Lab Assignment 02



| **Course Code:** | **CSE111** |
| --- | --- |
| **Course Title:** | **Programming Language II** |
| **Topic:** | **Loops** |
| **Number of Tasks:** | **11** |

(There are 11 total tasks, therefore you would have 11 total .java files.

If any task has parts a, b, c etc, complete all the parts in the same file)

**Task 1**

Using while loops, write a java code to display/print the following serieses:

1. 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, 50

(Hint: Identify the start, end, and common increment)

1. 1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78, 91, 105, 120

(Hint: at each iteration, the increment amount also increases)

**Task 2**

Using for loop or while loop, write a java program that displays the following palindromic sequence of numbers:

(A palindromic sequence of numbers means the sequence stays the same when the numbers are reversed)

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2

**Task 3**

Write a java program that takes 10 inputs from the user in a loop, and displays the sum, average, minimum and maximum of those numbers.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 1  4  2  9  2  -4  3  -1  0  1 | Sum = 17  Minimum = -4  Maximum = 9  Average = 1.7 |
| 23  2  -4  0  8  12  34  -11  53  21 | Sum = 138  Minimum = -11  Maximum = 53  Average = 13.8 |

**Task 4**

Write a java program that takes 10 inputs from the user in a loop, and displays the sum, average, minimum and maximum of **ONLY THE POSITIVE ODD NUMBERS** from those numbers. If no such numbers are found, then display the message “No odd positive numbers found”.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 1  4  2  9  2  -4  3  -1  0  1 | Sum = 14  Minimum = 1  Maximum = 9  Average = 3.5 |
| 34  -11  50  24  -24  2  -4  0  8  12 | No odd positive numbers found |
| 23  2  -4  0  8  12  34  -11  53  21 | Sum = 97  Minimum = 21  Maximum = 53  Average = 32.333333333333336 |

**Task 5**

Write a java program that takes inputs from the user in a loop **until three consecutive zeros are entered**, then displays the sum, average, minimum and maximum of those numbers. You can consider the zeros in the input to be excluded in the sum / max / min / average.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 4  1  12  54  0  0  37  4  0  0  0 | Sum = 112  Minimum = 1  Maximum = 54  Average = 18.666666666666668 |
| 0  0  0 | No numbers found |

**Task 6**

Write a java program to calculate **weighted average** of 5 decimal numbers, where the numbers will be given in the following format:

num1

weight1

num2

weight2

num3

weight3

num4

weight4

num5

weight5

The formula for calculating weighted average is as follows:

| **Sample Input** | **Sample Output** |
| --- | --- |
| 95.5 2  72.1 4  -3.8 1  0 2  59 1 | Weighted Average = 53.459999999999994 |
| 3 2  4 2  5 2  6 2  7 3 | Weighted Average = 5.181818181818182 |

**Task 7**

**Fibonacci sequence** is a sequence in which each number is the sum of the two preceding numbers, where starting values are most commonly two 1s (1, 1, . . .).

1. Write a java program to display the fibonacci sequence until an input number.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 15 | 1 1 2 3 5 8 13 |
| 70 | 1 1 2 3 5 8 13 21 34 55 |

1. Write a java program to display the fibonacci sequence until an input number, along with the sum of the sequence.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 15 | 1 1 2 3 5 8 13 Sum = 33 |
| 77 | 1 1 2 3 5 8 13 21 34 55 Sum = 143 |

**Task 8**

Write a java program that takes 2 integer numbers as input and calculates how many prime numbers exist between them.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 10  15 | There are 2 prime numbers between 10 and 15. |
| 150  100 | There are 10 prime numbers between 100 and 150. |

**Task 9**

1. Write a java program to take an **integer** as input and display how many digits there are in the number.

| **Sample Input** | **Sample Output** |
| --- | --- |
| 5500 | 4 digits |
| 647823 | 6 digits |

1. Write a java program that encrypts an input integer by multiplying each digit by 7.

(Hint: You will need to use the code from part *a*).

| **Sample Input** | **Sample Output** |
| --- | --- |
| 3705 | 21 49 0 35 |
| 99944 | 63 63 63 28 28 |

**Task 10**

Write a java program that when given an amount of money, it calculates how many paper notes it will take to represent it. For simplicity let's assume we have only 500, 100, 50,10, 5 and 1 paper notes available.

**Note:** You cannot use multiplication or division for this task

| **Sample Input** | **Sample Output** |
| --- | --- |
| 1500 | 3 500’s note |
| 3724 | 7 500’s note  2 100’s note  2 10’s note  4 1’s note |

**Task 11**

Write a java programs to print the following patterns

1. Square pattern

| **Sample Input** | **Sample Output** |
| --- | --- |
| 5 | \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\* |

1. Triangle pattern

| **Sample Input** | **Sample Output** |
| --- | --- |
| 5 | \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\* |