

# PDS Lab Section 16

## Set 2

Max Marks 25

Lab Day 6 (Lab Test 1) – September 29, 2023

Time: 9AM to 11:30AM

The top two lines of your programs must contain the following information:

//Roll No.: <Type in your roll no.>

//Name: <Type in your name>

You have to give names to your C files as specified below and upload them in Moodle well before time. Please read the instructions given below.

**Document your programs meaningfully using appropriately named variables and sufficient amount of comments. There will be marks for documentation and proper code indentation.**

1. Write a program that takes an integer between 1 and 9 as input, and prints out on the terminal a pattern similar to the following. The example display shown is for input 5.

Example (n=5):

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

[5 Marks]

2. Write a program to ask the user how many random numbers to generate. Generate that many random numbers between 0 and 100 (100 not included). Display the random numbers. Display the percentage (up to 1 decimal place) of random numbers that were generated between 0—9, 10—19, 20—29, ..., and 90—99.

For example: Your final display may look like this for 10 numbers:

```
10 0 99 56 78 65 1 64 85 25
0-9: 10.1%
10-19:8.5%
...
90-99:11.5%
```

[10 Marks]

3. Write a program that will prompt the user to enter a sequence of positive integer values. At any time, your program should display the two largest values entered so far and also the two smallest values. When the user has entered only one value, for the second largest and second smallest numbers your program should display “Value has not yet been entered”. Your program should terminate when the user enters any negative number.

For example:

```
Enter numbers: 1 ↵
Largest number: 1
Second largest number: Value Not yet entered
Smallest number: 1
Second smallest number: Value Not yet entered
```

```
Enter numbers: 1 2 5 4 ↵
Largest number: 5
Second largest number: 4
Smallest number: 1
Second smallest number: 2
```

```
Enter numbers: 1 2 5 4 8 2 ↵
Largest number: 8
Second largest number: 5
Smallest number: 1
Second smallest number: 2
```

```
Enter numbers: 1 2 5 4 8 2 1 1 ↵
Largest number: 8
Second largest number: 5
Smallest number: 1
Second smallest number: 2
```

```
Enter numbers: 1 2 5 4 8 2 1 1 -10 ↵
<Program terminates> Here ↵ denotes pressing of enter key.
```

**[10 Marks]**

----- **End** -----