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**Interview Preparations**

1. **Write a program to accept two numbers from the user, calculate the sum and display the same.**

num1=int(input('Enter the num1 value:'))

num2=int(input('Enter the num2 value:'))

print("Sum of " ,num1,"and", num2,"is",num1+num2)

Expected output:

*Enter the num1 value:*

*10*

*Enter the num2 value:*

*20*

*Sum of 10 and 20 is 30*

1. **Write a program to accept the weight of 3 persons, calculate the total weight, determine the average weight and display these details.**

wt1=float(input("Enter the weight of the first person:"))

wt2=float(input("Enter the weight of the second person:"))

wt3=float(input("Enter the weight of the third person:"))

sum=wt1+wt2+wt3

print("The sum of weight of the 3 persons is",sum," Kgs and the average weight is" , sum/3,"Kgs")

Expected output:

*Enter the weight of the first person:*

*55.5*

*Enter the weight of the second person:*

*45.4*

*Enter the weight of the third person:*

*65.6*

*The sum of weight of the 3 persons is 166.5 Kgs and the average weight is 55.5 Kgs*

1. **Write a program to accept the following details of an employee: empno, name and monthly salary; calculate the yearly salary and display the result.**

empno=int(input(" Enter the empno:"))

empname=input(" Enter the employee name:")

salary=int(input("Enter the monthly salary:"))

print("Hi Ramana! Your employee id is",empno, "monthly salary is Rs",salary,"and yearly salary is Rs",salary\*12,".")

Expected output:

*Enter the empno:*

*1001*

*Enter the employee name:*

*Ramana*

*Enter the monthly salary:*

*25000*

*Hi Ramana! Your employee id is 1001, monthly salary is Rs 25,000 and yearly salary is Rs 300,000.*

1. **Write a program to accept two numbers from the user, swap their values and display the result.**

num1=int(input('Enter the first number num1:'))

num2=int(input("Enter the second number num2:"))

print("Before swap, the values of num1=",num1," and num2=",num2)

num1=num1+num2

num2=num1-num2

num1=num1-num2

print("After swap, the values of num1=",num1," and num2=",num2)

Expected output:

*Enter the first number num1:*

*100*

*Enter the second number num2:*

*200*

*Before swap, the values of num1=100 and num2=200*

*After swap, the values of num1=200 and num2=100*

1. **Write a program to accept the principal amount, rate of interest, time and calculate the simple interest.**

def simpleinterest(p, i,t):

    print("Simple interest is",int(p\*i\*t/100))

p=int(input("Enter the principal amount:"))

i=float(input("Enter the rate of interest"))

t=float(input(" Enter the time (years)"))

simpleinterest(p,i,t)

Expected output:

*Enter the principal amount:*

*20000*

*Enter the rate of interest*

*1.5*

*Enter the time (years)*

*2*

*Simple interest is 600*

(Help: Simple Interest formula ((p\*t\*r)/100))

***IF* Statement**

1. **Write a program to accept a number, if it is negative then covert it to a positive number.**

n = int(input("Enter the negative number\n"))

if n<0:

  print("The result is:",n\*-1)

else:

  print("The result is:",n)

Expected output:

*Enter a number:*

*-10*

*The result is: 10*

**7.**       **Write a program to accept the billing amount, if it is > 6000 then give a discount of 10% and display the net amount.**

amt = int(input("Enter the Billing Amount: "))

if(amt>0):

    if amt>6000:

       disc = amt\*0.10

       print("Your net billing amount : ",amt-disc)

    else:

      print("Your net billing amount : ",amt)

Expected output:

*Enter the billing amount:*

*6500*

*Your net billing amount: 5850*

*Enter the billing amount:*

*5500*

*Your net billing amount: 5500*

**8.**       **The Sports Club registration form has the following details: name, mobile number and age. Per the membership policy, the person should be at least 18 years old to become a member. Write a program to accept the details mentioned above; if the age is >18 years then display the entered details with a congratulatory message, else the following message should be displayed “Sorry! You need to be at least 18 years old to get membership.”**

name=input("Enter the name:")

mobile=int(input("Enter the mobile number:"))

age=int(input("Enter the age:"))

if age>=18:

  print("Congratulation",name,"for your successful registration. ")

else:

  print("Sorry! You need to be at least 18 years old to get membership")

Expected output:

Enter the name:

Lakshman

Enter the mobile number:

989999999

Enter the age:

16

“Sorry! You need to be at least 18 years old to get membership.”

Enter the name:

Lakshman

Enter the mobile number:

989999999

Enter the age:

30

“Congratulations Lakshman for your successful registration.”

Hint: Use *return* statement in *if* block after displaying the “Sorry…” message.

**If – Else Statement**

9.       Write a program to accept a number from the user and determine whether it is even or odd.

num = int(input("Enter a number: "))

if (num % 2) == 0:

   print("The entered number {0} is Even".format(num))

else:

   print("The entered number {0} is Odd".format(num))

Expected output:

*Enter a number:*

*15*

*The entered number 15 is odd*

*Enter a number*

*10*

*The entered number 10 is even*

**10.**   **Write a program to accept two numbers from the user and determine bigger of the two.**

num1 = int(input("Enter the first number num1: "))

num2 = int(input("Enter the second number num2: "))

if(num1 > num2):

    print("{0} The Lesser than {1}".format(num1, num2))

elif(num2 > num1):

    print("{0} is Bigger than {1}".format(num2, num1))

else:

    print("Both num1 and num2 are Equal")

Expected output:

*Enter the first number num1:*

*20*

*Enter the second number num2:*

*45*

*The bigger of the two numbers entered (20 and 45) is: 45*

**11.**   **Write a program to accept two numbers num1 and num2; when one is subtracted from the other, the result should always be a positive number.**

num1=int(input("Enter the first number num1:"))

num2=int(input("Enter the second number num2:"))

if num1>num2:

    ans=num1-num2

else:

    ans=num2-num1

print("The result (difference) is: ",ans)

Expected output:

*Enter the first number num1:*

*35*

*Enter the second number num2:*

*45*

*The result (difference) is: 10*

*Enter the first number num1:*

*45*

*Enter the second number num2:*

*35*

*The result (difference) is: 15*

**12.**   **In a shopping mall, privileged customers (if they have a membership card) are being given a 10% discount on the billed amount, and the others are being given a 3% discount. Write a program to accept the billing amount and confirm the membership card from the customer; calculate and display the net amount to be paid by the customer.**

amt=int(input("Enter the bill amount:"))

print("Do you have a membership card? Y/N")

str=input()

if str=='y':

  print("Thank you! Your total bill amount is ",amt," discount is Rs 500 and net amount payable is Rs",amt-500,"." )

else:

  print("Thank you! Your total bill amount is Rs",amt ,", discount is Rs 150 and net amount payable is Rs",amt-150,".")

Expected output:

*Enter the bill amount:*

*5000*

*Do you have a membership card?*

*Y*

*Thank you! Your total bill amount is Rs 5000, discount is Rs 500 and net amount payable is Rs 4500.*

*Enter the bill amount:*

*5000*

*Do you have a membership card?*

*N*

*Thank you! Your total bill amount is Rs 5000, discount is Rs 150 and net amount payable is Rs 4850.*

**IF – ELSE – IF Statement**

**13.**   **Write a program to accept 3 numbers from the user and find the biggest of them.**

num1 = int(input("Enter the 1st number num1: "))

num2 = int(input("Enter the 2nd number num2: "))

num3 = int(input("Enter the 3rd number num3:"))

if (num1 > num2) and (num1 > num3):

   largest = num1

elif (num2 > num1) and (num2 > num3):

   largest = num2

else: 3

   largest = num

Expected output:

*Enter the 1st number num1:*

*45*

*Enter the 2nd number num2:*

*75*

*Enter the 3rd number num3:*

*45*

*The biggest of the 3 numbers entered is: 75*

**14.**   **Write a program to accept the marks scored in three subjects; determine the sum and average of the entered marks. Grade is awarded based on following criteria.**

sub1=int(input("Enter the marks scored in 1st subject:"))

sub2=int(input("Enter the marks scored in 3rd subject:"))

sub3=int(input("Enter the marks scored in 2nd subject:"))

tm=sub1+sub2+sub3

avg=tm/3

print(tm)

print(avg)

if avg<35:

    print("Grade: “C”")

elif avg>=35 and avg<=60:

    print("Grade: “B”")

else:

    print("Grade: “A”")

If average is < 35 -- “C”; >35 and <60 -- “B”; Otherwise -- “A”

Expected output:

*Enter the marks scored in 1st subject:*

*40*

*Enter the marks scored in 2nd subject:*

*60*

*Enter the marks scored in 3rd subject:*

*80*

*Total marks: 180*

*Average is: 60.0*

*Grade: “B”*

**FOR Loop**

**15.**   **Write a program to generate the first 'N' natural numbers. Accept the value of 'N' from the user.**

n=int(input("Enter the number of natural numbers to be generated:"))

print("First 5 natural numbers are :",end="")

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

print(i,end=" ")

Expected output:

*Enter the number of natural numbers to be generated:*

*5*

*First 5 natural numbers are : 1 2 3 4 5*

**16.**   **Write a program to accept a number and determine whether it is a prime number or not.**

n = int(input("Enter any number\n"))

if n > 1:

  m=n/2

  for i in range(2, int(m)):

    if (n % i) == 0:

      print("The entered number", n,"is not a prime number")

      break

    else:

      print("The entered number", n, "is a prime number")

      break

Expected output:

*Enter any number:*

*9*

*The entered number 9 is not a prime number*

*Enter any number:*

*7*

*The entered number 7 is a prime number*

**17.**   **Write a program to generate the first 'N' natural numbers and print them in descending order.**

n=int(input("Enter the number of natural numbers to be generated"))

print("The first 5 natural numbers in descending order are:",end="")

for i in range(n):

  print(n,end=" ")

  n=n-1

Expected output:

*Enter the number of natural numbers to be generated:*

*5*

*The first 5 natural numbers in descending order are: 5 4 3 2 1*

18.    **Write a program to accept the lower bound number and the upper bound number from the user and print the prime numbers between them.**

n=int(input("Enter the lower bound value:"))

m=int(input("Enter the upper bound value:"))

for j in range (n,m+1):

  if j>1:

    for i in range(2,j):

      if j%i==0:

        break

    else:

      print(j,end=" ")

Expected output:

*Enter the lower bound value:*

*5*

*Enter the upper bound value:*

*15*

*The prime numbers between 5 and 15 are: 5 7 11 13*

**19.**   **Write a program to accept a number and print the Fibonacci series up to the entered number.**

n = int(input("Enter the upper bound number to generate the Fibonacci numbers: "))

n1 = 0

n2 = 1

count = 0

if n <= 0:

   print("Please enter a positive integer")

elif n >= 1:

   print("Fibonacci sequence up to the entered number:",end="")

   print(n1,end=" ")

   print(n2,end=" ")

   while count < n:

       count = n1 + n2

       print(count,end=" ")

       n1 = n2

       n2 = count

Expected output:

*Enter the upper bound number to generate the Fibonacci numbers:*

*8*

*Fibonacci series up to the entered number is: 0 1 1 2 3 5 8*

**20.**   **Write a program to accept a number from the user and print its multiplication table (upto “times 10”).**

num = int(input('Enter the number to generate its multiplication table:'))

print('Multiplication table for is', num)

for i in range(1,11):

   print(num, 'x', i, '=', num\*i

Expected output:

*Enter the number to generate its multiplication table:*

*19*

*Multiplication table for 19 is :*

*19 \* 1 = 19*

*19 \* 2 = 38*

*…..............*

*…..............*

*19\* 10 = 190*

**21.**   **Write a program to accept a number and find its factorial.**

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

factorial = 1

if num < 0:

   print(" 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)

Expected output:

*Enter any number:*

*5*

*The factorial of 5 is 120*

(Hint: 5! = 5 \* 4 \* 3 \* 2 \* 1)

**22.**   **Write a program to accept a number “n” from the user; then display the sum of the series 1+1/2+1/3+……….+1/n.**

n=int(input())

sum=0

for i in range(1,n+1):

  sum=sum+1/i

sum

**23.**   **Write a program to accept a number “n” from the user; then display the series 1,3,5,7,9,…,n and find the sum of the numbers in this series.**

n=int(input())

sum=0

for i in range(1,n\*2,2):

  print(i,end=" ")

  sum=sum+i

print()

print(sum)

**24.**   **Write a program to accept a number “n” from the user; find the sum of the series 1/23+1/33+1/43……..+1/n3**

n=int(input())

sum=0

for i in range(2,n+2):

  sum=sum+1/i\*\*3

sum

**Write a program to generate following patterns.**

**25.**

num=1

for i in range(1,5):

    for j in range(i):

        print(num,end=" ")

        num=num+1

    print("")

1

2 3

4 5 6 7

8 9 10 11

**26.**

num=1

for i in range (0,3):

    for j in range(3):

        print(num,end=" ")

        num=num+1

    print()

1 2 3

4 5 6

7 8 9

**27.**

for i in range (1,7):

    for j in range(1,i):

        print(j,end=" ")

    print()

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

**28.**

n=6

for i in range (1,7):

    for j in range(n-i):

        print(j+1,end=" ")

    print()

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

**29.**

for i in range (1,7):

    for j in range(1,i):

        print(j,end=" ")

    print()

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

**30.**

for i in range (1,7):

    for j in range(1,i):

        print(j,end=" ")

    for k in range(2,i):

        print (i-k,end=" ")

    print()

1

1 2 1

1 2 3 2 1

1 2 3 4 3 2 1

1 2 3 4 5 4 3 2 1

**31.**

n=1

for i in range (1,4):

    for j in range (0,3):

        print(19\*n,end=" ")

        n=n+1

    print()

19 38 57

76 95 114

133 152 171

**32.**

ch=65

for i in range (1,4):

    for j in range(3):

        print(chr(ch),end=" ")

        ch=ch+1

    print()

A B C

D E F

G H I

**33.**

for i in range(1,6):

    for j in range(1,i):

         print(j,end=" ")

    for k in range(1,i):

        print(i-k,end=" ")

    print()

1 1

1 2 2 1

1 2 3 3 2 1

1 2 3 4 3 2 1

**34.**

for i in range (1,4):

    for j in range (3):

        if(i==1 and j==0):

            print("19",end=" ")

        elif i==2 and j==1:

            print("19",end=" ")

        elif(i==3 and j==2):

            print("19",end=" ")

        else:

            print("0" ,end=" ")

    print()

19 0 0

0 19 0

0 0 19

**35.**

m=7

for i in range (1,8):

    for j in range (m):

        if i==1 or i==7:

            print("\*",end=" ")

    for k in range (0,2):

        print( "   ",end="")

    for z in range (1):

        if i==1 or i==7:

            print(end="")

        else:

            print("\*",end=" ")

    print()

\* \* \* \* \* \* \* \* \*

             \*

             \*

             \*

             \*

             \*

\* \* \* \* \* \* \* \* \*

**36.**

m=7

for i in range (1,8):

    for j in range (m):

        if i==1 or i==7:

            print("\*",end=" ")

    for k in range (0,2):

        print( "   ",end="")

    for z in range (1):

        if i==1 or i==7:

            print(end="")

        else:

            print("\*",end=" ")

    print()

**@ @ @ @**

**@           @**

**@ @ @ @**

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**@           @**

**37.**

for j in range(5):

    print("\*",end="  ")

for i in range (1,9):

  if i>1 and i<=9:

    if i==5:

      for k in range(1,12):

        print("\*",end="  ")

      print("")

      continue

    if i<=5:

      for k in range(8,23):

          print("",end="  ")

      for k in range(1):

            print("\*")

    for k in range(7):

        print("",end="  ")

    for k in range(1):

          print("\*")

    if i>5:

      for k in range(1):

        print("\*")

      for k in range(2,2):

        print("",end="  ")

      if i==8:

        for k in range(2,16):

          print("",end=" ")

        for k in range(7):

          print("\*",end="  ")

  print("\r")

\* \* \* \* \* \* \*

    \*              \*

    \*              \*

    \*  \*

\* \* \* \* \* \* \* \* \* \* \* \*

\*                 \*

\*                 \*

\*                 \*

                   \* \* \* \* \* \* \*

**38.**   **Write a program to find the biggest, smallest and sum of the elements in the given 3 X 3 matrix.**

def find\_len(list1):

    length = len(list1)

    list1.sort()

    print("Largest element is:", list1[length-1])

    print("Smallest element is:", list1[0])

list1=[5,6,7,4,5,6,5,6,7]

Largest = find\_len(list1)

5 6 7

4 5 6

5 6 7S

**While – loop**

**41.**   **Write a program to accept a number from the user and count the number of digits in the number.**

n=int(input("Enter any number:"))

count=0

while(n>0):

    count=count+1

    n=n//10

print("The number of digits in the entered number is:",count)

Expected output:

*Enter any number:*

*14567*

*The number of digits in the entered number is 5*

**42.**   **Write a program to accept a number from the user and find the sum of digits in the entered number.**

n=int(input("Enter a number:"))

num=0

while(n>0):

    m=n%10

    num=num+m

    n=n//10

print("The sum of digits of the entered number:",num)

Expected output:

*Enter any number:*

*14567*

*The sum of digits of the entered number is 22*

**43.**   **Write a program to accept a number from the user and find the reverse of the entered number.**

n=int(input("Enter a number:"))

num=0

while(n>0):

    m=n%10

    num=num\*10+m

    n=n//10

print("Reverse of the entered number:",num)

Expected output:

*Enter any number:*

*45646*

*Reverse of the entered number is 64654*

**44.**   **Write a program to accept a number from the user and determine whether it is an Armstrong number or not.**

n=int(input("Enter a number:"))

num=0

while(n>0):

    m=n%10

    num=num+m\*m\*m

    n=n//10

print(":",num)

(Example: 153 is an Armstrong number 1^3 + 5 ^3 +3 ^3 =153)

**45.**   **Write a program to accept a number from the user and calculate the sum of digits of the number; repeat the operation till the sum gets to be a single digit number.**

n=int(input("Enter a number:"))

num=0

while(n>0):

    m=n%10

    num=num+m

    n=n//10

k=num

num=0

while(k>0):

  l=k%10

  num=num+l

  k=k//10

print("The sum of digits of the entered number:",j)

Expected output:

*Enter any number:*

*9981*

*Single digit sum is: 9*

(Hint: 9+9+8+1 = 27; 2+7 = 9)

**46.**   **Write a program to accept a number from the user and count the number of prime digits.**

def countDigit(n, count = 0):

    if (n == 0):

        print(count)

        return;

    d = n % 10;

    n = int(n / 10);

    if (d == 2 or d == 3 or d == 5 or d == 7):

        count += 1

    countDigit(n, count);

n = int(input("Enter any number"));

countDigit(n)

Expected output:

*Enter any number:*

*97512*

*Number of prime digits in the entered number is 3*

**47.**   **Write a program to accept a number and find the factorial of the number (using *while* loop).**

num = int(input("enter any number: "))

n = 1

i = 1

while i <= num:

  n=n\*i

  i = i + 1

print("factorial of ", num, " is ", n)

**48.**   **Write a program to accept a four digit number from the user and display its denomination.**

s=input(" ")

i=0

n=1000

while i<4:

    if i>=0:

        k=s[i]

        j=int(k)\*n

        print(int(k),"\*",int(n),"=",int(j))

    else:

        break

    i=i+1

    n=int(n)/10

*Example: 5698*

*Output: 5\*1000 =5000*

*6\*100 =600*

*9\*10 =90*

*8\*1 =8*

**49.**   **Write a program to accept a five digit number from the user, increment each digit by one and display the number (digit 9 gets incremented to 0).**

n=input("")

i=0

while i<len(n):

    k=n[i]

    k=int(k)+1

    print(int(k),end="")

    i=i+1

m=int(input())

n=int(input())

i=1

while(i<n):

    m=m\*n

    i=i+1

# print(m

*Example:*

*Input: 14385*

*Output: 25496*

**50.**   **Write a program to accept 2 numbers “m” and “n” from the user and determine m^n (without using predefined functions).**

m=int(input())

n=int(input())

i=1

while(i<n):

  m=m\*n

  i=i+1

print("",m)

**Switch statement**

**51.**   **Write a program to accept a character from the user and check whether it is a vowel or consonant using *switch* statement.**

def switch():

  ch = input()

  flag=1

  ch.lower()

  char = ['a', 'e', 'i', 'o', 'u']

  for i in char:

    if i==ch:

      flag=0

  if flag==0:

      print("is Vowel")

  else:

    print("Consonants")

switch()

**52.**   **Write a program to accept two numbers num1, num2 and an operator. Simulate the calculator using *switch* statement.**

a=int(input("Enter the 1st Operand num1:"))

b=int(input("Enter the 2nd Operand num2:"))

print("1.add 2.mul 3.sub 4.mod 5.div")

choice=int(input("Enter your choice:"))

def add(a,b):

  print(a+b)

def mul(a,b):

  print(a\*b)

def sub(a,b):

  print(a/b)

def mod(a,b):

  print(a%b)

def div(a,b):

  print(a/b)

if choice == 1:

  add(a,b)

elif choice == 2:

  mul(a,b)

elif choice == 3:

  sub(a,b)

elif choice == 4:

  mod(a,b)

elif choice == 5:

  div(a,b)

else:

  print("Enter the correct choice:")

*Enter the 1st Operand num1:*

*10*

*Enter the 2nd Operand num2:*

*20*

*1. add 2. mul 3. div 4. mod 5. div*

*Enter the operator*

*1*

*The sum of 10 and 20 is 30*

**53.**   **Write a program to generate the following output**

for i in range(12,33):

  if i==12 or i==13 or i==21 or i==23 or i==31 or i==32:

    print(i)

  else:

    continue

*1 2*

*1 3*

*2 1*

*2 3*

*3 1*

*3 2*

(Hint: Use *continue* statement)

**54.**   **Write a program to add the first 7 terms of the following series using a *for* loop:**

**1/1!+2/2!+3 /3!+....**

add=0

from math import factorial as fact

for i in range(1,8):

  add=add+i/fact(i)

print(add)

**55.**   **Write a program to fill the entire screen with a smiling face. The smiling face has an ASCII value 1.**

for i in range(50):

  for j in range(900):

    print("\u263A",end="")

  print()