MCA11 Programming with Python

Handout 3 – Loops

1. Print First 10 natural numbers using while loop

2. Write a program to print the following number pattern using a loop.

    1

    1 2

    1 2 3

    1 2 3 4

    1 2 3 4 5

    Hint

    - Decide the row count, i.e., 5, because the pattern contains five rows
    - Run outer for loop 5 times using for loop and range() function
    - Run inner for loop i+1 times using for loop and range() function
        - In the first iteration of the outer loop, the inner loop will execute 1 time
        - In the second iteration of the outer loop, the inner loop will execute 2 time
        - In the third iteration of the outer loop, the inner loop will execute 3 times, and so on till row 5
    - print the value of j in each iteration of inner loop (j is the the inner loop iterator variable)
    - Display an empty line at the end of each iteration of the outer loop (empty line after each row)

3. Calculate the sum and average of all numbers from 1 to a given number.

```
# s: store sum of all numbers
s = 0
n = int(input("Enter number "))
# run loop n times
# stop: n+1 (because range never include stop number in result)
for i in range(1, n + 1, 1):
    # add current number to sum variable
    s += i
print("\n")
ave = s/n
print("Sum is: ", s,)
```

4. Write a program to print multiplication table of a given number

    For example, num = 2 so the output should be

    1x2=2

    2x2=4

    3x2=6

    4x2=8

    5x2=10

    6x2=12

    7x2=14

    8x2=16

    9x2=18

    10x2=20

5. Write a program to display only those numbers from a list that satisfy the following conditions
    - The number must be divisible by five
    - If the number is greater than 150, then skip it and move to the next number
    - If the number is greater than 500, then stop the loop

6. Write a program to count the total number of digits and sum of digits in a number using a while loop.

7. Write a program to use for loop to print the following reverse number pattern

    5 4 3 2 1

    4 3 2 1

    3 2 1

    2 1

    1

8. Print list in reverse order using a loop.

9. Write a program to display all prime numbers within a range

    Expected output:

    Prime numbers between 25 and 50 are:

    29

    31

37

41

43

47

10. Display Fibonacci series up to 10 terms

11. Find the factorial of a given number

12. Reverse a given integer number

13. Use a loop to display elements from a given list present at odd index positions

14. Calculate the cube of all numbers from 1 to a given number

15. Write a Python program to find those numbers which are divisible by 7 and multiple of 5, between 1500 and 2700 (both included)

16. Write a Python program to construct the following pattern, using a nested for loop.

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

17. Write a Python program that accepts a word from the user and reverse it

18. Write a Python program that prints all the numbers from 0 to 6 except 3 and 6.

19. Write a Python program that accepts a string and calculate the number of digits and letters. [Use isalpha() and isdigit()]

20. Write a program to filter even and odd number from a list.