DS TUTORIAL 4

CODE:

```
/*Simple Task Scheduler:
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. */

#include <iostream>
using namespace std;
class Node {
public:
string task_name;
int priority;
int exe_time;
Node* next;
Node(string tn, int p, int e) {
task_name = tn;
priority = p;
exe_time = e;
next = NULL;
}
void display() {
cout << "Task Name: " << task_name << endl;
cout << "Priority: " << priority << endl;
cout << "Execution Time: " << exe_time << endl;
}
};
int main() {
Node* header = NULL;
Node* prev = NULL;
Node* current = NULL;
Node* temp = NULL;
int n;
string tn;
int p;
int e;

cout << "How many tasks do you want to add: ";
cin >> n;
for (int i = 0; i < n; i++) {
cout << "Enter task name: ";
cin >> tn;
```

```
cout << "Enter task priority (higher number means higher priority):
";
cin >> p;
cout << "Enter execution time (in seconds): ";
cin >> e;
temp = new Node(tn, p, e);
if (header == NULL) {
header = temp;
} else {
if (header->priority < temp->priority) { // if new node has higher
priority than header
temp->next = header;
header = temp;
} else {
prev = header;
current = prev->next;
while (current != NULL && current->priority >= temp->priority) {
prev = current;
current = current->next;
}
prev->next = temp;
temp->next = current;
}
}
}
cout << "\n-----------------------------------------\n" << endl;
cout << "The Priority List is as follows\n" << endl;
Node* t = header;
while (t != NULL) {
t->display();
t = t->next;
}
return 0;
}
```

OUTPUT:

```
How many tasks do you want to add: 3
Enter task name: t1
Enter task priority (higher number means higher priority): 3
Enter execution time (in seconds): 45
Enter task name: t2
Enter task priority (higher number means higher priority): 1
Enter execution time (in seconds): 32
Enter task name: t3
Enter task priority (higher number means higher priority): 2
Enter execution time (in seconds): 51

----------------------------------------

The Priority List is as follows

Task Name: t1
Priority: 3
Execution Time: 45
Task Name: t3
Priority: 2
Execution Time: 51
Task Name: t2
Priority: 1
Execution Time: 32
```