**1. To find factors of any number in python, you have to ask from user to enter a number to find and print all the factors of that number on the output screen.**

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

print("Factors of",n,"is: ",end="")

i=1

while i<=n:

if (n%i==0):

print(i,end=", ")

i=i+1

**2. To check for positive, negative, or zero in python, you have to ask from user to enter a number to check whether that number is a positive number, negative number, or zero.**

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

if num > 0:

print(num," is a positive number.")

elif num == 0:

print(num,"is zero.")

else:

print(num,"is a negative number.")

**3. To check whether the given number is an even number or an odd number in python, you have to ask from user to enter a number to check for even or odd.**

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

if (n%2==0):

print("Number is even.")

else:

print("Number is odd.")

**4. To find HCF and LCM of two numbers in python, you have to ask from user to enter any two numbers to find and print the value of HCF and LCM.**

n1 = int(input("Enter 1st number: "))

n2 = int(input("Enter 2nd number: "))

temp1 = n1

temp2 = n2

while temp2 != 0:

t = temp2

temp2 = temp1%temp2

temp1 = t

hcf = temp1

lcm = (n1\*n2)/hcf

print("HCF is:",hcf)

print("LCM is:",lcm)

**5. To find factorial of any number in python, you have to ask from user to enter the number to find and print the factorial of that number on the output screen.**

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

fact=1

if num<0:

print("Factorial of a negative number does not exist.")

elif num==0:

print("Factorial of 0 is: 1.")

else:

for i in range(1,num+1):

fact=fact\*i

print("Factorial of",num,"is:",fact)

**6. To solve quadratic equation in python, you have to ask from user to enter the value of a, b, and c. Now calculate the value of d, and finally calculate the value of r1 and r2 to solve the quadratic equation of the given value of a, b, and c.**

import math

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

b=float(input("Enter b: "))

c=float(input("Enter c: "))

d=(b\*\*2)-(4\*a\*c)

if d>0:

r1=(-b-math.sqrt(d))/(2\*a)

r2=(-b+math.sqrt(d))/(2\*a)

print("The roots are",r1,"and",r2)

elif d==0:

r1=(-b)/2\*a

print("The roots are",r1)

else:

num\_roots = 0

print("No roots")

**7. To find square root of any number in python, you have to ask from user to enter a number to find and print square root of that number as output.**

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

n\_sqrt=n\*\*0.5

print("The square root of",n,"is",n\_sqrt)

**8. To print multiplication table of any number in python, you have to first ask from user to enter the number and start calculating its table to print the multiplication table of the given number.**

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

e=int(input("Enter the ending range: "))

for i in range(0,e+1):

print(n,"x",i,"=",n\*i)

**9. To check whether the input number is a prime number or not in python, you have to ask from user to enter a number and start checking the number for prime.**

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

for i in range(2,num):

if num%i==0:

print("Not a prime number.")

break

else:

print("Prime number.")

**10. To check whether the input character is a vowel or not in python, you have to ask from user to enter a character to check whether that character is a vowel or not.**

ch=input("Please Enter Your Own Character : ")

if(ch=='a' or ch=='e' or ch=='i' or ch=='o' or ch=='u' or ch=='A'

or ch=='E' or ch=='I' or ch=='O' or ch=='U'):

print(ch,"is a Vowel.")

else:

print(ch,"is a Consonant.")

**11. To calculate average and percentage marks in python, you have to ask from user to enter marks obtained in 5 subjects to calculate and print the average and the percentage.**

m1=int(input("Enter AM-4 marks: "))

m2=int(input("Enter CN marks: "))

m3=int(input("Enter AT marks: "))

m4=int(input("Enter OS marks: "))

m5=int(input("Enter COA marks: "))

sum=m1+m2+m3+m4+m5

avg=sum/5

per=(sum/500)\*100

print("Average Marks:", avg)

print("Percentage Marks:", per,"%")

**12. To calculate grade of students in python, you have to ask from user to enter marks obtained in 5 subjects and calculate the sum of all the marks and then calculate the average marks to find the grade according to the average marks obtained by student.**

m1=int(input("Enter AM-4 marks: "))

m2=int(input("Enter CN marks: "))

m3=int(input("Enter AT marks: "))

m4=int(input("Enter OS marks: "))

m5=int(input("Enter COA marks: "))

sum=m1+m2+m3+m4+m5

avg=sum/5

if 100>avg>80:

print("Grade is A")

elif 80>avg>60:

print("Grade is B")

elif 60>avg>40:

print("Grade is C")

elif 40>avg>20:

print("Grade is D")

elif 20>avg>0:

print("Grade is E")

**13. To find sum of natural numbers in python, you have to ask from user to enter the total number of term upto which he/she want to find the sum of all natural numbers up to the desired term and then print the summation result.**

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

sum=0

for num in range(0,n+1):

sum=sum+num

print("SUM of first",n,"numbers is:", sum)

**14. To add or sum all the digits of a number given by the user in python, first ask from user to enter the number, then break the given number into its digit and sum or add all the digits. Finally display the addition result of the digits of given number.**

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

sum=0

while(n>0):

r=n%10

sum=sum+r

n=n//10

print("Sum of the digits of the given number is:",sum)

**15. To count even and odd numbered digits in a number given by user.**

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

nl=[int(d) for d in str(n)]

even,odd=0,0

for num in nl:

if num%2==0:

even+=1

else:

odd+=1

print("Even numbers in the given number: ", even)

print("Odd numbers in the given number: ", odd)

**16. To check whether the original number is equal to its reverse or not in python, you have to ask from user to enter the number and start reversing that number. After find the reverse of the given number, check whether the reverse is equal to the given number or not.**

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

orig=n

rev=0

while n>0:

rev=(rev\*10)+n%10

n //= 10

if orig==rev:

print("Original number is equal to its reverse.")

else:

print("Original number is not equal to its reverse.")

**17. To calculate area of a square in python, you have to ask from user to enter the side length of square to calculate and print the area of that square on the output screen.**

# Same as question 21

side=float(input("Enter side length of the square: "))

area = side\*side

print("Area of the square:",area)

**18. To make simple calculator in python to perform basic mathematical operations such as add, subtract, multiply, and divide two numbers entered by the user. To make calculator in python, first provide 5 options to the user, the fifth option for exit. After providing all the five options to the user, ask from user to enter his/her choice and perform the desired operation.**

def add(num1, num2):

return num1 + num2

def subtract(num1, num2):

return num1 - num2

def multiply(num1, num2):

return num1 \* num2

def divide(num1, num2):

return num1 / num2

while True:

n1=int(input("\nEnter 1st number: "))

n2=int(input("Enter 2nd number: "))

print("1.Add\n2.Subtract\n3.Multiply\n4.Divide\n5.EXIT")

ch=input("Select operation: ")

if ch=='1':

print(n1,"+",n2,"=",add(n1,n2))

elif ch=='2':

print(n1,"-",n2,"=",subtract(n1,n2))

elif ch=='3':

print(n1,"\*",n2,"=",multiply(n1,n2))

elif ch=='4':

print(n1,"/",n2,"=",divide(n1,n2))

elif ch=='5':

break

else:

print("Invalid input")

**19. To check whether the given character is an alphabet or not an alphabet in python, you have to ask from user to enter a character to check for alphabet.**

ch=input("Please enter a character: ")

if ch.isalpha():

print(ch,"is an Alphabet")

else:

print(ch,"is not an Alphabet")

**20. To check whether the given year is a leap year or not a leap year in python, you have to ask from**

**user to enter a year to check for leap year.**

year=int(input("Enter a year: "))

if(year%4==0 and year%100!=0 or year%400==0):

print("Its a leap year")

else:

print("Its not a leap year")

**21. To calculate area of a square in python, you have to ask from user to enter the side length of**

**square to calculate and print the area of that square on the output screen.**

# Same as question 17

side=float(input("Enter side length of the square: "))

area = side\*side

print("Area of the square:",area)

**22. To calculate area of rectangle in python, you have to ask from user to enter length and breadth**

**of rectangle to calculate and print area of that rectangle on the output screen.**

w=float(input("Enter the Width of the Rectangle: "))

h=float(input("Enter the Height of the Rectangle: "))

area=w\*h

print("Area of the Rectangle is:",area)

**23. To calculate area of a triangle in python, you have to ask from user to enter length of first,**

**second, and third side to calculate and print area of that triangle on the output screen.**

a=float(input("Enter 1st side: "))

b=float(input("Enter 2nd side: "))

c=float(input("Enter 3rd side: "))

s=(a+b+c)/2

area=(s\*(s-a)\*(s-b)\*(s-c))\*\*0.5

print("The area of the triangle is:",area)

**24. To calculate area of a circle in python, you have to ask from user to enter radius of circle to**

**calculate and print area of that circle on the output screen.**

PI=3.14

r=float(input("Enter the radius of the circle: "))

area=PI\*r\*r

print("Area of the Circle:",area)

**25. To calculate perimeter of square in python, you have to ask from user to enter side length of**

**square to calculate perimeter of that square.**

side=float(input("Enter side length of the square: "))

p = 4\*side;

print("Perimeter of the square:",p)

**26. To calculate perimeter of rectangle in python, you have to ask from user to enter length and**

**breadth of rectangle to calculate and print the perimeter of that rectangle.**

w=float(input("Enter the Width of the Rectangle: "))

h=float(input("Enter the Height of the Rectangle: "))

p=2\*(w+h)

print("Perimeter of the Rectangle is:",p)

**27. To calculate perimeter of a triangle in python, you have to ask from user to enter length of first,**

**second, and third side of the triangle to calculate perimeter of that triangle.**

a=float(input("Enter 1st side: "))

b=float(input("Enter 2nd side: "))

c=float(input("Enter 3rd side: "))

p=a+b+c

print("The perimeter of the triangle is:",p)

**28. To calculate circumference of a circle in python, you have to ask from user to enter the radius of**

**a circle to calculate and print the circumference of that circle.**

PI=3.14

r=float(input("Enter the radius of the circle: "))

cir=2\*PI\*r

print("Circumference of the Circle:",cir)

**29. To print ASCII value of any character in python.**

c=input("Enter a character: ")

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

**30. To print fibonacci series in python, you have to ask from user to enter the limit or to enter the**

**total number of term to print the fibonacci series upto the given term.**

nterms = int(input("Enter number of terms: "))

n1=0

n2=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 upto",nterms,":")

while count<nterms:

print(n1,end=', ')

nth=n1+n2

n1=n2

n2=nth

count+=1

**31. To display powers of 2 in python, you have to ask from user to enter upto how many terms**

**he/she want to print the powers of two, and then print powers of 2 upto the given term.**

e=int(input("Enter the ending range: "))

for i in range(0,e+1):

print("2 raised to power",i,"=",2\*\*i)

**32. To find ncR and nPr in python, you have to ask from user to enter the value of n and r and then**

**find the value of ncR and nPr to print the result on output screen.**

import math;

n=int(input("Enter a value of n: "))

r=int(input("Enter a value of r: "))

npr=math.factorial(n)/math.factorial(n-r)

ncr=npr/math.factorial(r)

print("ncR =",ncr)

print("nPr =",npr)

**33. To find largest or greatest of two numbers in python, you have to ask from user to enter the two**

**numbers and then compare both the numbers with each other to find which one is largest and**

**then display the largest number on the output screen.**

a=int(input("Enter 1st number: "))

b=int(input("Enter 2nd number: "))

if a>b:

print("Greatest number is:",a)

else:

print("Greatest number is:",b)

**34. To find largest or greatest of three numbers in python, you have to ask from user to enter three**

**numbers to find and print the largest one among these three numbers.**

n1=int(input("Enter 1st number: "))

n2=int(input("Enter 2nd number: "))

n3=int(input("Enter 3rd number: "))

if (n1>n2) and (n1>n3):

l=n1

elif (n2 > n1) and (n2 > n3):

l=n2

else:

l=n3

print("The largest number is",l)

**35. To convert temperature from Celsius to Fahrenheit in python, you have to ask from user to**

**enter the temperature in Celsius to convert that temperature into Fahrenheit.**

c=int(input("Enter a temperature in Celsius: "))

f=9.0/5.0\*c+32

print("Temperature:",c,"Celsius = ",f,"Fahrenheit")

**36. To convert temperature from Fahrenheit to Celsius in python, you have to ask from user to**

**enter temperature in Fahrenheit to convert that temperature into Celsius.**

f=float(input("Enter a temperature in Fahrenheit: "))

c=(f-32)\*5.0/9.0

print("Temperature:",f,"Fahrenheit = ",c,"Celsius")

**37. To check whether the given number is a palindrome number or not a palindrome number in**

**python, you have to ask from user to enter a number to check for palindrome number.**

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

orig=n

rev=0

while n>0:

rev=(rev\*10)+n%10

n //= 10

if orig==rev:

print("The number is a palindrome")

else:

print("The number is not a palindrome")

**38. Write a program which will find all such numbers which are divisible by 7 but are not a multiple**

**of 5, between 2000 and 3200 (both included). The numbers obtained should be printed in a**

**comma-separated sequence on a single line.**

n=[]

for x in range(2000, 3201):

if (x%7==0) and (x%5!=0):

n.append(str(x))

print(', '.join(n))

**39. Write a program that calculates and prints the value according to the given formula:**

**Q = Square root of [(2 \* C \* D)/H]. Following are the fixed values of C and H: C is 50. H is 30.**

**D is the variable whose values should be input to your program from user in a comma-separated**

**sequence. Example:**

**Let us assume the following comma separated input sequence is given to the program:**

**100,150,180**

**The output of the program should be: 18,22,24**

import math

c=50

h=30

value=[]

print("Enter input separated by comma: ")

items=[x for x in input().split(',')]

for d in items:

value.append(str(int(round(math.sqrt(2\*c\*float(d)/h)))))

print(','.join(value))

**40. Write a program which accepts a sequence of comma separated 4 digit binary numbers as its input and then check whether they are divisible by 5 or not. The numbers that are divisible by 5 are to be printed in a comma separated sequence. Example: 0100,0011,1010,1001 Then the output should be: 1010**

items=[]

print("Enter a 4 digit binary separated by comma: ")

num=[x for x in input().split(',')]

for p in num:

x=int(p, 2)

if not x%5:

items.append(p)

print(', '.join(items))

**41. Write a program, which will find all such numbers between 1000 and 3000 (both included) such that each digit of the number is an even number. The numbers obtained should be printed in a comma-separated sequence on a single line.**

items=[]

for i in range(1000,3000):

s=str(i)

if (int(s[0])%2==0) and (int(s[1])%2==0) and (int(s[2])%2==0) and (int(s[3])%2==0):

items.append(s)

print(", ".join(items))

**42. Write a program that accepts a sentence and calculate the number of letters and digits. Suppose the following input is supplied to the program: hello world! 123 Then, the output should be: LETTERS 10 DIGITS 3**

s=input("Input a string: ")

d=l=0

for c in s:

if c.isdigit():

d=d+1

elif c.isalpha():

l=l+1

else:

pass

print("Letters:", l)

print("Digits:", d)

**43. Write a program that computes the value of a+aa+aaa+aaaa with a given digit as the value of a. Suppose the following input is supplied to the program: 9 Then, the output should be: 11106**

n=int(input('Enter a number: '))

temp=str(n)

t1=temp+temp

t2=temp+temp+temp

t3=temp+temp+temp+temp

x=n+int(t1)+int(t2)+int(t3)

print('The result of a+aa+aaa+aaaa for the entered number is: %d'%x)

**44. A website requires the users to input username and password to register. Write a program to check the validity of password input by users. Following are the criteria for checking the password: 1. At least 1 letter between [a-z] 2. At least 1 number between [0-9] 1. At least 1 letter between [A-Z] 3. At least 1 character from [$#@] 4. Minimum length of transaction password: 6 5. Maximum length of transaction password: 12 Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma. Example: If the following passwords are given as input to the program:ABd1234@1,a 1#,2w3E\*,2We3345 Then, the output of the program should be: ABd1234@1**

import re

value=[]

items=[x for x in input("Enter passwords: ").split(',')]

print(items)

for p in items:

if len(p)<6 or len(p)>12:

continue

if not re.search("[a-z]",p):

continue

elif not re.search("[0-9]",p):

continue

elif not re.search("[A-Z]",p):

continue

elif not re.search("[$#@]",p):

continue

else:

value.append(p)

print(", ".join(value))

**45. A robot moves in a plane starting from the original point (0,0). The robot can move toward UP, DOWN, LEFT and RIGHT with a given steps. The trace of robot movement is shown as the following: UP 5 DOWN 3 LEFT 3 RIGHT 2 The numbers after the direction are steps. Please write a program to compute the distance from current position after a sequence of movement and original point. If the distance is a float, then just print the nearest integer. Example: If the following tuples are given as input to the program: UP 5 DOWN 3 LEFT 3 RIGHT 2 Then, the output of the program should be: 2**

pos = {

"x": 0,

"y": 0

}

while True:

line=input("> ")

if not line:

break

direction, steps=line.split()

if direction == "UP":

pos["y"] += int(steps)

elif direction == "DOWN":

pos["y"] -= int(steps)

elif direction == "LEFT":

pos["x"] -= int(steps)

elif direction == "RIGHT":

pos["x"] += int(steps)

print(int(round((pos["x"]\*\*2 + pos["y"]\*\*2)\*\*0.5)))