

CSCI 445

STEFANA RUSU

(Activity Selection Problem)

Description

Each activity is assigned a start time (startTime) and finish time (finish-Time). The goal is to select the maximum number of activities that can be performed by a single person, assuming that a person can only work on a single activity at a time.

Input:

No user input required

The code is tested by using the following number of activities, start times, and end times:

Use Case 1

i	1	2	3	4	5	6	7	8	9	10	11
s_i	1	3	0	5	3	5	6	8	8	2	12
f_i	4	5	6	7	9	9	10	11	12	14	16

Expected output: activities a_1, a_4, a_8, a_{11}

Use Case 2

i	1	2	3	4	5	6	7	8
s_i	1	1	0	3	4	4	5	2
f_i	2	3	4	5	5	6	8	9

Expected output: activities a_1, a_4, a_7

The algorithm used is:

```
RECURSIVE-ACTIVITY-SELECTOR (s, f, k, n)
1  $m = k + 1$ 
2 while  $m \leq n$  and  $s[m] < f[k]$ 
3    $m = m + 1$ 
4 if  $m \leq n$ 
5   return  $a_m \cup \text{RECURSIVE-ACTIVITY-SELECTOR}(s, f, m, n)$ 
6 else return
```

The algorithm can be found on page 419 of the textbook (Chapter 16: Greedy Algorithms).

PLEASE SEE OUTPUT BELOW.

C:\Users\stefa\Desktop\ActivitySelection\ActivitySelection\bin\Debug\ActivitySelection.exe

Stefana Rusu - Assignment 4

Greedy Algorithms

Recursive Activity Selector Algorithm

Use case 1 (table from CH16):

Start times = {1, 3, 0, 5, 3, 5, 6, 8, 8, 2, 12}

Finish times = {4, 5, 6, 7, 9, 9, 10, 11, 12, 14, 16}

Number of activities = 11

The selected mutually compatible activities that can be performed are:

a1 a4 a8 a11

Use case 2:

Start times = {1, 1, 0, 3, 4, 4, 5, 2}

Finish times = {2, 3, 4, 5, 5, 6, 8, 9}

Number of activities = 8

The selected mutually compatible activities that can be performed are:

a1 a4 a7