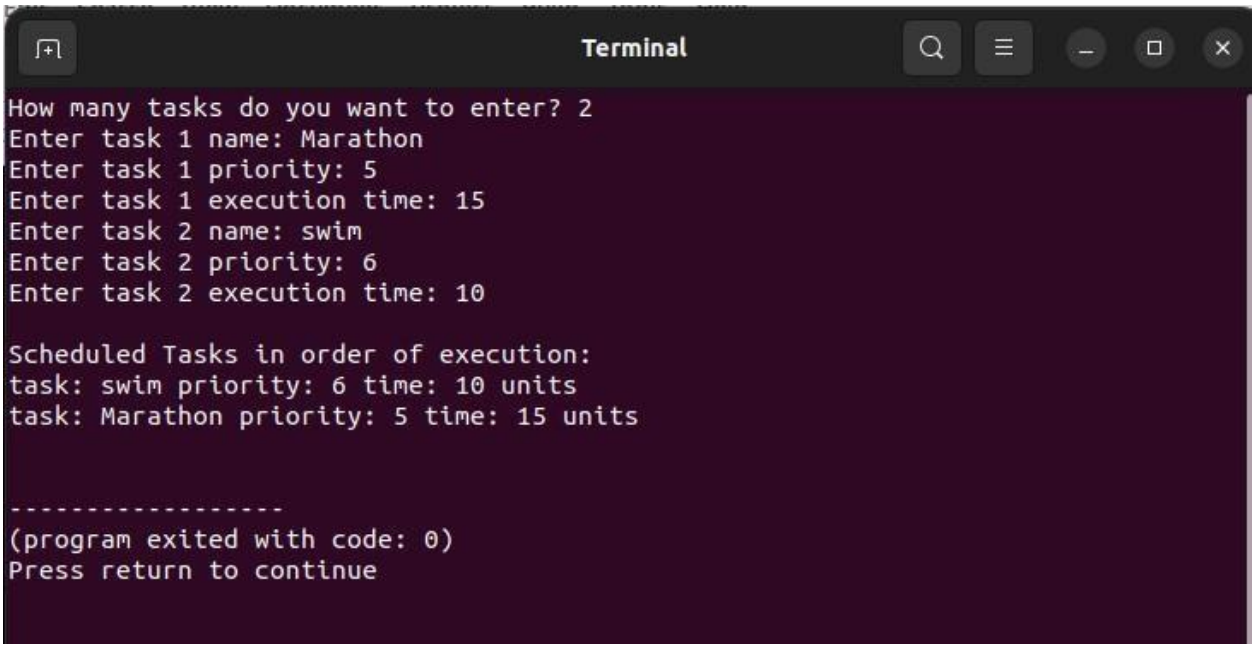
CODE:-

```
#include <iostream>
#include <string> using
namespace std; struct Task
{    string name;    int
priority;    int execTime;
   Task* next;
   Task(const string& n, int p, int e) : name(n), priority(p), execTime(e), next(nullptr) {}
};

class TaskScheduler { private:
   Task* head;

public:
   TaskScheduler() : head(nullptr) {}
   ~TaskScheduler() {
while (head) {          Task*
temp = head;          head =
head->next;          delete temp;
      }
   }

   void addTask(const string& name, int priority, int execTime) {
      Task* newTask = new Task(name, priority, execTime);
```

```
        if (!head || head->priority < priority) {
newTask->next = head;             head = newTask;
        } else {
            Task* current = head;             while (current->next && current-
>next->priority >= priority) {                 current = current->next;
            }
            newTask->next = current->next;             current>next
= newTask;
        }
    }

    void executeTasks() {         Task* current =
head;         while (current) {             cout <<
"task: " << current->name
                << " priority: " << current->priority
                << " time: " << current->execTime << " units\n";             current
= current->next;
        }
    }
};

int main() {
    TaskScheduler scheduler;
    int n;
    cout << "How many tasks do you want to enter? ";     cin
>> n;      cin.ignore();     for (int i = 0; i < n;
++i) {
string name;         int priority, execTime;         cout <<
"Enter task " << i + 1 << " name: ";         getline(cin,
name);
        cout << "Enter task " << i + 1 << " priority: ";
cin >> priority;
        cout << "Enter task " << i + 1 << " execution time: ";
cin >> execTime;         cin.ignore();         scheduler.addTask(name,
priority, execTime);
    }

    cout << "\nScheduled Tasks in order of execution:\n";
scheduler.executeTasks();     return 0;
```

}

OUTPUT:-


Terminal
How many tasks do you want to enter? 2
Enter task 1 name: Marathon
Enter task 1 priority: 5
Enter task 1 execution time: 15
Enter task 2 name: swim
Enter task 2 priority: 6
Enter task 2 execution time: 10
Scheduled Tasks in order of execution:
task: swim priority: 6 time: 10 units
task: Marathon priority: 5 time: 15 units
(program exited with code: 0)
Press return to continue