

PYTHON PROGRAM COLLECTIONS

1. Area of Triangle
2. Concatenating String
3. Largest number among the three input numbers
4. Prime Number or Not
5. Factorial
6. Number is Positive or Negative
7. Multiplication Table
8. Leap Year or Not
9. Current Date
10. HCF
11. LCM
12. Function to find square of a number
13. Convert temperature in Celsius to Fahrenheit
14. Convert kilometers to miles
15. Swap two Variables
16. Armstrong number
17. Finding Compound Interest
18. Check whether the element is present in List or not
19. Reversing a list
20. Using Dictionary to Merge the theory and practical marks
21. String Palindrome
22. Pattern Printing
23. Pattern Printing in Reverse order
24. Reversing the number
25. Arithmetic operations
26. Odd or Even Numbers
27. Given letter is alphabet or not
28. Sum of n numbers

29. Finding substring in a string
30. Finding and Counting vowels
31. Perfect Number or Not
32. Generating all the divisors of an integer
33. Taking in the marks of 5 subjects and display the grade
34. Finding the binary equivalent of a number
35. Find the Roots of a Quadratic Equation
36. Count the frequency of words in a string using a dictionary
37. Find the sum all the items in a dictionary
38. Find the area of a rectangle using classes.
39. Take a string and replace every blank space with a hyphen
40. Design a Calculator with all the operations
41. Remove the duplicate from the list

SOLUTIONS :

1. Write a Python Program to find the area of triangle

```
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 ', area)
```

OUTPUT

The area of the triangle is 14.696

2. Write a program to concatenate two strings

```
str1="python"
str2="programming"
print ("String 1:",str1)
print ("String 2:",str2)
str=str1+str2
print("Concatenated two different strings:",str)
```

OUTPUT

```
String 1: python
String 2: programming
Concatenated two different strings: pythonprogramming
```

3. Python program to find the largest number among the three input numbers

```
# 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)
```

OUTPUT

Enter first number: 88
Enter second number: 9
Enter third number: 6
The largest number is 88.0

4. Program to check if a number is prime or not

```
# To take input from the user
num = int(input("Enter a number: "))
# define a flag variable
flag = False
if num == 1:
    print(num, "is not a prime number")
elif 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")
```

OUTPUT

Enter a number: 55
55 is not a prime number
Enter a number: 23
23 is a prime number

5. Python program to find the factorial of a number provided by the user.

```
# 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)
```

OUTPUT

Enter a number: 4
The factorial of 4 is 24

6. Python program to find the number is Positive Negative or Zero

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

OUTPUT

```
Enter a number: 12
Positive number
```

7. Python program to find Multiplication table

```
# 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)
```

OUTPUT

Display multiplication table of? 12

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

8. Python program to check if year is a leap year or not

```
# 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(year,"is a leap 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(year,"is a leap year")
```

```
# if not divided by both 400 (century year) and 4 (not century year)
```

```
# year is not leap year
```

```
else:
```

```
    print(year,"is not a leap year")
```

OUTPUT

Enter a year: 2000
2000 is a leap year

9. Program to print current date

```
from datetime import date
# today() to get current date
todays_date = date.today()
print("Today's date =", todays_date)
```

OUTPUT

Today's date = 2023-08-30

10. Python program to find H.C.F of two numbers

```
# define a function
def compute_hcf(x, y):
    # choose the smaller number
    if x > y:
        smaller = y
    else:
        smaller = x
    for i in range(1, smaller+1):
        if((x % i == 0) and (y % i == 0)):
            hcf = i
    return hcf
num1 = int(input("Enter first number"))
num2 = int(input("Enter first number"))
print("The H.C.F. is", compute_hcf(num1, num2))
```


OUTPUT

```
Enter first number12
Enter first number4
The H.C.F. is 4
```

11. Python Program to find the L.C.M. of two input number

```
def compute_lcm(x, y):
    # choose the greater number
    if x > y:
        greater = x
    else:
        greater = y
    while(True):
        if((greater % x == 0) and (greater % y == 0)):
            lcm = greater
            break
        greater += 1
    return lcm

num1 = int(input("Enter first number"))
num2 = int(input("Enter second number"))
print("The L.C.M. is", compute_lcm(num1, num2))
```

OUTPUT

```
Enter first number12
Enter second number4
The L.C.M. is 12
```

12. Write a function to find square of a number

```
def find_square(num):  
    result = num * num  
    return result  
# function call  
square = find_square(3)  
print('Square:',square)
```

OUTPUT

Square: 9

13. Python Program to convert temperature in celsius to Fahrenheit

```
# change this value for a different result  
celsius = float(input("Enter the celsius "))  
# calculate fahrenheit  
fahrenheit = (celsius * 1.8) + 32  
print('%0.1f degree Celsius is equal to %0.1f degree  
Fahrenheit' %(celsius,fahrenheit))
```

OUTPUT

Enter the celsius 37
37.0 degree Celsius is equal to 98.6 degree Fahrenheit

14. Convert kilometers to miles

```
# Taking kilometers input from the user
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))
```

OUTPUT

```
Enter value in kilometers: 33.9
33.90 kilometers is equal to 21.06 miles
```

15. Swapping two numbers

```
x = 5
y = 10
x, y = y, x
print("x =", x)
print("y =", y)
```

OUTPUT

```
x = 10
y = 5
```

16. Python program to check if the number is an Armstrong number or not

```
# 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")
```

OUTPUT

```
Enter a number: 153
153 is an Armstrong number
```

17. Python program to find Compound Interest

```
# interest for given values.
def compound_interest(principal, rate, time):
    # Calculates compound interest
    Amount = principal * (pow((1 + rate / 100), time))
    CI = Amount - principal
    print("Compound interest is", CI)
compound_interest(10000, 10.25, 5)
```

OUTPUT

Compound interest is 6288.946267774416

18. check whether the element is present in list or not

```
lst=[ 1, 6, 3, 5, 3, 4 ]
#checking if element 7 is present
# in the given list or not
i=7
# if element present then return
# exist otherwise not exist
if i in lst:
    print("exist")
else:
    print("not exist")
```

OUTPUT

not exist

19. Reversing a list using slicing technique

```
def Reverse(lst):  
    new_lst = lst[::-1]  
    return new_lst  
lst = [10, 11, 12, 13, 14, 15]  
print(Reverse(lst))
```

OUTPUT

```
[15, 14, 13, 12, 11, 10]
```

20. Python programs using dictionaries to Merge the theory and practical marks of the students

```
marks = {'Physics':67, 'Maths':87}  
int_marks = {'Practical':48}  
marks.update(int_marks)  
print(marks)
```

OUTPUT

```
{'Physics': 67, 'Maths': 87, 'Practical': 48}
```

21. String Palindrome or Not

```
def isPalindrome(string):  
    if(string== string[::-1]):  
        return "The string is a palindrome."  
    else:  
        return "The string is not a palindrome."  
#Enter input string  
string=input("Enter string:")  
print(isPalindrome(string))
```

OUTPUT

```
Enter string:madam  
The string is a palindrome.
```

22. Pattern Printing Program

```
n = 5  
for i in range(0, n):  
    for j in range(0, i+1):  
        print("*", end=" ")  
    print()
```

OUTPUT

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

23. Pattern Printing in Reverse

```
rows = int(input("Enter the number of rows: "))
# the outer loop is executing in reversed order
for i in range(rows + 1, 0, -1):
    for j in range(0, i - 1):
        print("*", end=' ')
    print(" ")
```

OUTPUT

```
Enter the number of rows: 7
* * * * *
* * * * *
* * * * *
* * * *
* * * *
* * *
* *
*
*
```

24. To reverse an number

```
# Ask for enter the number from the use
number = int(input("Enter the integer number: "))
# Initiate value to null
revs_number = 0
# reverse the integer number using the while loop
while (number > 0):
    # Logic
    remainder = number % 10
```



```
    revs_number = (revs_number * 10) + remainder
    number = number // 10
# Display the result
print("The reverse number is : {}".format(revs_number))
```

OUTPUT

```
Enter the integer number: 1234567
The reverse number is : 7654321
```

25. Python Program to Perform Arithmetic Operations

```
num1=float(input(" Please Enter the First Value Number 1: "))
num2=float(input(" Please Enter the Second ValueNumber2:"))
# Add Two Numbers
add = num1 + num2
# Subtracting num2 from num1
sub = num1 - num2
# Multiply num1 with num2
multi = num1 * num2
# Divide num1 by num2
div = num1 / num2
# Modulus of num1 and num2
mod = num1 % num2
# Exponent of num1 and num2
expo = num1 ** num2
print("The Sum of {0} and {1} = {2}".format(num1, num2, add))
print("The Subtraction of {0} from {1} = {2}".format(num2,
num1, sub))
```

```
print("The Multiplication of {0} and {1} = {2}".format(num1,
num2, multi))
print("The Division of {0} and {1} = {2}".format(num1, num2,
div))
print("The Modulus of {0} and {1} = {2}".format(num1, num2,
mod))
print("The Exponent Value of {0} and {1} = {2}".format(num1,
num2, expo))
```

OUTPUT

Please Enter the First Value Number 1: 12

Please Enter the Second Value Number 2:3

The Sum of 12.0 and 3.0 = 15.0

The Subtraction of 3.0 from 12.0 = 9.0

The Multiplication of 12.0 and 3.0 = 36.0

The Division of 12.0 and 3.0 = 4.0

The Modulus of 12.0 and 3.0 = 0.0

The Exponent Value of 12.0 and 3.0 = 1728.0

26. To find Odd or Even

```
print("Enter the Number: ")
num = int(input())
if num%2==0:
    print("\nIt is an Even Number")
```

```
else:  
    print("\nIt is an Odd Number")
```

OUTPUT

Enter the Number: 12
It is an Even Number

27. To check whether a given character is an alphabet or not in Python

```
print("Enter a Character: ")  
c = input()  
if c>='a' and c<='z':  
    print("\nIt is an alphabet")  
elif c>='A' and c<='Z':  
    print("\nIt is an alphabet")  
else:  
    print("\nIt is not an alphabet!")
```

OUTPUT

Enter a Character:
4
It is not an alphabet!

28. Sum of n numbers

```
sum = 0
print("Enter the Value of n: ")
n = int(input())
print("Enter " + str(n) + " Numbers: ")
for i in range(n):
    num = int(input())
    sum = sum+num
print("Sum of " + str(n) + " Numbers = " + str(sum))
```

OUTPUT

```
Enter the Value of n:
5
Enter 5 Numbers:
12
1
2
3
5
Sum of 5 Numbers = 23
```

29. Program to find substring in a given string

```
fullstring =input("Enter the string ")
substring = input("Enter the substring to search for")
if substring in fullstring:
    print("Found!")
else:
    print("Not found!")
```

OUTPUT

```
Enter the string welcome to py
Enter the substring to search forpy
Found!
```

30. Program to find Vowels in a Strings

```
string=raw_input("Enter string:")
vowels=0
for i in string:
    if(i=='a' or i=='e' or i=='i' or i=='o' or i=='u' or i=='A' or i=='E'
or i=='I' or i=='O' or i=='U'):
        vowels=vowels+1
print("Number of vowels are:")
print(vowels)
```

OUTPUT

Enter string:WELCOME

Number of vowels are:

3

31. Python Program to check if a number is a Perfect number.

```
n = int(input("Enter any number: "))
sum1 = 0
for i in range(1, n):
    if(n % i == 0):
        sum1 = sum1 + i
if (sum1 == n):
    print("The number is a Perfect number!")
else:
    print("The number is not a Perfect number!")
```

OUTPUT

Enter any number: 6

The number is a Perfect number!

32. Python Program to generate all the divisors of an integer

```
n=int(input("Enter an integer:"))
print("The divisors of the number are:")
for i in range(1,n+1):
    if(n%i==0):
        print(i)
```

OUTPUT

```
Enter an integer:20
The divisors of the number are:
1
2
4
5
10
20
```

33. Python Program to take in the marks of 5 subjects and display the grade

```
sub1=int(input("Enter marks of the first subject: "))
sub2=int(input("Enter marks of the second subject: "))
```

```
sub3=int(input("Enter marks of the third subject: "))
sub4=int(input("Enter marks of the fourth subject: "))
sub5=int(input("Enter marks of the fifth subject: "))
avg=(sub1+sub2+sub3+sub4+sub4)//5
if(avg>=90):
    print("Grade: A")
elif(avg>=80&avg<90):
    print("Grade: B")
elif(avg>=70&avg<80):
    print("Grade: C")
elif(avg>=60&avg<70):
    print("Grade: D")
else:
    print("Grade: F")
```

OUTPUT

```
Enter marks of the first subject: 80
Enter marks of the second subject: 80
Enter marks of the third subject: 80
Enter marks of the fourth subject: 80
Enter marks of the fifth subject: 80
Grade: B
```


34. Python Program to find the binary equivalent of a number

```
decNum = int(input("Enter any Decimal Number: "))  
print(bin(decNum)[2:])
```

OUTPUT

```
Enter any Decimal Number: 23  
10111
```

35. Python Program to Find the Roots of a Quadratic Equation

```
print("Equation: ax^2 + bx + c ")  
a=int(input("Enter a: "))  
b=int(input("Enter b: "))  
c=int(input("Enter c: "))  
d=b**2-4*a*c  
d1=d**0.5  
if(d<0):  
    print("The roots are imaginary. ")  
else:  
    r1=(-b+d1)/2*a  
    r2=(-b-d1)/2*a  
    print("The first root: ",round(r1,2))  
    print("The second root: ",round(r2,2))
```

OUTPUT

Equation: $ax^2 + bx + c$

Enter a: 1

Enter b: -5

Enter c: 6

The first root: 3.0

The second root: 2.0

36. Python Program to count the frequency of words appearing in a string using a dictionary

```
test_string=input("Enter string:")  
l=[]  
l=test_string.split()  
wordfreq=[l.count(p) for p in l]  
print(dict(zip(l,wordfreq)))
```

OUTPUT

Enter string:hi hello hi well done

{'hi': 2, 'hello': 1, 'well': 1, 'done': 1}

37. Python Program to find the sum all the items in a dictionary

```
d={'A':100,'B':200,'C':300}
print("Total sum of values in the dictionary:")
print(sum(d.values( )))
```

OUTPUT

```
Total sum of values in the dictionary:
600
```

38. Python Program to find the area of a rectangle using classes.

```
class rectangle():
    def __init__(self,breadth,length):
        self.breadth=breadth
        self.length=length
    def area(self):
        return self.breadth*self.length
a=int(input("Enter length of rectangle: "))
b=int(input("Enter breadth of rectangle: "))
obj=rectangle(a,b)
print("Area of rectangle:",obj.area())
```

OUTPUT

Enter length of rectangle: 2
Enter breadth of rectangle: 3
Area of rectangle: 6

39. Python Program to take a string and replace every blank space with a hyphen.

```
string=input("Enter string:")  
string=string.replace(' ','-')  
print("Modified string:")  
print(string)
```

OUTPUT

Enter string:
welcome to python strings
Modified string:
welcome-to-python-strings

40. Write a Python Program to design a calculator

```
# This function adds two numbers  
def add(x, y):
```

```
    return x + y

# This function subtracts two numbers
def subtract(x, y):
    return x - y

# This function multiplies two numbers
def multiply(x, y):
    return x * y

# This function divides two numbers
def divide(x, y):
    return x / y

print("Select operation.")
print("1.Add")
print("2.Subtract")
print("3.Multiply")
print("4.Divide")
while True:
    # take input from the user
    choice = input("Enter choice(1/2/3/4): ")
    # check if choice is one of the four options
    if choice in ('1', '2', '3', '4'):
        try:
            x = int(input("Enter first number: "))
            y = int(input("Enter second number: "))
```

```
    num1 = float(input("Enter first number: "))
    num2 = float(input("Enter second number: "))
except ValueError:
    print("Invalid input. Please enter a number.")
    continue
if choice == '1':
    print(num1, "+", num2, "=", add(num1, num2))
elif choice == '2':
    print(num1, "-", num2, "=", subtract(num1, num2))
elif choice == '3':
    print(num1, "*", num2, "=", multiply(num1, num2))
elif choice == '4':
    print(num1, "/", num2, "=", divide(num1, num2))

# check if user wants another calculation
# break the while loop if answer is no
next_calculation = input("Let's do next calculation?
(yes/no): ")
if next_calculation == "no":
    break
else:
    print("Invalid Input")
```

OUTPUT

Select operation.

1.Add

2.Subtract

3.Multiply

4.Divide

Enter choice(1/2/3/4): 2

Enter first number: 99

Enter second number: 6

99.0 - 6.0 = 93.0

Let's do next calculation? (yes/no): yes

Enter choice(1/2/3/4): 3

Enter first number: 9

Enter second number: 8

9.0 * 8.0 = 72.0

Let's do next calculation? (yes/no): no

41. Remove the duplicate from the list

```
a=[]
```

```
n= int(input("Enter the number of elements in list:"))
```

```
for x in range(0,n):
```

```
    element=int(input("Enter element" + str(x+1) + ":"))
```

```
    a.append(element)
```

```
b = set()
```

```
unique = []
for x in a:
    if x not in b:
        unique.append(x)
        b.add(x)
print("Non-duplicate items:")
print(unique)
```

OUTPUT

```
Enter the number of elements in list:7
Enter element1:10
Enter element2:20
Enter element3:20
Enter element4:30
Enter element5:40
Enter element6:40
Enter element7:50
```

```
Non-duplicate items:
[10, 20, 30, 40, 50]
```