

Experiment:-5

Aim: - Implementation of solution of Activity Selection problem using Greedy method.

Code: -

```
#include <iostream>
#include <algorithm>
#include <vector>
```

```
using namespace std;
```

```
// Struct to represent an activity
struct Activity {
    int start, finish;
};
```

```
// Function to compare activities based on finish time
bool compareActivities(Activity a1, Activity a2) {
    return (a1.finish < a2.finish);
}
```

```
// Function to find maximum number of activities that can be performed
int activitySelection(vector<Activity>& activities) {
    // Sort activities based on finish time
    sort(activities.begin(), activities.end(), compareActivities);
```

```
    // Select the first activity
    int last_finish_time = activities[0].finish;
    int count = 1;
    cout << "Selected activity: 0\n";
```

```
    // Select other activities if they don't overlap with the last selected
    activity
    for (int i = 1; i < activities.size(); i++) {
        if (activities[i].start >= last_finish_time) {
```

```
        count++;
        cout << "Selected activity: " << i << "\n";
        last_finish_time = activities[i].finish;
    }
}
return count;
}

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

    vector<Activity> activities(n);

    // Input the start and finish time of each activity
    for (int i = 0; i < n; i++) {
        cout << "Enter start time and finish time of activity " << i << ": ";
        cin >> activities[i].start >> activities[i].finish;
    }

    int max_activities = activitySelection(activities);
    cout << "Maximum number of activities that can be performed: " <<
max_activities << endl;

    return 0;
}
```

Output: -

```
Enter the number of activities: 4
Enter start time and finish time of activity 0: 4 5
Enter start time and finish time of activity 1: 5 6
Enter start time and finish time of activity 2: 1 9
Enter start time and finish time of activity 3: 2 5
Selected activity: 0
Selected activity: 2
Maximum number of activities that can be performed: 2
```