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

`void printPowersInRange(int n, int p, int count, int minVal, int maxVal)`

that prints all integer for the equation $n^p + 3p$, where they are in range [**`minVal maxVal`**] inclusively.

Finally you should print total number of p that satiffies minimum and maximum values.

Assume that

- n is an integer greater than 1.
- **`minVal`** and **`maxVal`** are positive integers where **`maxVal`** >= **`minVal`**.
- **`P is between 0 and`** ∞**.**

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> 4
Enter minimum value> 2
Enter maximum value> 80
F_1 is: 7
F_2 is: 22
F_3 is: 73
3

Process returned 0 (0x0)   execution time : 4.694 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 findClosestPoint(double *length, double *closestX, double *closestY);
```

This function is supposed to do the following tasks:

- Read x and y coordinate of points using **`scanf`** function until reaching EOF.
  - Calculate to distance from this point to origin (0,0) using this formula: $\sqrt{(x1)^2 + (y1)^2}$
- Find closest point to origin.
- Output computed values through the pointer variables listed in the function's formal parameter list.

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 is a sample run of the program:

```
2.2 4.2
0 2.0
^Z
length of line from point to origin 2.00
Closest Point X: 0.00
Closest Point Y 2.00

Process returned 0 (0x0)   execution time : 12.036 s
Press any key to continue.
```

```
10 20.2
0 7
3 4
^Z
length of line from point to origin 5.00
Closest Point X: 3.00
Closest Point Y 4.00

Process returned 0 (0x0)   execution time : 10.650 s
Press any key to continue.
```