Computer Engineering Department

TED University

TED UNIVERSITY

CMPE 252 - C Programming, Spring 2021

Lab 1

Part 1 (25 points)

Write a recursive function **`int modulus(int num, int d)`** that finds modulus of given numbers.

Your task in this part to fill in the missing function definition in skeleton code **`lab1part1.c`**. The remaining part of the code (such as **`main`** function) will stay as it is.

Here are example runs of the program:

```
Enter number> 30
Enter divisor> 8
Remainder : 6
Process returned 0 (0x0)   execution time : 1.975 s
Press any key to continue.
```

```
Enter number> 13
Enter divisor> 12
Remainder : 1
Process returned 0 (0x0)   execution time : 1.960 s
Press any key to continue.
```

```
Enter number> 6
Enter divisor> 8
Remainder : 6
Process returned 0 (0x0)   execution time : 4.178 s
Press any key to continue.
```

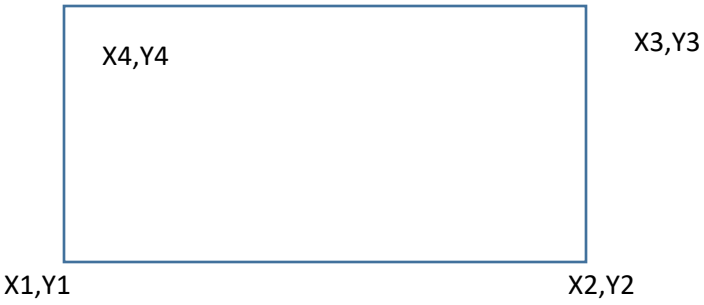
Part 2 (75 points)

In this part, you are going to implement the following function in skeleton code **`lab1part2.c`**:

`void void isRectangle(int *result, double *centerX, double *centerY):`

This function is supposed to do the following tasks:

- Read x and y coordinate of the four points using **`scanf`** function.
- Check that given points construct rectangle or not.
- If yes, set result variable to 1 and set centerX and centerY variables to the center coordinate of rectangle.
- Otherwise set result, centerX and centerY to 0.
- the corner coordinates of the rectangle will always be given in order.



To find given coordinates construct rectangle or not, you should check following conditions:

- Edge between (X1,Y1) and (X2,Y2) should be equal to edge between (X3,Y3) and (X4,Y4).
- Edge between (X2,Y2) and (X3,Y3) should be equal to edge between (X4,Y4) and (X1,Y1).
- Edge between (X1,Y1) and (X3,Y3) should be equal to edge between (X2,Y2) and (X4,Y4).
- Edge between (X1,Y1) and (X2,Y2) should be smaller than edge between (X1,Y1) and (X3,Y3).
- Edge between (X2,Y2) and (X3,Y3) should be smaller than edge between (X2,Y2) and (X4,Y4).
- Edge between (X3,Y3) and (X4,Y4) should be smaller than edge between (X3,Y3) and (X1,Y1).

Your task in this part to fill in the missing function definition in skeleton code **`lab1part2.c`**. The remaining part of the code (such as **`main`** function) will stay as it is.

Here are example runs of the program:

```
0 0
2 0
2 2
0 2
Given points are rectangle, centers are x: 1.000 y: 1.000
Process returned 0 (0x0)   execution time : 6.291 s
Press any key to continue.
```

```
0 0
0 2
2 2
3 0
Given points are not rectangle, centers are x: 0.000 y: 0.000
Process returned 0 (0x0)   execution time : 10.096 s
Press any key to continue.
```

```
0 0
2 2
0 2
2 0
Given points are not rectangle, centers are x: 0.000 y: 0.000
Process returned 0 (0x0)   execution time : 4.649 s
Press any key to continue.
```