Python Basics

1. Write a program to print the statement Hello,world! in python.

```
print('Hello, world!')
```

```
Hello, world!
```

2.Write a program to perform addition of two number in python.

```
4+5
```

```
9
```

```
num1 = 1.5
num2 = 6.3
# Add two numbers
sum = num1 + num2
# Display the sum
print('The sum of {0} and {1} is {2}'.format(num1, num2, sum))
```

```
The sum of 1.5 and 6.3 is 7.8
```

3. Write a program to calculate the square root of the number in python.

```
# Note: change this value for a different result
num = 8
# To take the input from the user
#num = float(input('Enter a number: '))
num_sqrt = num ** 0.5
print('The square root of %0.3f is %0.3f'%(num ,num_sqrt))
```

4. Write a program to find the area of triangle in python.

```
a = 5
b = 6
c = 7
# Uncomment below to take inputs from the user
# a = float(input('Enter first side: '))
# b = float(input('Enter second side: '))
```

```
# c = float(input('Enter third side: '))
# calculate the semi-perimeter
s = (a + b + c) / 2
# calculate the area
area = (s*(s-a)*(s-b)*(s-c)) ** 0.5
print('The area of the triangle is %0.2f' %area)
```

The area of the triangle is 14.70

5. Write a program to find out the quadratic equation in python.

```
# Solve the quadratic equation ax**2 + bx + c = 0
# import complex math module
import cmath
a = 1
b = 5
c = 6
# calculate the discriminant
d = (b**2) - (4*a*c)
# find two solutions
sol1 = (-b-cmath.sqrt(d))/(2*a)
sol2 = (-b+cmath.sqrt(d))/(2*a)
print('The solution are {0} and {1}'.format(sol1,sol2))
```

The solution are (-3+0j) and (-2+0j)

6.Write a program to swapping of two numbers in python.

```
x = 5
y = 10
# To take inputs from the user
#x = input('Enter value of x: ')
#y = input('Enter value of y: ')
# create a temporary variable and swap the values
```

```
temp = x

x = y

y = temp

print('The value of x after swapping: {}'.format(x))

print('The value of y after swapping: {}'.format(y))
```

```
The value of x after swapping: 10
The value of y after swapping: 5
```

7.Write a program to generate a random number between 0 and 9 in python.

```
# importing the random module

import random

print(random.randint(0,9))
```

```
9
```

8. Write a program to Taking kilometers input from the user in python

```
kilometers = float(input("Enter value in kilometers: "))

# conversion factor

conv_fac = 0.621371

# calculate miles

miles = kilometers * conv_fac

print('%0.2f kilometers is equal to %0.2f miles' %(kilometers,miles))
```

```
Enter value in kilometers: 10
10.00 kilometers is equal to 6.21 miles
```

9.Write a program to convert temperature in celsius to fahrenheit in python.

```
# change this value for a different result

celsius = 37.5

# calculate fahrenheit

fahrenheit = (celsius * 1.8) + 32

print('%0.1f degree Celsius is equal to %0.1f degree Fahrenheit' %(celsius,fahrenheit))

num = float(input("Enter a number: "))

if num > 0:
```

```
  print("Positive number")
elif num == 0:
  print("Zero")
else:
  print("Negative number")
```

```
Enter a number: -1
Negative number
```

```
num = float(input("Enter a number: "))
if num >= 0:
  if num == 0:
    print("Zero")
  else:
    print("Positive number")
else:
  print("Negative number")
```

```
Enter a number: 3
Positive number
```

10.Write a program to check if the input number is odd or even in python.

```
# A number is even if division by 2 gives a remainder of 0.
# If the remainder is 1, it is an odd number.
num = int(input("Enter a number: "))
if (num % 2) == 0:
  print("{0} is Even".format(num))
else:
  print("{0} is Odd".format(num))
```

```
Enter a number: 22
22 is Even
```

11.Write a program to check if year is a leap year or not in python.

```
year = 2000
# To get year (integer input) from the user
```

```
# year = int(input("Enter a year: "))
# divided by 100 means century year (ending with 00)
# century year divided by 400 is leap year
if (year % 400 == 0) and (year % 100 == 0):
    print("{0} is a leap year".format(year))
# not divided by 100 means not a century year
# year divided by 4 is a leap year
elif (year % 4 ==0) and (year % 100 != 0):
    print("{0} is a leap year".format(year))
# if not divided by both 400 (century year) and 4 (not century year)
# year is not leap year
else:
    print("{0} is not a leap year".format(year))
```

2000 is a leap year

12.Write a program to find the largest number among the three input numbers in python.

```
# change the values of num1, num2 and num3
# for a different result
num1 = 10
num2 = 14
num3 = 12
# uncomment following lines to take three numbers from user
#num1 = float(input("Enter first number: "))
#num2 = float(input("Enter second number: "))
#num3 = float(input("Enter third number: "))
if (num1 >= num2) and (num1 >= num3):
   largest = num1
elif (num2 >= num1) and (num2 >= num3):
   largest = num2
```

```
else:
   largest = num3
print("The largest number is", largest)
```

The largest number is 14

13.Write a program to check if a number is prime or not

```
num = 29
# To take input from the user
#num = int(input("Enter a number: "))
# define a flag variable
flag = False
# prime numbers are greater than 1
if num > 1:
    # check for factors
    for i in range(2, num):
        if (num % i) == 0:
            # if factor is found, set flag to True
            flag = True
            # break out of loop
            break
# check if flag is True
if flag:
    print(num, "is not a prime number")
else:
    print(num, "is a prime number")
```

29 is a prime number

14.Write a program to display all the prime numbers within an interval in python.

```
lower = 900
upper = 1000
```

```
print("Prime numbers between", lower, "and", upper, "are:")

for num in range(lower, upper + 1):
   # all prime numbers are greater than 1
   if num > 1:
       for i in range(2, num):
           if (num % i) == 0:
               break
       else:
           print(num)
```

```
Prime numbers between 900 and 1000 are:
907
911
919
929
937
941
947
953
967
971
977
983
991
997
```

15.Write a program to find the factorial of a number provided by the user in python.

```
# change the value for a different result

num = 7

# To take input from the user

#num = int(input("Enter a number: "))

factorial = 1

# check if the number is negative, positive or zero

if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
```

```
else:
   for i in range(1,num + 1):
      factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

The factorial of 7 is 5040

16.Write a program to find Multiplication table (from 1 to 10) in python.

```
num = 12
# To take input from the user
# num = int(input("Display multiplication table of? "))
# Iterate 10 times from i = 1 to 10
for i in range(1, 11):
   print(num, 'x', i, '=', num*i)
```

12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72
12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 = 120

17. Write a Program to display the Fibonacci sequence up to n-th term

```
nterms = int(input("How many terms? "))
# first two terms
n1, n2 = 0, 1
count = 0
# check if the number of terms is valid
if nterms <= 0:
   print("Please enter a positive integer")
# if there is only one term, return n1
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":")
```

```
   print(n1)
# generate fibonacci sequence
else:
   print("Fibonacci sequence:")
   while count < nterms:
      print(n1)
      nth = n1 + n2
      # update values
      n1 = n2
      n2 = nth
      count += 1
```

```
How many terms? 3
Fibonacci sequence:
0
1
1
```

18.Write a program to check if the number is an Armstrong number or not in python.

```
# take input from the user
num = int(input("Enter a number: "))
# initialize sum
sum = 0
# find the sum of the cube of each digit
temp = num
while temp > 0:
   digit = temp % 10
   sum += digit ** 3
   temp //= 10
# display the result
if num == sum:
   print(num,"is an Armstrong number")
```

```
else:
   print(num,"is not an Armstrong number")
```

```
Enter a number: 4
4 is not an Armstrong number
```

19.Write a Program to check Armstrong numbers in a certain interval in python

```
lower = 100
upper = 2000
for num in range(lower, upper + 1):
   # order of number
   order = len(str(num))
   # initialize sum
   sum = 0
   temp = num
   while temp > 0:
      digit = temp % 10
      sum += digit ** order
      temp //= 10
   if num == sum:
      print(num)
```

```
153
370
371
407
1634
```

20.Write a program to find Sum of natural numbers up to num in python.

```
num = 16
if num < 0:
   print("Enter a positive number")
else:
   sum = 0
   # use while loop to iterate until zero
```

```
  while(num > 0):
      sum += num
      num -= 1
  print("The sum is", sum)
```

The sum is 136

21.Write a program to display the powers of 2 using anonymous function in python

```
terms = 10
# Uncomment code below to take input from the user
# terms = int(input("How many terms? "))
# use anonymous function
result = list(map(lambda x: 2 ** x, range(terms)))
print("The total terms are:",terms)
for i in range(terms):
  print("2 raised to power",i,"is",result[i])
```

The total terms are: 10
2 raised to power 0 is 1
2 raised to power 1 is 2
2 raised to power 2 is 4
2 raised to power 3 is 8
2 raised to power 4 is 16
2 raised to power 5 is 32
2 raised to power 6 is 64
2 raised to power 7 is 128
2 raised to power 8 is 256
2 raised to power 9 is 512

```
# Take a list of numbers
my_list = [12, 65, 54, 39, 102, 339, 221,]
# use anonymous function to filter
result = list(filter(lambda x: (x % 13 == 0), my_list))
# display the result
print("Numbers divisible by 13 are",result)
```

Numbers divisible by 13 are [65, 39, 221]

22.Write a program to convert decimal into other number systems in python

```
dec = 344

print("The decimal value of", dec, "is:")

print(bin(dec), "in binary.")

print(oct(dec), "in octal.")

print(hex(dec), "in hexadecimal.")
```

```
The decimal value of 344 is:
0b101011000 in binary.
0o530 in octal.
0x158 in hexadecimal.
```

23. Write a Program to find the ASCII value of the given character in python.

```
c = 'p'

print("The ASCII value of '" + c + "' is", ord(c))

print(5)

x = 10

y= 5

print(x,y)

print(x+y)
```

```
10 5
15
```