PYTHON PROGRAMS

1)To Print Hello world

```
print("Hello World")
```

2)To add Two number from taking the input from user

```
a=int(input("Enter the first number:"))
b=int(input("Enter the second number:"))
print("The sum is:",a+b)
```

3)Python Program to Find the Square Root

```
a=int(input("Enter the first number:"))
sq_root=a**0.5
print("Squre root of",a,":",sq_root)
---
a=int(input("Enter the first number:"))
num_sqrt = a ** 0.5
print("The square root of %0.3f is %0.3f"%(a ,num_sqrt))
---
a=float(input("Enter a number:"))
square_root = a**0.5
print(f"The square root of {a} is {square_root}")
print("The square root of %d is %d"%(int(a),int(square_root)))
print("The square root of %0.3f is %0.3f" % (a, square_root))
```

4)Area of a triangle

```
a,b,c=map(float, input("Enter sizes:").split())
s=(a+b+c)/2
area = (s*(s-a)*(s-b)*(s-c)) ** 0.5
print("The area of the triangle with sides %.2f, %.2f, %.2f is %.2f" % (a, b, c, area))
----------------------------
numbers=[int (x) for x in input("Enter three numbers:").split()]
a,b,c=numbers
s=(a+b+c)/2
area = (s*(s-a)*(s-b)*(s-c)) ** 0.5
print("Area of triangle is:",area)
```

5)Solving Quadratic Equation

```
import cmath
a,b,c=map(float, input("Enter the first number:").split(','))
d=(b**2)-4*a*c
Sol1=(-b-cmath.sqrt(d))/(2*a)
Sol2=(-b+cmath.sqrt(d))/(2*a)
print(f"{Sol1.real:.3f}+{Sol1.imag:.3f}i")
```

```
print(f"{Sol2.real:.3f}{Sol2.imag:.3f}i")
```

6)SWAPING TWO NUMBERS

```
#using third variable
a=10
b=30
x=a
a=b
b=x
print(a,b)
#without using third variable
a=15
b=36
a=a+b
b=a-b
a=a-b
print(a,b)
```

7)GENERATING RANDOM NUMBERS BETWEEN TWO NUMBERS

```
import random
print(random.randint(1,1000))
import random
a,b=map(int,input("Enter the range:").split())
print(random.randint(a,b))
```

8)Converting kilometers into Miles

```
a=float(input("Enter the kilometers:"))
Miles =a*0.621371
print(f'{Miles:.2f}miles')
```

9)Covert temperature from Celsius to Fahrenheit

```
Celsius =float(input("Enter the temperature in Celsius:"))
Fahrenheit=(Celsius * 1.8) + 32
print("Temperature in Fahrenheit:%0.1f"%fahrenheit)
```

10)Python Program to Check if a Number is Positive, Negative or 0

```
number=int(input("Enter a number:"))
if number>0:
   print("It is a positive number.")
elif number<0:
   print("It is a negative number.")
else:
   print("It is zero.")
```

11)Python Program to Check if a Number is Odd or Even

```
number=int(input("Enter a number:"))
```

```
if number%2==0:
   print("It is a even number.")
else:
   print("It is a odd number.")
```

12)Python Program to Check Leap Year

```
year=int(input("Enter year:"))
if (year%4==0 and year%100!=0) or (year%400==0):
   print("It's a leap year.")
else:
   print("It's not an leap year.")
```

13)Python Program to Find the Largest Among Three Numbers

```
x,y,z=map(int,input("Enter three numbers:").split(','))
Max=0
if x>=y and x>=z:
   Max=x
elif y>=x and y>=z:
   Max=y
else:
   Max=z
print(Max)
```

14)Python Program to Check Prime Number

```
number=float(input("Enter a Number:"))
if number>1:
   for i in range(2, int(number / 2) + 1):
      if number%i==0:
         print("It's Not an Prime Number.")
         break
   else:
         print("It's a Prime Number.")
else:
   print("It's Not an Prime number.")
```

15)Python Program to Print all Prime Numbers in an Interval

```
a = int(input("Enter a number: "))
b = int(input("Enter a number: "))
for num in range(a, b + 1):
   for i in range(2, int(num ** 0.5) + 1):
      if num % i == 0:
         break
   else:
      print(num)
```

16)Python Program to Find the Factorial of a Number

```
a = int(input("Enter a number: "))
```

```
fact=1
if a<0:
   print("Sorry Factorial does not exist for negative numbers.")
elif a==0:
   print("Factorial of 0 is 1.")
else:
   for i in range(1,a+1):
      fact*=i
   print(f"Factorial of {a} is:{fact}.")
```

17)Python Program to Display the multiplication Table

```
a =int(input("Enter a number:"))
for i in range(1,11):
   print(f"{a}*{i}={a*i}")
```

18)Python Program to Print the Fibonacci sequence

```
a=int(input("Enter the first number:"))
b=int(input("Enter the second number:"))
n=int(input("Enter the size of series:"))
for i in range(n):
   print(a)
   a, b = b, a + b
```

19)Python Program to Print the digits count

```
a= int(input("Enter a Number:"))
count=0
while a>0:
a=a//10
count+=1
print(count)
----------------------------
a= int(input("Enter a Number:"))
print(len(str(a)))
```

20)Python Program to Check Armstrong Number

```
a= int(input("Enter a Number:"))
d=a
n=len(str(a))
b=0
Sum=0
for i in range (n):
b=a%10
a=a//10
Sum+=b ** n
if Sum==d:
        print(f'{d} is an Armstrong Number.')
else:
```

```
        print(f'{d} is not an Armstrong Number.')
```

21)To find out the Power

```
a= int(input("Enter a Number:"))
n= int(input("Enter a Number:"))
power=1
for i in range(1,n+1):
  power*=a
print(power)
-------------------------
print(pow(a,n))
print(a**n)
```

22)Python Program to Find the Sum of Natural Numbers

```
n=int(input("Enter the  Number:"))
Sum=0
for i in range (1,n+1):
   Sum+=i
print(Sum)
```

23)Python Program to Display Powers of 2 Using Anonymous Function

```
n=int(input("Enter the number:"))
result = list(map(lambda x: 2 ** x, range(n)))
for i in range(n):
    print(result[i])
```

24)Python Program to Find Numbers Divisible by Another Number

```
n=int(input("Enter the number:"))
result = list(filter(lambda x: n%x==0, range(1,n+1)))
for i in range(len(result)):
   print(result[i])
--------------------
n=int(input("Enter the number:"))
for i in range(1,n+1):
if n%i==0:
    print(i)
my_list = [12, 65, 54, 39, 102, 339, 221,]
result = list(filter(lambda x: (x % 13 == 0), my_list))
print("Numbers divisible by 13 are",result)
```

25)Python Program to Convert Decimal to Binary, Octal and Hexadecimal

```
n = int(input("Enter the number:"))
print(bin(n),'in binary')
print(oct(n),'in octal')
print(hex(n),'in hexadecimal')
```

26)Python Program to Find ASCII Value of Character

```
c=input("Enter a character:")
print("The ASCII value of '" + c + "' is", ord(c))
```

27)Python Program to Find ASCII Value of characters in a text

```
c=input("Enter a string:")
ascii_values =[v.encode('ascii')[0] for i in text]
print(ascii_values)
```

28)Python Program to Find HCF or GCD

```
a,b=map(int,input("Enter two numbers:").split())
if a>b:
   Range=b
else:
   Range=a
result= list(filter(lambda x: a%x==0 and b%x==0, range(1,Range+1)))
Max=1
for i in range(len(result)):
   if result[i]>Max:
      Max=result[i]
print(f"The Highest common Factor for {a} and {b} is:{Max}")
```

29)Python Program to Find LCM

```
def compute_lcm(a, b):
   if a > b:
      Range = a
   else:
      Range = b

   while True:
      if Range % a == 0 and Range % b == 0:
         lcm = Range
         break
      Range += 1
   return lcm


a, b = map(int, input("Enter two numbers: ").split())
print(compute_lcm(a, b))
```

30)Python Program to Find the Factors of a Number

```
a = int(input("Enter the Number: "))
result = list(filter(lambda x: a % x == 0, range(1, a + 1)))
count = 0
for i in range(len(result)):
   print(result[i])
   count += 1
```

```
print(f"Total Number of factors for {a} is: {count}.")
```

31) Python Program to mini calculator

```
def calculator(a, b, c):
   match c:
      case "+":
         return a + b
      case "-":
         return a - b
      case "*":
         return a * b
      case "%":
          if b==0 :
             return "Error: Division(Modulus) by zero not allowed!"
          return a%b
      case "/":
         if b==0 :
             return "Error: Division by zero not allowed!"
         return a / b
      case "//":
         if b==0 :
             return "Error:Floor Division by zero not allowed!"
         return a // b
      case _:
         return "invalid operator"


a = int(input("Enter the first number:"))
c = input("Enter the operarator like +,-,%,/,//,*:")
b=int(input("Enter the second number:"))
result = calculator(a, b, c)
print(result)
```

32)Python Program to draw 5 random cards

```
import random, itertools
deck=list(itertools.product(range (1,14),['Spade','Club','Heart','Diamond']))
random.shuffle(deck)

for i in range (5):
   print(deck[i][0],'of',deck[i][1])
```

33)Python Program to Print the calendar of a month

```
import calendar
a=int(input("Enter the Month:"))
```

```
b=int(input("Enter the Year:"))
cal=calendar.month(b,a)

print(cal)
```

34) Python Program to print Fibonacci series using recursion.

```
def fibonacci(n):
   if n <= 0:
      return "Invalid input"
   elif n == 1:
      return 0
   elif n == 2:
      return 1
   else:
      return fibonacci(n-1) + fibonacci(n-2)

n=int(input("Enter the range:"))

for i in range(n):
   print(f"Fibonacci({i}) =", fibonacci(i))
```

35)Python Program to find the sum of natural numbers using recursion.

```
def Sum_numbers(n):
   if n<=1:
      return n
   else:
      return Sum_numbers(n-1)+n
num = int(input("Enter the range: "))
if num <= 0:
   print("No numbers to perform sum.")
else:
      print(Sum_numbers(num))
```

36) Python Program to find the Factorial of a number using recursion.

```
def Fact(n):
   if n<=1:
      return n
   else:
      return Fact(n-1)*n
num = int(input("Enter the range: "))
if num <= 0:
   print("No numbers to perform sum.")
else:
      print(Fact(num))
```

37)Python Program to covert decimal to binary using recursion.

```
def ConvertBinary(n):
   if n>1:
      ConvertBinary(n//2)
   print(n%2,end='')

n=int(input(“Enter a decimal number:”)
ConvertBinary(n)
```

38)Python Program to create and print matrix

```
rows=int(input("Enter number of rows of matrix:"))
col=int(input("Enter number of column of matrix:"))
Matrix=[]
for i in range(rows):
   row=[]
   for j in range(col):
      val=int(input())
      row.append(val)
   Matrix.append(row)

for i in Matrix:
   print(i)
```

39)Python Program to add two matrices

```
row=int(input("Enter the number of rows in first Matrix:"))
col=int(input("Enter the number of column in first Matrix:"))
Matrix1=[]
Matrix2=[]

for i in range(row):
   rows=[]
   for j in range (col):
      val=int(input("Enter the values in first matirx:"))
      rows.append(val)
   Matrix1.append(rows)

for i in range(row):
   rows=[]
   for j in range (col):
      val=int(input("Enter the values in second matrix:"))
      rows.append(val)
   Matrix2.append(rows)

Matrix3=[]
```

```
for i in range(row):
   rows=[]
   for j in range(col):
      rows.append(Matrix1[i][j]+Matrix2[i][j])
   Matrix3.append(rows)

for r in Matrix3:
   print(r)
```

40)Python Program to transpose of Matrix

```
row=int(input("Enter the number of rows in first Matrix:"))
col=int(input("Enter the number of column in first Matrix:"))
Matrix1=[]

for i in range(row):
   rows=[]
   for j in range (col):
      val=int(input("Enter the values in first matirx:"))
      rows.append(val)
   Matrix1.append(rows)

Matrix2=[]

for i in range(col):
   rows=[]
   for j in range(row):
      rows.append(Matrix1[j][i])
   Matrix2.append(rows)
print("Matrix Entered:")
for r in Matrix1:
   print(r)
print("Transpose of Matrix:")
for r in Matrix2:
   print(r)
```

```
#using list comprehension
row=int(input("Enter the number of rows in first Matrix:"))
col=int(input("Enter the number of column in first Matrix:"))

Matrix1=[]

for i in range(row):
   rows=[]
   for j in range (col):
      val=int(input("Enter the values in first matirx:"))
```

```
        rows.append(val)
    Matrix1.append(rows)

Matrix2=[[Matrix1[j][i] for j in range(len(Matrix1))] for i in range(len(Matrix1[0]))]

print(Matrix2)
```

41) Python Program to check a String Palindrome.

```
string=input("Enter a String:")
rev_string= string[::-1]

if rev_string== string:
    print("Its a palandrome.")
else:
    print("Not a palandrome.")
```

42) Python Program to remove Punctuation Marks in a String.

```
string=input("Enter a String:")

punc='''!()_[]{};:'"/,<>.?'''
empty_str=''
for i in string:
    if i not in punc:
        empty_str+=i

print(empty_str)
```

43)Python Program for Multiplication of Matrix

```
row1=int(input("Enter Number of rows in first Matrix:"))
col1=int(input("Enter Number of column in first Matrix:"))
row2=int(input("Enter Number of rows in second Matrix:"))
col2=int(input("Enter Number of column in second Matrix:"))
Matrix=[]
if col1!=row2:
    print("Multiplication not possible.first matrix column and second matrix row size should
be same.")
else:
    A = [list(map(int, input().split())) for _ in range(row1)]
    B = [list(map(int, input().split())) for _ in range(row2)]

    for i in range(len(A)):
        row=[]
        for j in range(len(B[0])):
            val
            for k in range(len(B)):
```

```
            val+=A[i][k]*B[k][j]
        row.append(val)
    Matrix.append(row)

for i in Matrix:
  print(i)
```

44)Python Program to Sort words in Alphabetic order.

```
String=input("Enter the String:")
w=String.split()

for i in range(len(w)):
  w[i]=w[i].lower()

w.sort()
print(w)
```

45) Python Program to do Operations on Sets.

```
A=set(map(int,input("Enter first Set by separating values with , :").split(',')))
B=set(map(int,input("Enter Second Set by separating values with , :").split(',')))

Op=input('''Select the operation like For Union '|'
For Intersection '&'
For Difference '-'
For Symmetric Difference '^' ''')

match Op:
  case '|':
    print("The Union of A and B is:",A|B)
  case '&':
    print("The Intersection of A and B is:",A&B)
  case '-':
    print("The Difference of A and B is:",A-B)
  case '^':
    print("The Symmetric Difference of A and B is:",A^B)
  case _:
    print("Invalid operation")
```

46) Python Program to find the total count of the Vowels in a String.

```
a=input("Enter the Sring:")
vowels='aeiou'
a=a.casefold()
count=0
for i in a:
  if i in vowels:
    count+=1;
```

```
print(count)
```

47) Python Program to find the individual count of the Vowels in a String.

```
a=input("Enter the Sring:")
vowels='aeiou'

a=a.casefold()
count_a=0
count_e=0
count_i=0
count_o=0
count_u=0
for i in a:
   if i in vowels:
      match i:
         case 'a':
            count_a+=1
         case 'e':
            count_e+=1
         case 'i':
            count_i+=1
         case 'o':
            count_o+=1
         case 'u':
            count_u+=1

print(count_a ,count_e,count_i,count_o,count_u,sep='\n')
----------------------------
#using fromkeys
a=input("Enter the Sring:")
vowels='aeiou'

a=a.casefold()
count={}.fromkeys(vowels,0)
for i in a:
   if i in vowels:
      count[i]+=1

print(count)
```

48) Python Program to Print Right angled Triangle using *.

```
n=int(input("Enter the number of rows:"))
a=''
for i in range(n):
   a+='*'
```

```
    print(a)
-------------------------------------
#using nested loops
rows = int(input("Enter number of rows: "))
for i in range(rows):
    for j in range(i+1):
        print("* ", end="")
    print()
```

49) Python Program to print half pyramid using numbers.

```
n=int(input("Enter the number of rows:"))
for i in range(n):
    for j in range(i+1):
        print(j+1,end=' ')
    print()
```

50) Python Program to print half pyramid using Alphabets.

```
n=int(input("Enter the number of rows:"))
a=65
for i in range(n):
    for j in range(i+1):
        print(chr(a+j),end=' ')
    print()
```

51) Python Program to Inverted half pyramid using *.

```
n=int(input("Enter the number of rows:"))
for i in reversed(range(1,n+1)):
    for j in range(i):
        print("*",end="")
    print()
```

52) Python Program to Inverted half pyramid using numbers.

```
n=int(input("Enter the number of rows:"))
for i in reversed(range(1,n+1)):
    for j in range(i):
        print(i,end="")
    print()
---------------------------
n= int (input("Enter number of rows:"))

for i in reversed(range(1,n+1)):
    for j in range(i):
        print(j+1,end="")
    print()
```

53) Python Program to Inverted half pyramid using Alphabets.

```
n=int(input("Enter the number of rows:"))
ascii_value=65
for i in reversed(range(1,n+1)):
```

```
    for j in range(i):
        print(chr(ascii_value),end="")
    ascii_value+=1
    print()

--------------------------------
n=int(input("Enter the number of rows:"))
ascii_value=65+n
for i in reversed(range(1,n+1)):
    ascii_value-=1
    for j in range(i):
        print(chr(ascii_value),end="")
    print()
----------------------------
n= int (input("Enter number of rows:"))
ascii_value=65
for i in reversed(range(1,n+1)):
    for j in range(i):
        print(chr(ascii_value+j),end='')
    print()
```

54)Python Program to print Right-Aligned Half Pyramid using * and spaces.

```
n = int(input("Enter number of rows:"))

for i in range(1, n+1):
    for j in range(n - i):
        print("  ", end="")
    for k in range(i):
        print("* ", end="")
    print()
```

55)Python Program to print full Pyramid using * and spaces.

```
n = int(input("Enter number of rows:"))
for i in range(1, n+1):
    for j in range(n - i):
        print("  ", end="")
    for k in range(2*i-1):
        print("* ", end="")
    print()
```

56)Python Program to print full Pyramid using numbers and spaces.

```
n = int(input("Enter number of rows:"))

for i in range(1, n+1):
    for j in range(n - i):
        print("  ", end="")
    for k in range(2*i-1):
        print(f"{i} ", end="")
```

```
    print()
```

57)Python Program to print full Pyramid using numbers and spaces.

```
n = int(input("Enter number of rows:"))

for i in range(1, n+1):
    for j in range(n - i):
        print("  ", end="")
    for k in range(2*i-1):
        print(f"{i+k} ", end="")
    print()
```

58)Python Program to print Inverted Pyramid using numbers and spaces.

```
n = int(input("Enter number of rows:"))

for i in reversed(range(1,n+1)):
    for j in range(n-i):
        print(' ',end='')
    for j in range(2*i-1):
        print("*",end='')
    print()
```

59)Python Program to print Pascal's triangle using numbers and spaces.

```
n = int(input("Enter number of rows:"))
coef=1
for i in range(1,n+1):
    for j in range(1,n-i+1):
        print(' ',end='')
    for j in range(0,i):
        if j==0 or i==0:
            coef = 1
        else:
            coef = coef * (i - j)//j
        print(coef, end = " ")
    print()
```

60)Python Program to Access Index of a List Using for Loop

```
#using enumerate
nums = list(map(int, input("Enter numbers separated by space: ").split()))

for index,value in enumerate(nums):
    print(index,value)
--------------------------------------------------------------------------------
#starting index value from 1
nums = list(map(int, input("Enter numbers separated by space: ").split()))

for index,value in enumerate(nums,start=1):
    print(index,value)
```

```
-------------------------------------------------------------------------------
#without enumerate
nums = list(map(int, input("Enter numbers separated by space: ").split()))

for i in range(len(nums)):
   print(i,nums[i])
```

61)Python Program to Access Index of a List Using for Loop

```
n=int(input("Enter number of rows:"))
n_list=[]
for i in range(n):
   rows = list(map(int, input("Enter numbers separated by space: ").split()))
   n_list.append(rows)
flat_list = [num for sublist in n_list for num in sublist]
print(flat_list)
-----------------------------------------
#using nested loops
flat_list = []
for sublist in n_list:
   for num in sublist:
      flat_list.append(num)

print(flat_list)
-----------------------------
flat_list = list(itertools.chain(*n_list))
print(flat_list)
```

62)Python Program to Slice Lists

```
n_list=list(map(int,input("Enter 10 values:").split()))
print(n_list)
print(n_list[2:])          #After mentioned Index
print(n_list[2:4])         #between two index
print(n_list[::2])         #specified intervals
print(n_list[::-1])        #reverse the List
print(n_list[1:6:2])       #between 1 and 6 with interval 2
```

63)Python Program to Check If a List is Empty

```
my_list = []
if not my_list:
   print("the list is empty")
```

```
#using length
n_list =[]
if not len(n_list):
    print("the list is empty")
```

64)Python Program to Concatenate Two Lists

```
n_list1=list(map(int,input("Enter values:").split()))
n_list2=list(map(int,input("Enter values:").split()))

final_list= n_list1 + n_list2
print(final_list)
```

65) Python Program to Split a List Into Evenly Sized Chunks

```
def split_chunks(lst, n):
   for i in range(0, len(lst), n):
      yield lst[i:i+n]

n_list=list(map(int,input("Enter values:").split()))
chunk_size = 3
chunks = list(split_chunks(n_list, chunk_size))
print("Chunks:", chunks)
```

66) Python Program to Split a List Into Evenly Sized Chunks

```
def split_chunks(lst, n):
   for i in range(0, len(lst), n):
      yield lst[i:i+n]

n_list=list(map(int,input("Enter values:").split()))
chunk_size = 3

chunks = list(split_chunks(n_list, chunk_size))
print("Chunks:", chunks)
```

67) Python Program to Convert String to Datetime

```
from datetime import datetime
date=input("Enter date in this format APR 21 2022 10:54AM:")
Date = datetime.strptime(date, '%b %d %Y %I:%M%p')
print(type(Date))
print(Date)
```

68) Python Program to Get a Substring of a String

```
a=input("Enter the String:")

print(a[2:6])
print(a[2:])
print(a[:-1])
```

69) Python program to find the first non-repeating character in a string.

```
def unique_char(text):
```

```
    count = {}
    for c in text:
        count[c] = count.get(c, 0) + 1
    for c in text:
        if count[c] == 1:
            return c
    return None

a = input("Enter a string: ")
print(unique_char(a))
```

70) Python program to check if two strings are anagrams of each other.

```
def is_anagram(a, b):
    return sorted(a) == sorted(b)

x = input("Enter first string: ")
y = input("Enter second string: ") b
print(is_anagram(x, y))
```