Computer Engineering Department

TED University

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CMPE 252 - C Programming, Spring 2021

Lab 1

Part 1 (25 points)

Write a recursive function **`int takePow(int num, int d, int result)`** 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> 5
Enter power> 2
2 Power of: 5 is 25
Process returned 0 (0x0)   execution time : 1.466 s
Press any key to continue.
```

```
Enter number> 3
Enter power> 4
4 Power of: 3 is 81
Process returned 0 (0x0)   execution time : 2.608 s
Press any key to continue.
```

```
Enter number> 5
Enter power> 3
3 Power of: 5 is 125
Process returned 0 (0x0)   execution time : 4.311 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 isInCircle(int *result, double *centerX, double *centerY);
```

This function is supposed to do the following tasks:

- Read x and y coordinate and radius of the given circle using **`scanf`** function, respectively.
- Read x and y coordinate of the points until EOF using **`scanf`** function.
- Calculate center coordinate of given points(for this step, do not use circle point)
- After calculating centerX and centerY, you should check that this center is inside, on or outside of circle using following formula:
    - Let distance = (CenterPointsX – centerCircleX)^2 + (CenterPointsY – centerCircleY)^2
    - If it is inside, distance < radius^2, you should set result to 1,
    - If it is on the circle, distance = radius^2, you should set result to 0
    - Otherwise, distance > radius^2, you should set result to -1.
    - You should also set centerX and centerY parameters of function

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 the example runs of the programs:

```
1 1 2
2 2
3 3
4 4
^Z
center of points is outside circle, centerX: 3.0 , centerY: 3.0
Process returned 0 (0x0)   execution time : 12.844 s
Press any key to continue.
```

```
1 1 3
2 2
3 3
4 4
^Z
center of points is inside circle, centerX: 3.0 , centerY: 3.0
Process returned 0 (0x0)   execution time : 10.500 s
Press any key to continue.
```


```
0 0 2
-1 2
1 3
0 1
^Z
center of points is on circle, centerX: 0.0 , centerY: 2.0
Process returned 0 (0x0)   execution time : 12.415 s
Press any key to continue.
```