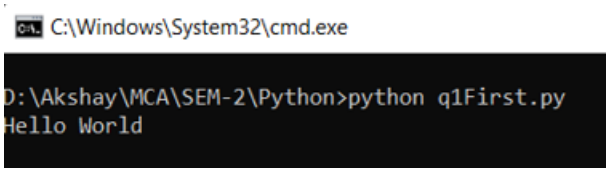
Practical Assigment – 1 (Basic Program)

1. **Write a program to print "Hello World" using function.**

```
def display():
        print("Hello World")

display()
```

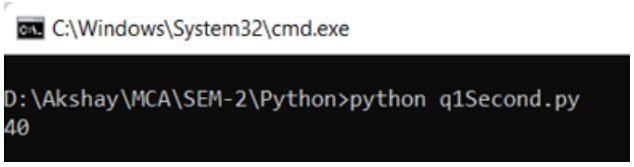
Output:



2. **Write a program to add two numbers and print the result.**

```
a=20
b=20

c=a+b
print(c)
```

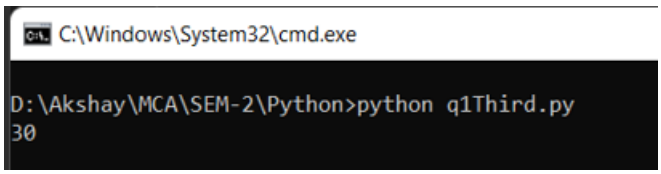
Output:



3. **Write a program to add two numbers and print the result using function.**

```
def sum(a,b):
        c=a+b
        print(c)

sum(10,20)
```

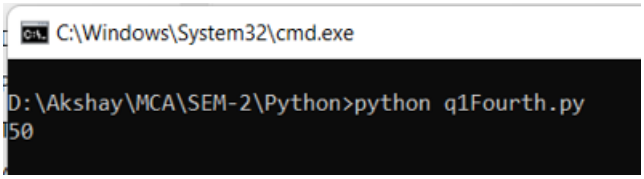
Output:



4. **Write a program to add two numbers and return the result using function.**

```
def sum(a,b):
        c=a+b
        return c

d=sum(25,25)
print(d)
```

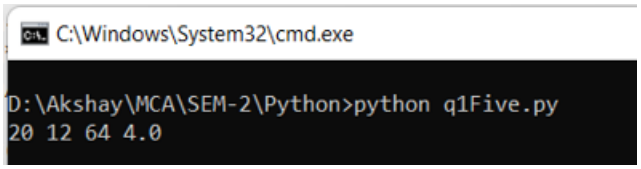
Output:



5. **Write a program to add, subtract, multiply and divide two numbers and print the result.**

```
a=16
b=4
sum=a+b
sub=a-b
mul=a*b
div=a/b

print(sum,sub,mul,div)
```

Output:

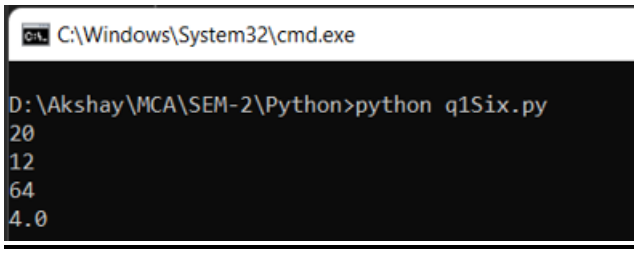


6. Write a program to add, subtract, multiply and divide two numbers using function and return the result.

```
def sum_sub_m_d(a,b):
    c=a+b
    d=a-b
    e=a*b
    f=a/b
  return c,d,e,f


t=sum_sub_m_d(16,4)
```

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

Output:

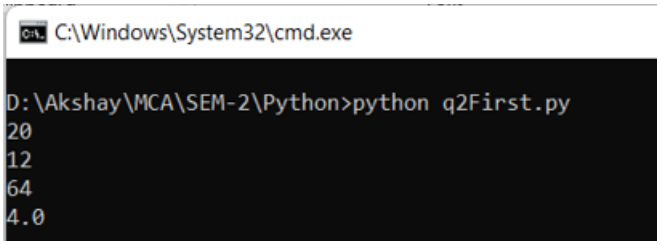


Practical Assignment -2 (Function With List)

1. Write a function to add, subtract, multiply and divide two numbers using function and return the result in list.

```
def total(a,b):
    l=[]
    c=a+b
    l.append(c)
    d=a-b
    l.append(d)
    e=a*b
    l.append(e)
    f=a/b
    l.append(f)
    return l
a=total(16,4)
for i in a:
    print(i)
```

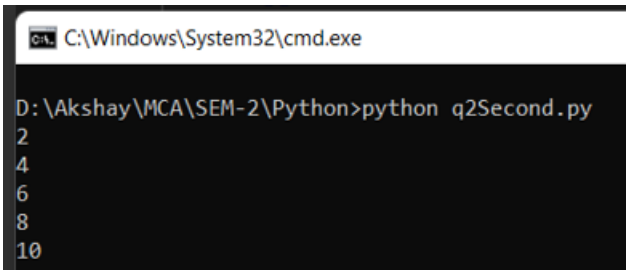
Output:



2. Write a function to find even numbers and return a list.

```
def even(n):
    l=[]
    for i in range(1,n+1):
        if i%2==0:
            l.append(i)
    return l
a=even(10)
for i in a:
    print(i)
```

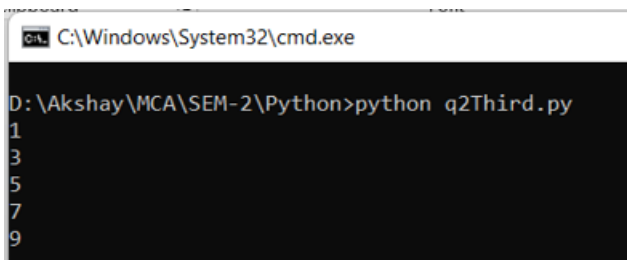
Output:



3. Write a function to find odd numbers and return a list.

```
def odd(n):
    l=[]
    for i in range(1,n+1):
        if i%2==1:
            l.append(i)
    return l
a=odd(10)
for i in a:
    print(i)
```

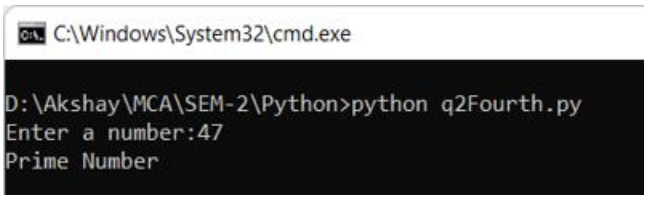
Output:



4. Write a function to find prime numbers and return a list.

```
num=int(input("Enter a number:"))
flag=False
if(num>1):
    for i in range(2,num):
        if(num%i==0):
            flag=True
            l.append(num)
            break
    if flag:
        print("Not prime Number")
    else:
        print("Prime Number")
```

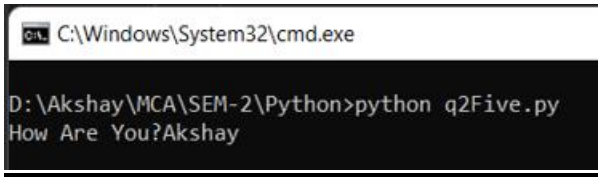
Output:



5. Write a function inside another function

```
def display(str):
        def message():
                return 'How Are You?'
        result=message()+str
        return result

print(display('Akshay'))
```

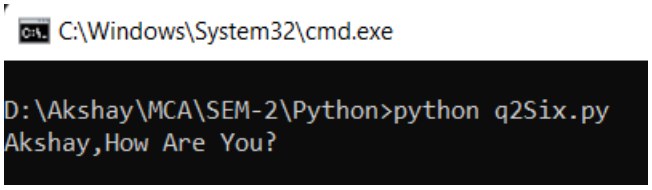
Output:



6. Write a program to pass function as a parameter. Hint write a function, which returns a string 'How are you?' Pass this function, as a parameter to another function that print Hi, How are you?

```
def display(function):
        return 'Akshay,'+function
def message():
        return 'How Are You?'
print(display(message()))
```

Output:

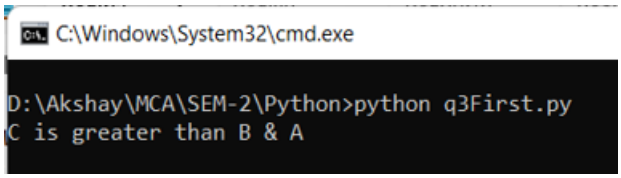


Practical Assignment -3 (Function With List)

1. **Write a Python function to find the maximum of three numbers.**

```
def maxno(a,b,c):
        if a>b and a>c :
                print("A is greater than B & C")
        elif b>a and b>c:
                print("B is greater than A & C")
        else:
                print("C is greater than B & A")
maxno(15,16,17)
```

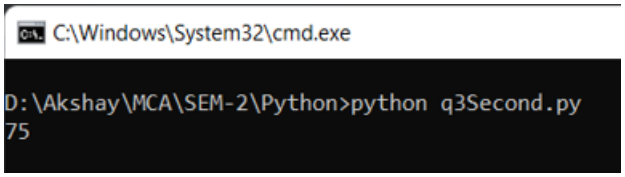
Output:



2. **Write a Python function to multiply all the numbers in a list. (Numbers can be negative, positive or zero).**

```
def multiply(mylist):
        result=1
        for i in mylist:
                result=result*i
        return result

list1=[5,5,3]
print(multiply(list1))
```

Output:



3. **Write a Python function to calculate the factorial of a number. The function accepts the number as an argument.**

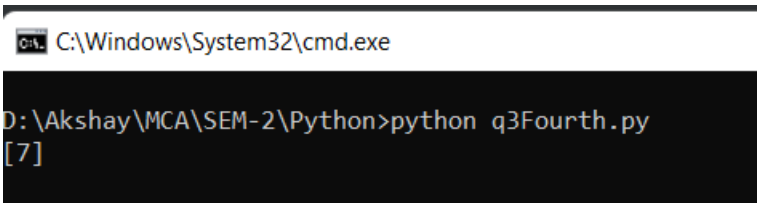
```
num=int(input("Enter the number:"))

fact=1
for i in range(1,num+1):
        fact=fact*i
print("Factorial of ",num,"is",fact)
```

Output:

4. **Write a Python function that takes a list and returns a new list with distinct elements from the first list.**

```
def unique_list(l):
        x = []
        for a in l:
                if a not in x:
                        x.append(a)
                return x

print(unique_list([7,2,3,3,3,3,4,5]))
```

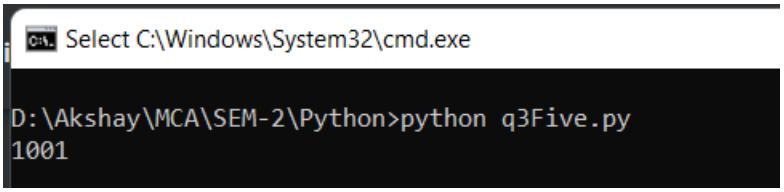
Output:



5. **Write a python function to find the largest item from a given list.**

```
heights = [100, 2, 300, 10, 1001, 1000]
largest_number = heights[0]
for number in heights :
        if number > largest_number :
                largest_number = number
print(largest_number)
```

Output:

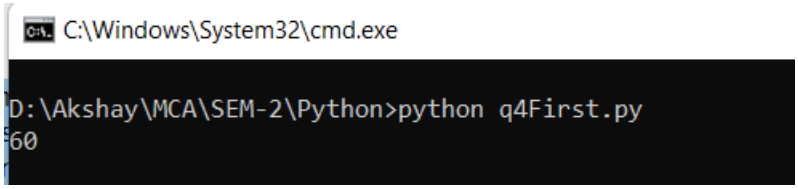


Practical Assignment -4 (Function With List)

1. **Write a function to add up all the numbers in a list.**

```
def sum(mylist):
        result=0
        for i in mylist:
                result=result+i
        return result

list1=[10,20,30]
print(sum(list1))
```

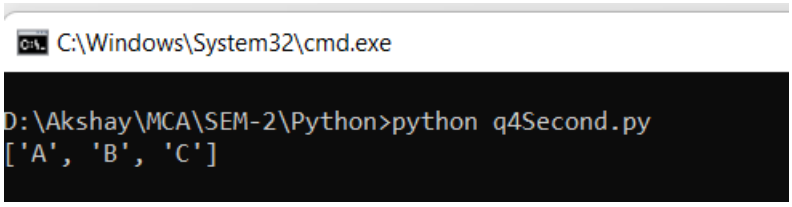
Output:



2. **Write a function takes a list of strings and returns a new list that contains capitalized strings**

```
def cap(mylist):
        l=[]
        for i in mylist:
                a=i.upper()
                l.append(a)
        return l

list1=['a','b','c']
print(cap(list1))
```

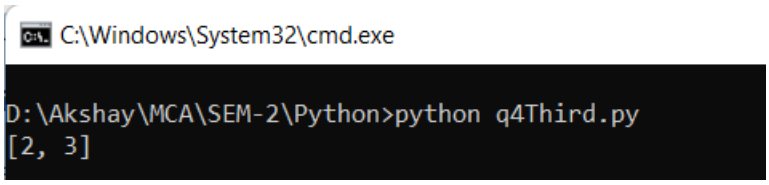
Output:



3. **Write a function called middle that takes a list and returns a new list that contains all but the first and last elements should be removed. So middle([1,2,3,4]) should return [2,3].**

```
def middle(mylist):
        del mylist[0]
        del mylist[-1]
        return mylist

list1=[1,2,3,4]
a=middle(list1)
print(a)
```

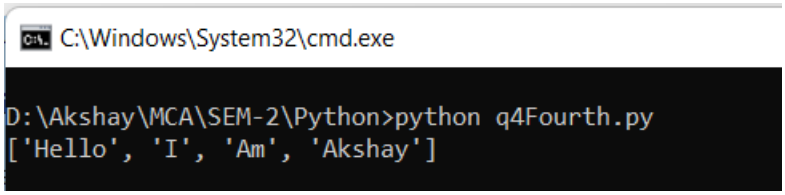
Output:



4. **Write a function which breaks a string into individual letters.**

```
def message(mylist):
        a=mylist.split()
        return a

string='Hello I Am Akshay'
res=message(string)
print(res)
```

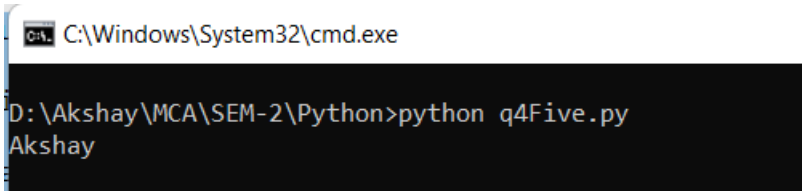
Output:



5. **Write a function which takes a list of strings and concatenates the elements**

```
def conc(mylist):
        list2=""
        for i in mylist:
                list2=list2+i
        return list2

list1=['A','k','s','h','a','y']
res=conc(list1)
print(res)
```

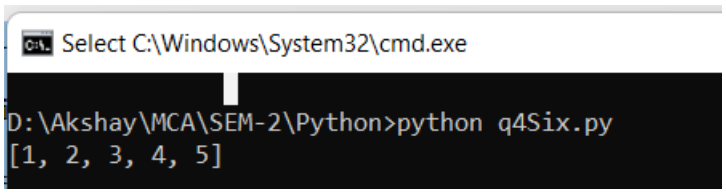
Output:



6. **Write a function that takes a list and returns a new list with distinct elements from the first list.**

```
def unique_list(mylist):
 l = []
 for i in mylist:
  if i not in l:
    l.append(i)
 return l
list1=[1,2,3,3,3,3,4,5]
res=unique_list(list1)
print(res)
```

Output:

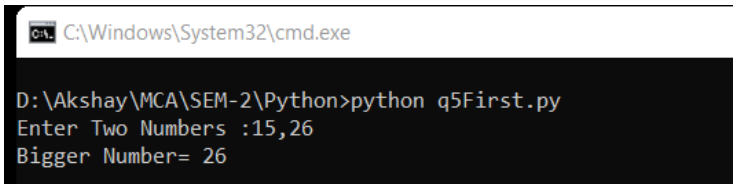


Practical Assignment -5 (Lamda,filter,map)

1. **Write lambda function to find maximum value from two numbers.**

```
max=lambda x,y:x if x>y else y
a,b=[int(n) for n in input("Enter Two Numbers :").split(',')]
print("Bigger Number=",max(a,b))
```

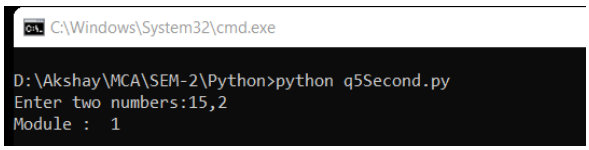
Output:



2. **Write a lambda function to find module of given number.**

```
mod=lambda x,y : x%y
a,b=[int(n) for n in input("Enter two numbers:").split(',')]
print("Module : ",mod(a,b))
```

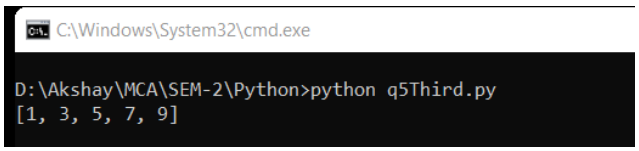
Output:



3. **Use filter to find odd values from a list. Use lambda function to write function.**

```
lst = [1,2,3,4,5,6,7,8,9,10]
f = lambda x : True if x%2!=0 else False
result=list(filter(f,lst))
print(result)
```

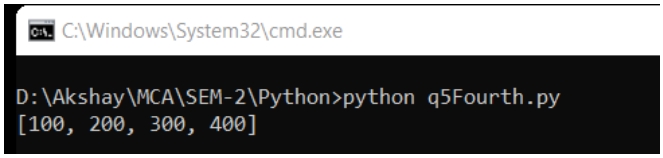
Output:



4. **Use filter function to find values greater than 10 and less than 500 function.**

```
lst = [10,100,200,300,400,500,600]
f = lambda x : x>10 and x<500
a=list(filter(f,lst))
print(a)
```

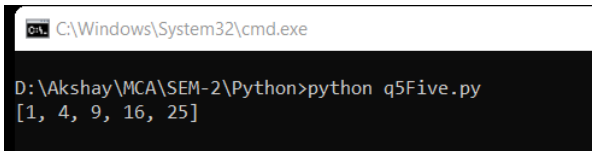
Output:



5. **Use map to find square for each values of the list. Use lambda function to write function.**

```
lst=[1,2,3,4,5]
lst1=list(map(lambda x : x*x,lst))
print(lst1)
```

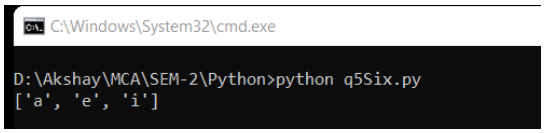
Output:



6. **Use filter function to extract vowels from given list of alphabets.**

```
l = ['a','b','c','d','e','f','g','h','i','j']
vl = ['a','e','i','o','u']
f = lambda x: x in vl
res = list(filter(f,l))
print(res)
```

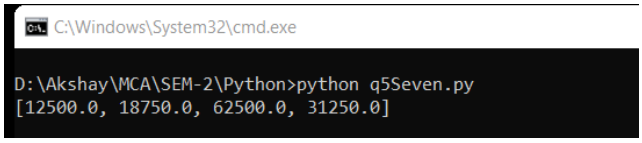
Output:



7. **Use map function to increase salary by 25% of all employees.**

```
f = lambda x: x + (x*0.25)

sal = [10000,15000,50000,25000]
res = map(f,sal)
print(list(res))
```

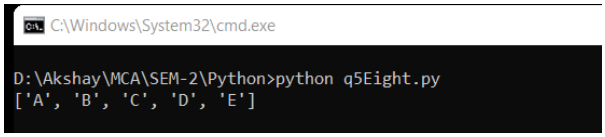
Output:



8. **Write a Python program to convert all the characters into uppercase. Use map.**

```
f = lambda x: x.upper()

l = ['a','b','c','d','e']
res = map(f,l)
print(list(res))
```

Output:

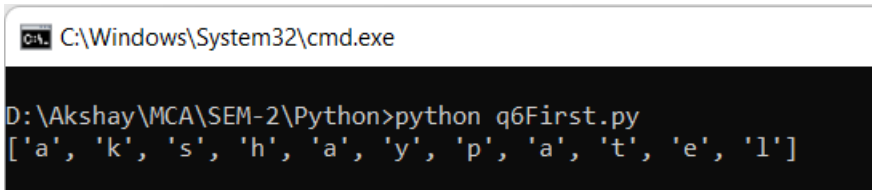


Practical Assignment -6 (List Comprehension)

1. **Using List Comprehension to Iterate through a String.**

```
a=[i for i in "akshaypatel"]
print(a)
```

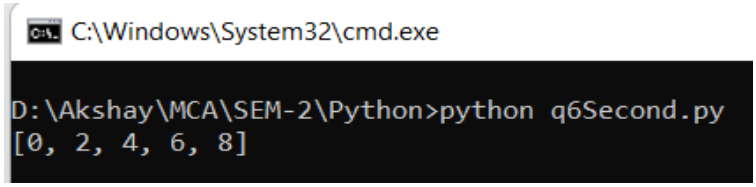
Output:



2. **Please check in the range from 0 – 9 if the item's value is divisible by 2.**

```
visible_no2=[i for i in range(0,9) if i%2==0]
print(visible_no2)
```

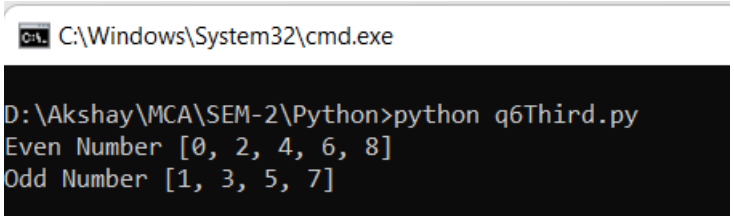
Output:



3. **Check the five numbers from 0 to 9. If y is divisible by 2, then even is appended to the obj list. If not, odd is appended.**

```
even=[]
odd=[]
list1=[even.append(i) if(i%2==0) else odd.append(i) for i in range(0,9)]
print("Even Number",even)
print("Odd Number",odd)
```

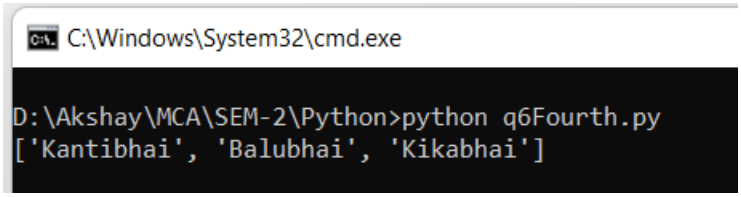
Output:



4. **Finding the elements in a list in which elements are ended with the letter 'b' and the length of that element is greater than 2.**

```
a=["Akshay","Patel","Kantibhai","Balubhai","Kikabhai","i"]
l=[i for i in a if i.lower().endswith('i') and len(i) > 2]
print(l)
```

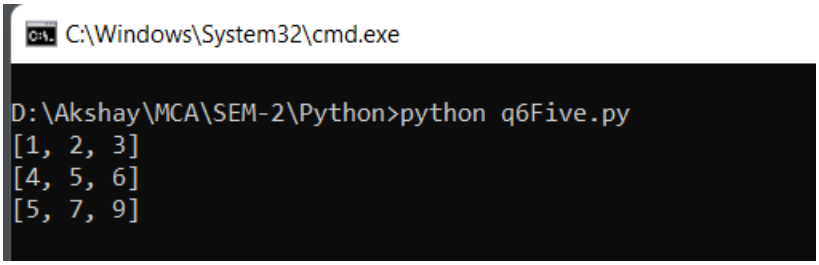
Output:



5. **Add two list X & Y and display the result.**

```
new=[]
x=[1,2,3]
y=[4,5,6]
print(str(x))
print(str(y))
l=[new.append(x[i] + y[i]) for i in range(0,len(x))]
print(new)
```

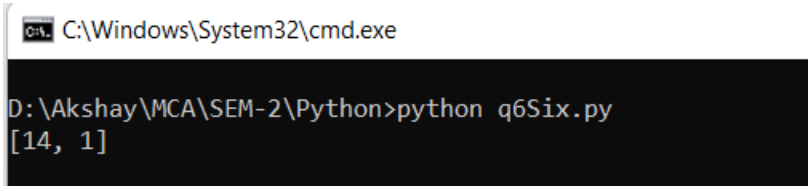
Output:



6. **Lets take two list L1 & L2 with numbers and create another list L3 with numbers present in L1 but not in L2.**

```
l1 = [11,25,69,14,1]
l2 = [25,32,36,69,11]
l3 = [x for x in l1 if x not in l2]
print(l3)
```

Output:

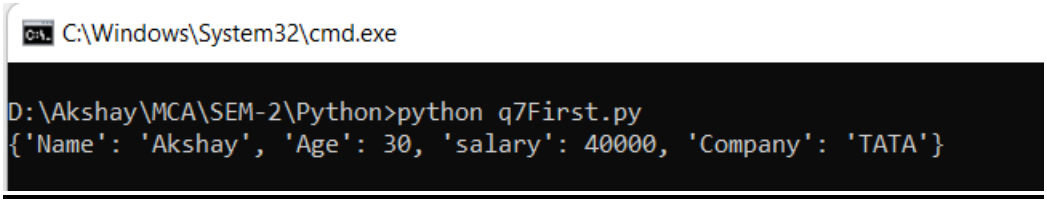


Practical Assignment -7 (Dictionary)

1. **Write a python program to create a dictionary with the employee details and retrieve the value upon giving the keys.**

```
Employee = {"Name": "Akshay", "Age": 30, "salary":40000,"Company":"TATA"}
print(Employee)
```

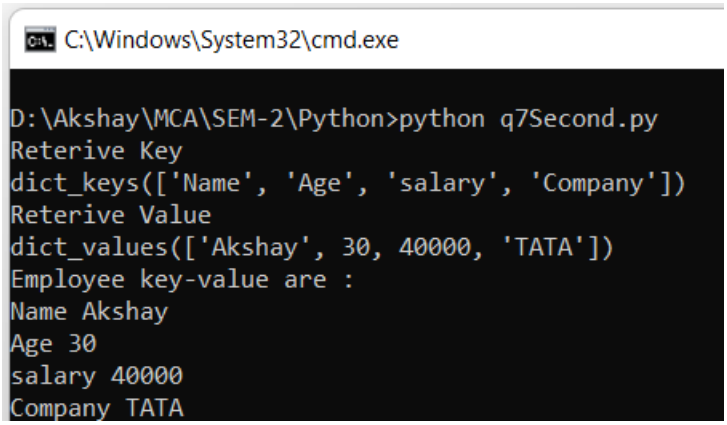
Output:



2. **Write a python program to retrieve keys, values and key-value pair from a dictionary.**

```
Employee = {"Name": "Akshay", "Age": 30, "salary":40000,"Company":"TATA"}
print("Reterive Key")
x=Employee.keys()
print(x)
print("Reterive Value")
y=Employee.values()
print(y)
print("Employee key-value are : ")
for i in Employee:
    print(i, Employee[i])
```

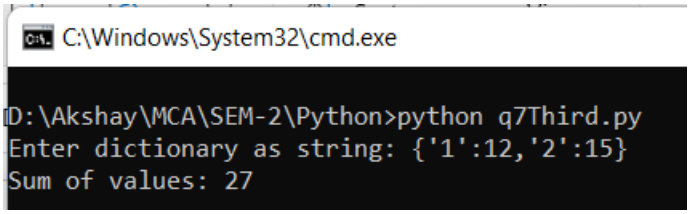
Output:



3. **Write a python program to create a dictionary and find the sum of values.(Use eval & sinput method.)**

```
dict_str = input("Enter dictionary as string: ")
dictionary = eval(dict_str)
sum_values = sum(dictionary.values())
print("Sum of values:", sum_values)
```

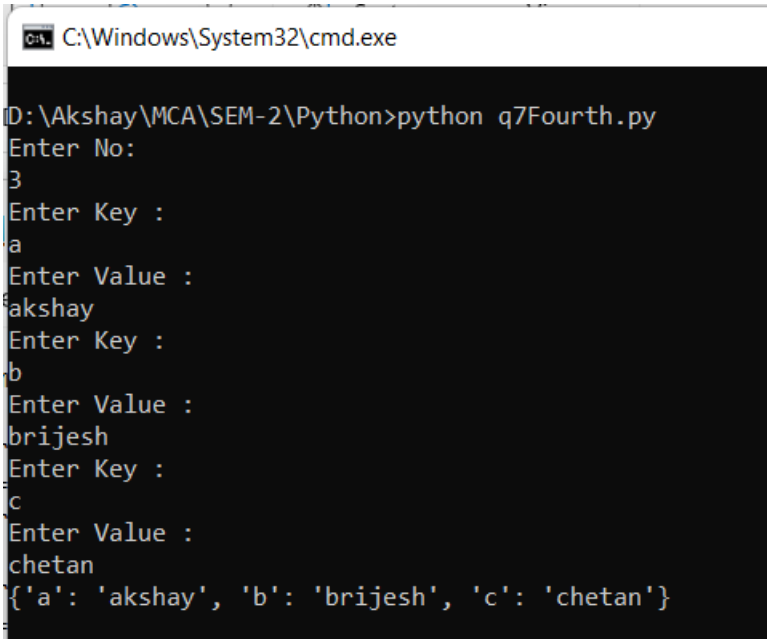
Output:



4. **Write a python program to create a dictionary from keyboard and display the elements.**

```
x={}
print("Enter No:")
n=int(input())
for i in range(n):
        print("Enter Key :")
        k=input();
        print("Enter Value :")
        v=input();
        x.update({k:v})
print(x)
```

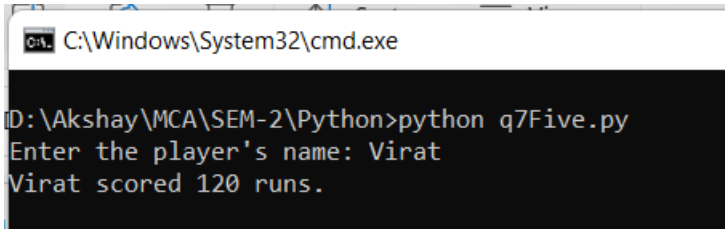
Output:



5. **Write a python program to create a dictionary with cricket player's names and scores in a match. Also we are retrieving runs by entering the player's name.**

```
cricket_scores = {
   "Sachin": 78,
   "Virat": 120,
   "Rohit": 64,
   "Dhoni": 45,
   "Rahul": 89
}
player_name = input("Enter the player's name: ")
if player_name in cricket_scores:
   print(f"{player_name} scored {cricket_scores[player_name]} runs.")
else:
   print(f"{player_name} didn't play in this match.")
```

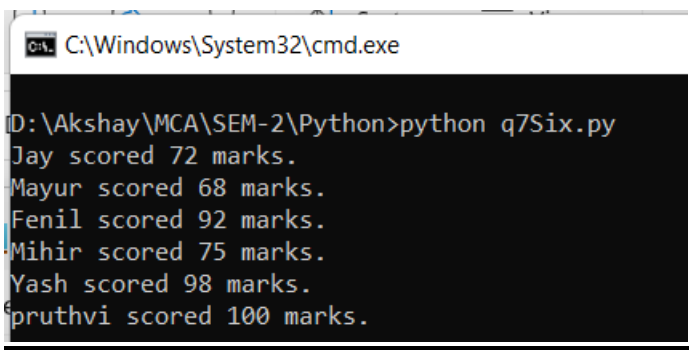
Output:



6. **Write a python program to show the usage of for loop to retrieve elements of dictionaries.**

```
student_scores = {
   "Jay": 72,
   "Mayur": 68,
   "Fenil": 92,
   "Mihir":75,
   "Yash":98,
   "pruthvi":100
}
for key in student_scores:
   value = student_scores[key]
   print(f"{key} scored {value} marks.")
```

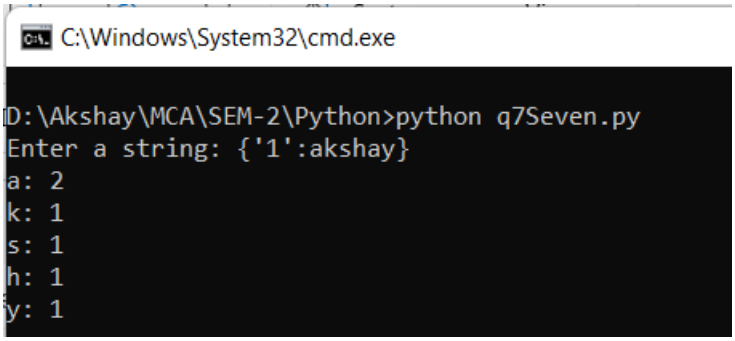
Output:



7. **Write a python program to find the number of occurrences of each letter in a string using dictionary**

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

letter_counts = {}

for char in input_string:
    if char.isalpha():
        lowercase_char = char.lower()
        if lowercase_char in letter_counts:
            letter_counts[lowercase_char] += 1
        else:
            letter_counts[lowercase_char] = 1

for letter in letter_counts:
    count = letter_counts[letter]
    print(f"{letter}: {count}")
```

Output:

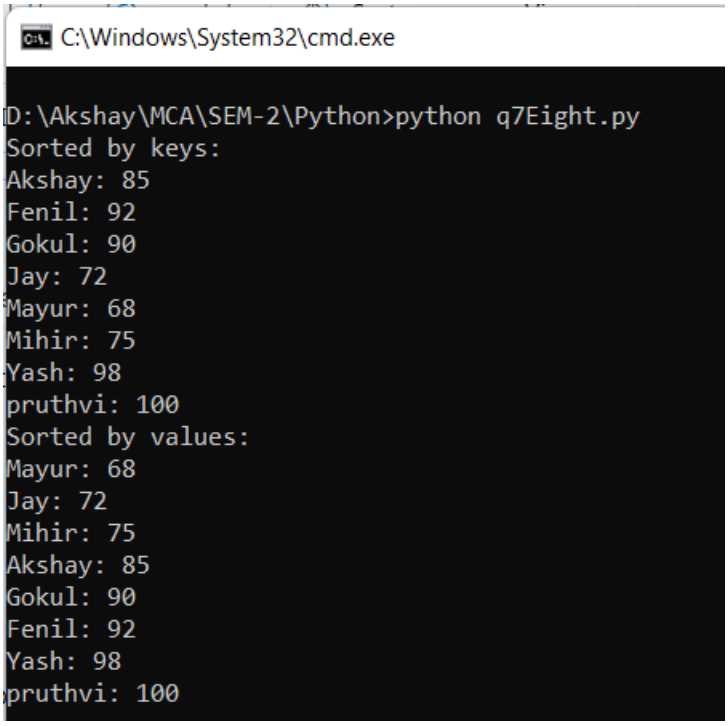


8. **Write a python program to sort the elements of a dictionary based on a key or values.(use lambda function)**

```
student_scores = {
    "Akshay": 85,
    "Jay": 72,
    "Gokul": 90,
    "Mayur": 68,
    "Fenil": 92,
    "Mihir":75,
    "Yash":98,
    "pruthvi":100
}
sorted_by_keys = dict(sorted(student_scores.items(), key=lambda x: x[0]))
print("Sorted by keys:")
for key, value in sorted_by_keys.items():
        print(f"{key}: {value}")
sorted_by_values = dict(sorted(student_scores.items(), key=lambda x: x[1]))
```

```
print("Sorted by values:")
for key, value in sorted_by_values.items():
        print(f"{key}: {value}")
```

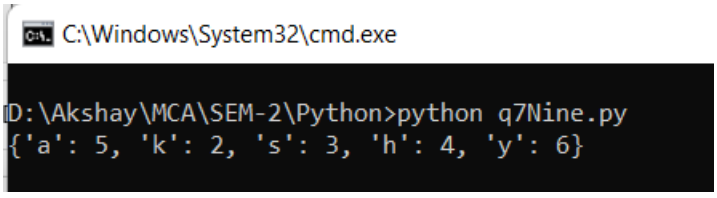
Output:



9. **Write a python program to convert the elements of two lists into key-value pairs of dictionary.**

```
values = [1, 2, 3, 4, 5, 6]
my_dict = {}
for i in range(len(keys)):
        my_dict[keys[i]] = values[i]
print(my_dict)
```

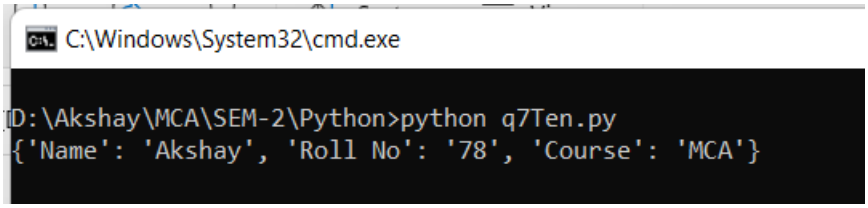
Output:



10. Write a python program to convert string into key value pair and store them into a dictionary

```
my_string = "Name:Akshay,Roll No:78,Course:MCA"
pairs = my_string.split(",")
my_dict = {}
for pair in pairs:
        key, value = pair.split(":")
        my_dict[key] = value

print(my_dict)
```

Output:



Practical Assignment -8 (Decorators,Generators)

1. **Write a function to return an integer, write one decorator to increment the value by returned by function, write another decorator to multiply the value by 2. Print the results, then change the order of decorator applied and print the result.**

```
def decor(fun):
def add():
        v=fun()
        return v+2
return add
def decor1(fun):
def sub():
        v=fun()
        return v*2
return sub
@decor1
@decor
def num():
        return 2
print(num())
```

Output:

2. Define a module containing math functions like

a. Add

b. Subtract

c. Multiply

d. Divide

Create a module to create a decor to print name of the math function, import math and decor in third file to use the function defined in math module and print name using decor module.

(1) q8Second_main.py

```
from q8Second_math import *
from q8Second_funname import *
@fun_name
def main():
        print(add(8,2))
        print(sub(8,2))
        print(mul(8,2))
        print(div(8,2))
main()
```

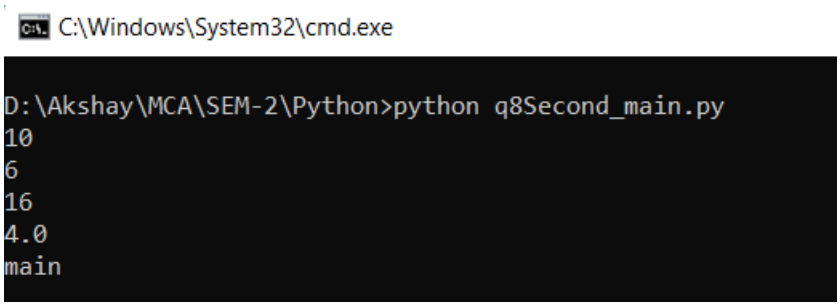
(2) q8Second_math.py

```
def add(a,b):
        return a+b

def sub(a,b):
        return a-b

def mul(a,b):
        return a*b

def div(a,b):
        return a/b
```

(3) q8Second_funname.py

```
def fun_name(fun):
        def wrapper():
                v=fun()
                print(fun.__name__)
                return v
        return wrapper
```

Output:



3. Define a module geometric containing functions to calculate area of

a. Square

b. Rectangle

c. Circle

d. Triangle

e. IsSquare

Create a module to create a decor to print name of the Geometirc function, import Geometirc and decor in third file to use the function defined in Geometirc module and print name using decor module.

(1) q8Third_main.py

```
from q8Third_geometric import *
from q8Third_geometric_funname import *

@geometric_fun_name
def main():
    print("Square of area = ",Square(5))
    print("Rectangle of area = ",Rectangle(4,5))
    print("Circle of area = ",Circle(5))
    print("Triangle of area = ",Triangle(5,6))
    print("IsSquare of area = ",IsSquare(1,1,1,1))

main()
```

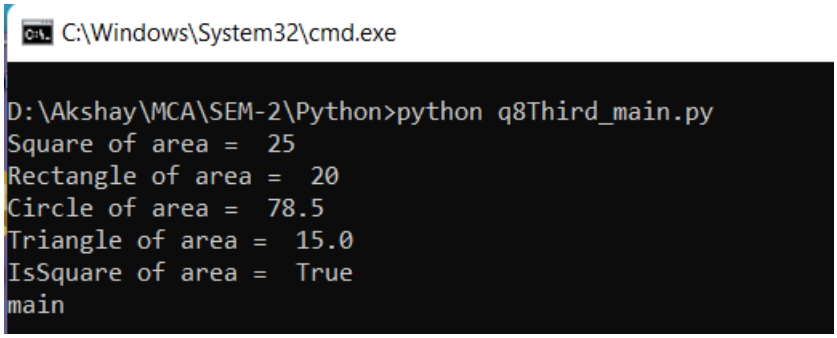
(2) q8Third_geometric.py

```
def Square(l):
    return l*l
def Rectangle(l,b):
    return l*b
def Circle(r):
    return 3.14*r*r
def Triangle(l,h):
    return 1/2*l*h
def IsSquare(a,b,c,d):
    return a==b==c==d
```

(3) q8Third_ geometric _funname.py

```
def geometric_fun_name(fun):
    def wrapper():
            v=fun()
            print(fun.__name__)
            return v
    return wrapper
```

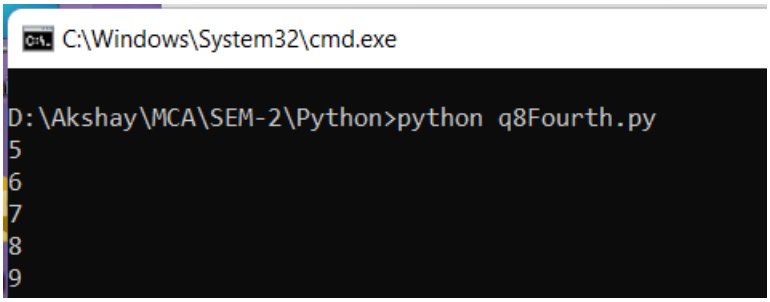
Output:



4. Write a generator to returns a sequence in given range (Hint. values between x and y say 5 and 10)

```
def mygen(x,y):
    while x<y:
        yield x
        x=x+1
a=mygen(5,10)
for i in a:
    print(i)
```

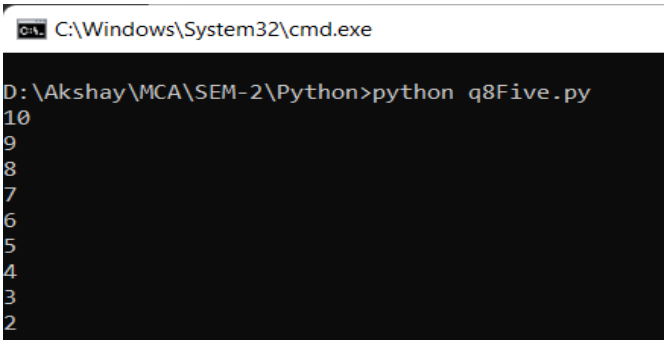
Output:



5.Write generator to returns a sequence in given range (Hint. values between x and y say 10 and 1)

```
def mygen(x,y):
    while x>y:
        yield x
        x=x-1
a=mygen(10,1)
for i in a:
    print(i)
```

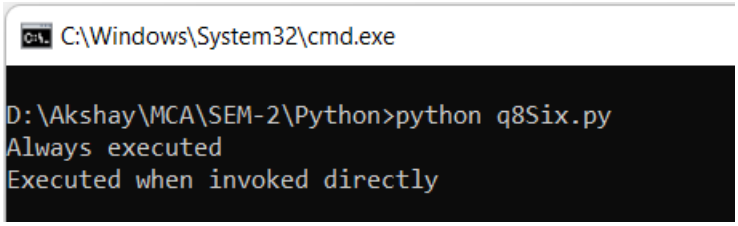
Output:



6. Write a program to display the source of execution of a program using name variable.

```
print ("Always executed")

if __name__ == "__main__":
    print ("Executed when invoked directly")
else:
    print ("Executed when imported")
```

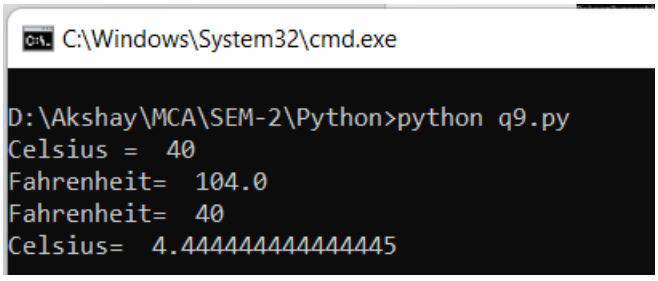
Output:



Q.9 Write a Python Program to Convert Celsius to Fahrenheit and vice –a-versa.

```
def Celsius(c):
    print("Celsius = ",c)
    f=1.8*c+32
    print("Fahrenheit= ",f)
Celsius(40)
def Fahrenheit(f):
    print("Fahrenheit= ",f)
    c=(f-32)*5/9
    print("Celsius= ",c)
Fahrenheit(40)
```

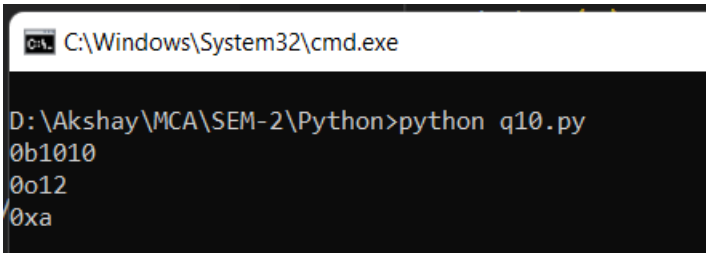
Output:



Q.10 Write a Python Program to Convert Decimal to Binary, Octal, and Hexadecimal

```
def decitobin(n):
    b=bin(n)
    o=oct(n)
    h=hex(n)
    return b,o,h
t=decitobin(10)
for i in t:
    print(i)
```

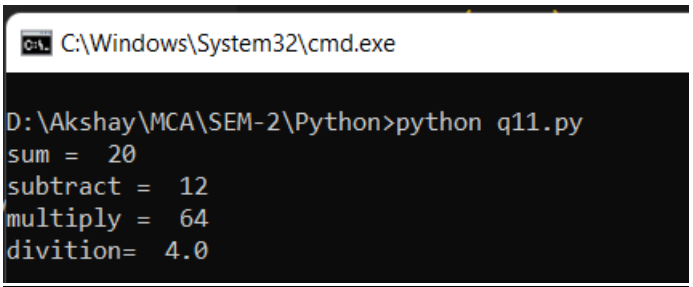
Output:



Q.11 Write a program to make a simple calculator (using functions)

```
def sum(a,b):
    c=a+b
    print("sum = ",c)
sum(16,4)
def subtract(a,b):
    c=a-b
    print("subtract = ",c)
subtract(16,4)
def multiply(a,b):
    c=a*b
    print("multiply = ",c)
multiply(16,4)
def divition(a,b):
    c=a/b
    print("divition= ",c)
divition(16,4)
```

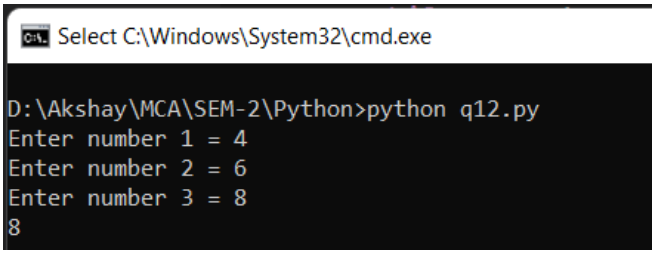
Output:



Q.12 Write a program in python to find the maximum and minimum numbers out of three user-entered numbers.

```
a=input("Enter number 1 = ")
b=input("Enter number 2 = ")
c=input("Enter number 3 = ")
if(a>b):
    if(a>c):
        print(a)
    else:
        print(c)
else:
    if(b>c):
        print(b)
    else:
        print(c)
```

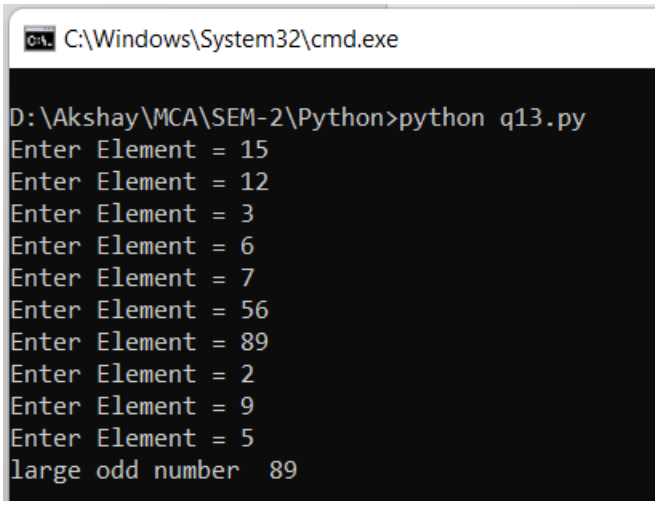
Output:



Q.13 Write a program that will allow the user to enter 10 numbers and display the largest odd number from them. It will display an appropriate message in case, no odd number is found.

```
def largeodd(list):
    oddlist=[]
    for i in list:
        if(i%2==1):
            oddlist.append(i)
    oddlist.sort()
    oddlist.reverse()
    if(oddlist==[]):
        print("Not Found Odd NUmber")
    else:
        print("large odd number ",oddlist[0])
n=10
list=[]
for i in range(1,n+1):
    i=int(input("Enter Element = "))
    list.append(i)
largeodd(list)
```

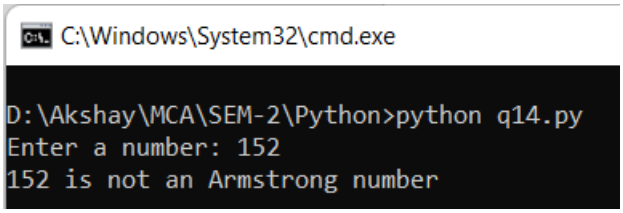
Output:



Q.14 Write a Python program to check if the number provided by the user is an Armstrong number

```
n = int(input("Enter a number: "))
sum = 0
temp = n
while temp != 0:
    d = temp % 10
    sum = sum + (d*d*d)
    temp = int(temp / 10)
if sum == n:
    print(n,"is an Armstrong number")
else:
    print(n,"is not an Armstrong number")
```

Output:

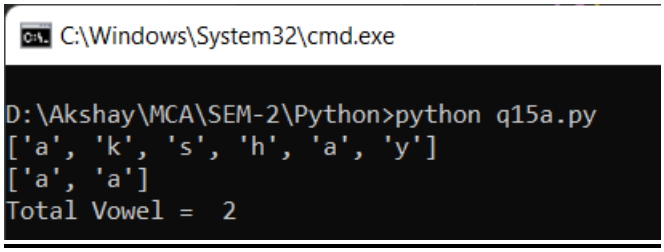


Q.15 Write a Python program to perform the following operation on given string input:

a) Count Number of Vowel in a given string

```
def checkvowel(list):
        newlist=[]
        for x in list:
                if(x=='a' or x=='e' or x=='i' or x=='o' or x=='u'):
                        newlist.append(x)
        print(list)
        print(newlist)
        n=len(newlist)
        print("Total Vowel = ",n)
list=['a','k','s','h','a','y']
checkvowel(list)
```

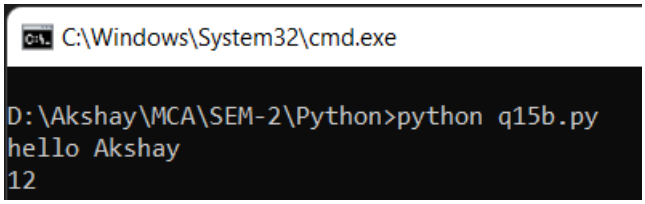
Output:



b) Count Length of string (do not use len())

```
def countlen(str):
        print(str)
        count=0
        for i in str:
                count=count+1
        print(count)
str="hello Akshay"

countlen(str)
```

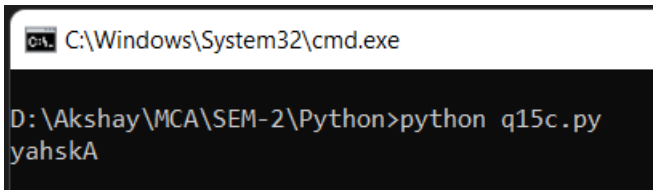
Output:



c) Reverse string

```
def rev(str1):
        a=str1[::-1]
        print(a)
string="Akshay"

rev(string)
```

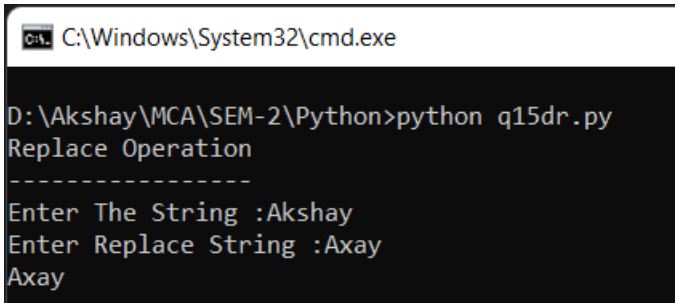
Output:



d) Find and replace operation

```
#replace Operation
def rep(str1):
        str2=input("Enter Replace String :")
        a=str1.replace(str1,str2)
        print(a)

print("Replace Operation")
print("-----------------")
string=input("Enter The String :")
rep(string)
```

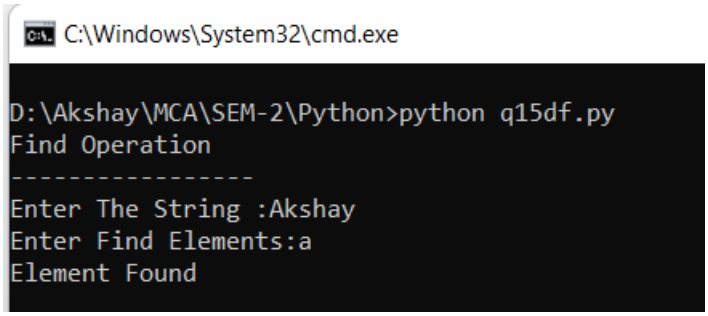
Output:




```
#Find Operation
def find(strf):
        flag=0
        a=input("Enter Find Elements:")
        for i in strf:
                if i in a:
                        flag=1
        if flag==1:
```

```
            print("Element Found")
        else:
            print("Element Not Found")

print("Find Operation")
print("-----------------")
string=input("Enter The String :")
find(string)
```

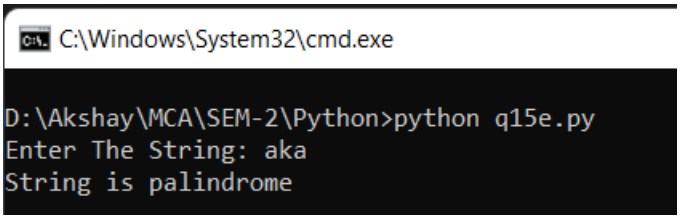
Output:



e) check whether string entered is a palindrome or not

```
def palin(str1):
    if str1==str1[::-1] :
        print("String is palindrome number")
    else:
        print("String is not palindrome number")

string=input("Enter The String: ")
palin(string)
```

Output:



Q.16 Write a program in python to implement the Fibonacci series up to user entered number. (Use recursive Function).

```
def fibo(n):
    if n==0:
            return 0
    elif n==1:
            return 1
    else:
            return fibo(n-1) + fibo(n-2)
num = int(input("Enter Number : "));
print("Fibonacci: ")
i = 0
for i in range(num):
    print(fibo(i))
```

Output:

```
D:\Akshay\MCA\SEM-2\Python>python q16.py
Enter Number : 5
Fibonacci:
0
1
1
2
3
```

Q.17 Write a program in python to implement Factorial series up to a user-entered number. (Use recursive Function)

```
def factorial(n):
    if n <= 1:
            return 1
    else:
            return n*factorial(n-1)
num = int(input("Enter Number : "))
if num < 0:
    print("Sorry," + str(num) + " is invalid number..")
else:
    print("factorial : ", factorial(num))
```

Output:

```
C:\Windows\System32\cmd.exe

D:\Akshay\MCA\SEM-2\Python>python q17.py
Enter Number : 5
factorial :  120
```