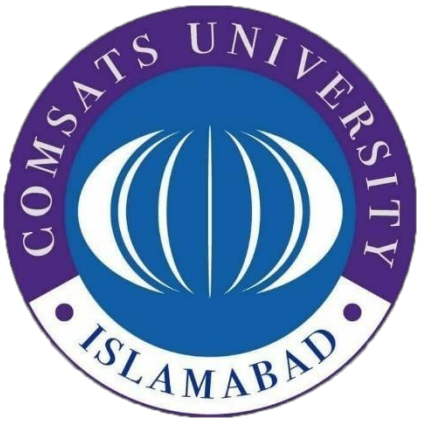


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**5-B**

**COURSE:**

**Artificial Intelligence**

**EEE 462**

# Lab Report 01

BS Electrical Engineering

# Lab 01 Introduction to Python

## Lab Tasks:

### Task 1:

Display numbers on screen using Python IDLE. Solution:

```
>>> 24
24
>>> 4.2
4.2
>>> print(234)
234
>>> print(49.50)
49.5
```

### Task 2:

Display strings on screen.

**Solution:**

```
>>> 'hello'
'hello'
>>> 'quote me on this'
'quote me on this'
>>> "What's ur name?"
"What's ur name?"
>>> """What's your name?" I asked He said "Bond", James Bond"""
'What\'s your name?" I asked He said "Bond", James Bond'
```

## Task 3:

Use Python as a calculator.

**Solution:**

```
>>> 2+2
4
>>> 23.5+20
43.5
>>> 23-18.5
4.5
>>> 5*6
30
>>> 28/4
7.0
>>> 26/4
```

## Task 4:

Get an integer answer from division operation. Also get remainder of a division operation in the output.

**Solution:**

```
>>> 28/4
7.0
>>> 26/4
6.5
>>> 28//4
7
>>> 26//4
6
>>>
```

## Task 5:

Calculate 43, 410, 429, 4150, 41000

**Solution:**

```
>>> 4**3
64
>>> 4**29
288230376151711744
>>> 4**150
203703597633448608626844568840937816105146839366593625063614044935438129976333670618339737 6
>>> 4**1000
114813069527425452423283320117768198402231770208869520047764273682576626139237031385665948631650626
```

## Task 6:

Write following math expressions. Solve them by hand using operators' precedence. Calculate their answers using Python. Match the results.

**Solution:**

```
>>> 2+3*6
20
>>> (2+3)*6
30
>>> 48565878 * 578453
28093077826734
>>> 2   +   2
4
>>> .   2   +   2 (note the spaces after
... +) 5. (5 - 1) * ((7 + 1) / (3 - 1))
```

## Task 7:

Combine numbers and text. Solution:

**Command**

```
# Text x = "Nancy" print(x)
# Combine numbers and text
s = "My lucky number is %d, what is yours?" %7 print(s)
# alternative method of combining numbers and text
s = "My lucky number is " + str(7) + ", what is yours?"
print(s)
```

**Output:**

```
Nancy
My lucky number is 7, what is yours?
My lucky number is 7, what is yours?

Process finished with exit code 0
```

## Task 8:

Take input from the keyboard and use it in your program.

**Solution:**

**Command**

```
name = input('What is your name? ')
print('Hello ' + name)
job = input('What is your job? ')
```

```
print('Your job is ' + job)
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\Scripts\python.exe C:\Users\FaT\Desktop\AI\Codes\main.py
What is your name? Saad
Hello Saad
What is your job? Vela
Your job is Vela

Process finished with exit code 0
```

## Task 9:

Let us take an integer from user as input and check whether the given value is even or not.

**Solution:**

**Command**

```
n=input("Enter a number = ")
if int(n)%2==0:
   print("The given Number is even")
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\S
Enter a number = 50
The given Number is even

Process finished with exit code 0
```

## Task 10:

Let us modify the code to take an integer from user as input and check whether the given value is even or odd. If the given value is not even then it means that it will be odd. So here we need to use if-else statement an demonstrated below.

**Solution:**

**Command**

```
n=input("Enter a number = ")
if int(n)%2==0:
    print("The given Number is even")
else:
    print("The given Number is odd")
```

**Output:**

```
Enter a number = 51
The given Number is odd

Process finished with exit code 0
```

## Task 11:

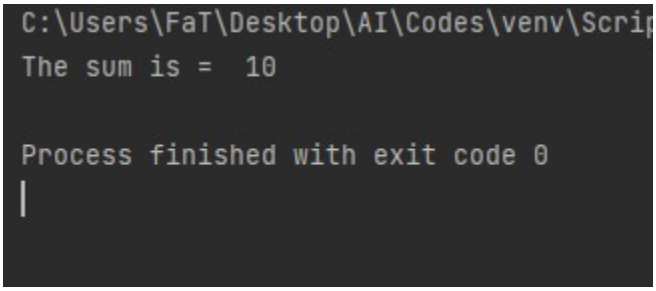
Calculate the sum of all the values between 0-10 using while loop.

**Solution:**

**Command**

```
summation=0
i=1
while i<=10:
    summation=summation+1
   i=i+1
print("The sum is = ", summation)
```

**Output:**




## Task 12:

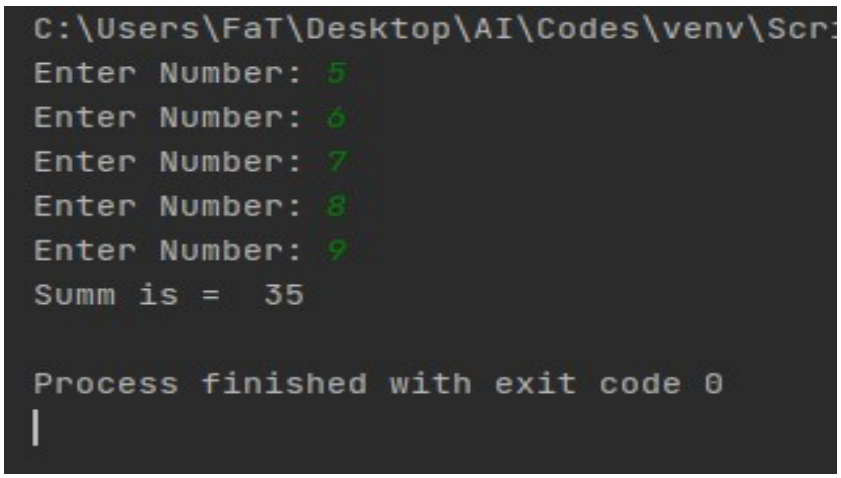
Accept 5 integer values from user and display their sum. Draw flowchart before coding in python.

**Solution:**

**Command**

```
i=0 while i<=4:
s=input("Enter Number: ")
 n=int(s)
summ=summ+n
 i=i+1
 print("Summ is = ", summ)
```

**Output:**




## Task 13:

Write a Python code to keep accepting integer values from user until 0 is entered. Display sum of the given values.

**Solution:**

**Command**

```
sum=0
s=input("Enter an integer value : ")
n=int(s)
while n!=0:
 sum=sum+n
    s=input("Enter an integer value : ")
 n=int(s)
print("The sum of given values is = ", sum)
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\Scripts\python.
Enter an integer value : 5
Enter an integer value : 6
Enter an integer value : 8
Enter an integer value : 10
Enter an integer value : 0
The sum of given values is =  29

Process finished with exit code 0
```

## Task 14:

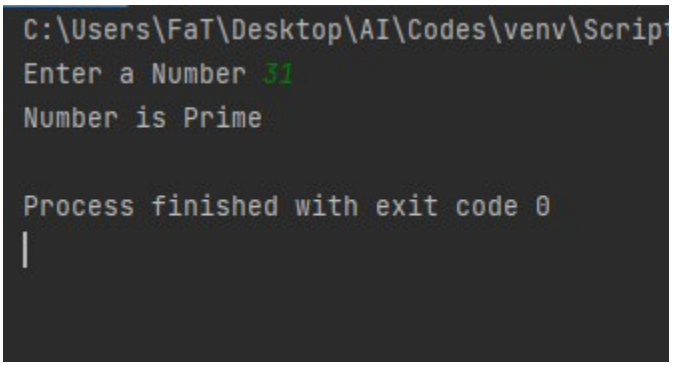
Write a Python code to accept an integer value from user and check that whether the given value is prime number or not.

**Solution:**

**Command**

```
isp=True
i=2
n=int(input("Enter a Number "))
while i<n:
rem=n%i
 if rem==0:
  isp=False
       break
 else:
       i=i+1 if isp:
   print("Number is Prime")
else:
   print("Number is not Prime")
```

**Output:**




# Post Lab:

## Task 1:

Write a Python code to accept marks of a student from 1-100 and display the grade according to the following formula.

Grade F if marks are less than 50 Grade E if marks are between 50 to 60

Grade D if marks are between 61 to 70 Grade C if marks are between 71 to

80 Grade B if marks are between 81 to 90

Grade A if marks are between 91 to 100 Code:

```
s=1
while s<=100:
    abc="Enter Marks Obtained for Student %d" %s
 avg=int(input("Marks: "))
s=s+1
   if avg>=91 and avg<=100:
        print("Your Grade is A")
```

```
elif avg>=81 and avg<91:
    print("Your Grade is B")
elif avg>=71 and avg<81:
    print("Your Grade is C")
elif avg>=61 and avg<71:
    print("Your Grade is D")
elif avg>=50 and avg<61:
    print("Your Grade is E")
elif avg<50:
    print("Your Grade is F")
else:
    print("Invalid Input!")
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\Scripts\py
Marks: 50
Your Grade is E
Marks: 90
Your Grade is B
Marks: 80
Your Grade is C
Marks: 60
Your Grade is E
Marks: 70
Your Grade is D
Marks: 75
Your Grade is C
Marks:
```

## Task 2:

Write a program that takes a number from user and calculate the factorial of that number. Code:

```
num=int(input("Enter a number to calculate the factorial of: "))
 factorial = 1
if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of Ois 1")
else:
  for i in range(1, num + 1):
       factorial = factorial*i
   print("The factorial of", num, "is", factorial),
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\Scripi
Enter a number to calculate the factoriai
The factorial of 5 is 120

Process finished with exit code 0
```

## Assignment:

Fibonacci series is that when you add the previous two numbers the next number is formed. You have to start from 0 and 1.

E.g. 0+1=1 → 1+1=2 → 1+2=3 → 2+3=5 → 3+5=8 → 5+8=13 So the series becomes

0 1 1 2 3 5 8 13 21 34 55 ……

Steps: You have to take an input number that shows how many terms to be displayed. Then use loops for displaying the Fibonacci series up to that term e.g. input no is =6 the output should be

0 1 1 2 3 5

**Code:**

```
nterms = int(input("How many terms? "))
n1, n2 = 0, 1
count = 0
if nterms <= 0:
   print("Please enter a positive integer")
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":")
    print(n1)
 else:
   print("Fibonacci sequence:")
  while nterms > count:
       print(n1)
 nth = n1 + n2
n1 = n2
n2 = nth
count += 1
```

**Output:**

```
C:\Users\FaT\Desktop\AI\Codes\venv\Scripts\python.exe C:\User
How many terms? 15
Fibonacci sequence:
0
1
1
2
3
5
8
13
21
34
55
89
144
233
377

Process finished with exit code 0
```

## Critical Analysis and Conclusion:

In this lab I was introduced to Python Language. I learnt basic programming commands i.e arithmetic, print scan, loops etc and I was able to become familiar with them. Python is a powerful and easy to programable language. It has various number of use cases in machine learning and AI.