Total Points 30 | Duration: 45 minutes | Pages: 5

ESC101 – Fundamentals of Computing(Major Quiz 1)

3 February, 2016

Instructions

1. Write you name, section and roll number on all the pages of the answer book.
2. Write the answers cleanly in the space provided. There is space left on the back of the answer book for rough work.
3. Using pens (blue/black ink) and not pencils. Do not use red pens for answering.
4. Even if no answers are written, the answer book has to be returned back with name and roll number written.
5. Recall that cheating carries severe consequences.

Question	Points	Score
1	20	20
2	10	4
Total:	30	24

Name:	DIVYANSH SINGHVI
Roll No:	150238
Section:	A-4

B(2) → returns x =
B(3) ..

Name: DIVYANSH SINGHVI Section: A-4 Rollno: 150238

Question 1. (20 points) At a factory there are 3 tasks that are being carried out for specific intervals of time given in terms of positive integers. A special worker will be available for a specific time duration. We would like to identify which tasks he can carry out and for what duration. We have written a program to identify these. However, it is not working correctly. For certain inputs, it outputs incorrect values.

```
1 #include <stdio.h>
2
3 int main()
4 {
5   int start[3];
6   int end[3];
7   int qstart, qend;
8   int s, e;
9   int i, j;
10  for(i =0; i<3; i++)
11    scanf("%d %d",&start[i], &end[i]);
12  scanf("%d %d",&qstart, &qend);
13
14  for(i=0; i<3; i++)
15    {
16      if(qstart < end[i] && qend < start[i] )
17        {
18          s = (qstart>start[i]) ? qstart:start[i];
19          e = (qend<end[i]) ? qend:end[i];
20          printf("range %d intersection %d \n",i+1, e-s);
21        }
22    }
23
24  return 0;
25 }
```

55 72
35 65 X
42 51
27 38

S = 55
e = 38

S = 42
C = 38

12 20
40 70
15 30
S 33

S = 40
e = 33

0 14 0
50 63 1
47 56 2

33 42

S = 50
e = 42

S = 47
e = 42

Name: DIVYANSH SINGHVI Section: A-4 Rollno: 180238

Clearly specify the output of the above program for the following inputs:

#	INPUT	OUTPUT
A.	9 7 23 46 26 5 54 52 10 45 2 5	40 X
B.	10 20 30 40 50 60 70 80 90 100 3 6	90 ✓
C.	12 8 10 4 42 50 2 8 100 4 2 5	54 ✓
D.	9 7 23 46 26 5 54 52 10 45 2 6	40 X
E.	24 48 36 80 40 60 72 16 88 12 5 8	49 X

4

107/3

[9 7 23 46 5 54 87 10 45]

60 128 40 60 72 16

100 88 60

248/5

49

2 55/2 107/3 161/4 99 62 111/4

23 55/2 107/3

132 49/6

172 128 300

344/7 360/8 72

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Question 2. (10 points) Consider the following program:

```
1  #include <stdio.h>
2
3  int main()
4  {
5    int a[10];
6    int ws, we, w, i, sum=0;;
7    int ma;
8    int mam=0;
9    for(i=0; i<10; i++)
10     scanf("%d",&a[i]);
11   scanf("%d",&ws);
12   scanf("%d",&we);
13   for( w = ws; w<we; w++)
14     {
15       sum=0;
16       for(i = 0; i<w; i++)
17         sum = sum+a[i];
18       ma = sum/w;
19       if(ma > mam)
20         mam = ma;
21       for(i=1; i<=10-w; i++)
22         {
23           sum = (sum-a[i-1]+a[i+w-1]);
24           ma = sum/w;
25           if(ma > mam)
26             mam = ma;
27         }
28
29     }
30   printf("%d\n", mam);
31
32   return 0;
33 }
```

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Clearly specify the output of the above program for the following inputs:

#	INPUT	OUTPUT
A.	10 40 30 90 40 50 25 39	~~range 3 intersection -1~~ range 3 intersection -1
B.	50 80 70 80 10 70 52 59	~~range 2 intersection -11~~ range 2 intersection -11
C.	12 20 40 70 15 30 5 33	range 2 intersection -7
D.	6 14 50 63 47 56 33 42	range 2 intersection -8 range 3 intersection -5
E.	55 72 35 65 42 51 27 38	range 1 intersection -17 range 3 intersection -4

(2