

CSE 1001: Introduction to Computer Programming

Programming Assignment-IV

(Iterative Statement/ Looping)

1. Write a java program that gets three integers from the user. Count from the first number to the second number in increments of the third number. Use a for loop to do it.

```
Count from:  4
Count to:   13
Count by:   3
4 7 10 13
```

2. Write a java program that uses a *for* loop. With the loop, make the variable x go from -2 to 2 counting by 0.5.

```
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
```

3. Write a java program to print the following output using loop. Where, input is the number of rows in output pattern.

```
For input, N = 5.
1
121
1213121
121312141213121
1213121412131215121312141213121
```

4. If we list all the natural numbers below 10 that are multiple of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Write a program to find the sum of all the multiples of 3 or 5 below 1000.

5. Write a java program to print the sum of all even numbers and the product of all odd numbers from 1 to N. Where, N is the input to the program.

```
For input, N = 10
Sum of all even numbers = 2 + 4 + 6 + 8 + 10 = 30
Product of all odd numbers = 1 * 3 * 5 * 7 * 9 = 945
```

6. Write a program to print the multiplication table of a number entered by the user.

```
Enter a number for which you want to find the multiplication table:  8
8 x 1 = 8
8 x 2 = 16
8 x 3 = 24
8 x 4 = 32
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72
8 x 10 = 80
```

7. Write a program to find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.

The sum of the squares of the first ten natural numbers is,
 $1^2 + 2^2 + \dots + 10^2 = 385$

The square of the sum of the first ten natural numbers is,
 $(1 + 2 + \dots + 10)^2 = 3025$

Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is $3025 - 385 = 2640$.

8. An integer n is divisible by 9 if the sum of its digits is divisible by 9. Use this concept in your program to determine whether or not the number is divisible by 9. Test it on the following numbers:

$n = 123456$

$n = 154368$

$n = 621594$

Hint: Use the `%` operator to get each digit; then use `/` operator to remove the digit.

9. Write a java program to print largest power of two less than or equal to N . Where, N is the input to the program.

10. Write a java program to print the below given pattern using *while* loop as well as *for* loop in two different programs.

For input, $N = 5$.

```
*
* *
* * *
* * * *
* * * * *
```

11. Write the java program to print the following four patterns using *for* loops in four different programs.

For input, $N = 5$.

Pattern 1	Pattern 2	Pattern 3	Pattern 4
*	1	1	1
* *	1 2	2 2	2 3
* * *	1 2 3	3 3 3	4 5 6
* * * *	1 2 3 4	4 4 4 4	7 8 9 10
* * * * *	1 2 3 4 5	5 5 5 5 5	11 12 13 14 15