```
#P1-PRANAV V RAJ-12A-27
menu='''
1.input a floating point and an integer value to find the sum of the series
2.input a floating point and an integer value to find the sum of the series
3.input a floating point and an integer value to find the sum of the series
4.input a floating point and an integer value to find the sum of the series
0.exit the menu
'''
while True:
    print(menu)
    op=int(input('enter your option:'))
    x=float(input('enter a floating point value:'))
    n=int(input('enter an integer value:'))
    if op==1:
        s=0
        t=1
        d=1
        for i in range(n+1):
         s+=t/d
         t*=x
         d*=(i+1)
        print(s)
    elif op==2:
        s=0
        t=1
        d=1
        for i in range(n+1):
            s+=t/d
            t*=-x
```

```
        d*=(i+1)
    print(s)
elif op==3:
    s=0
    t=1
    d=1
    for i in range(0,2*n+1,2):
        s+=t/d
        t*=x**2
        d*=(i+1)*(i+2)
    print(s)
elif op==4:
    s=1
    t=x
    d=1
    for i in range(1,2*n,2):
        s+=t/d
        t*=x**2
        d*=(i+1)*(i+2)
    print(s)
elif op==0:
    break
else:
    print('invalid option')
'''
```

SAMPLE OUTPUT

```
enter your option:1
enter a floating point value:10.5
enter an integer value:5
```

1829.59140625

1.input a floating point and an integer value

2.input a floating point and an integer value to find the sum of the series

3.find the sum of the sequece

0.exit the menu

enter your option:2

enter a floating point value:24.6

enter an integer value:2

278.98

1.input a floating point and an integer value

2.input a floating point and an integer value to find the sum of the series

3.find the sum of the sequece

0.exit the menu

enter your option:3

enter a floating point value:17.9

enter an integer value:42

29705798.471271444

1.input a floating point and an integer value

2.input a floating point and an integer value to find the sum of the series

3.find the sum of the sequece

0.exit the menu

enter your option:4

enter a floating point value:6.54

enter an integer value:34

347.14256677399635

1.input a floating point and an integer value to find the sum of the series

2.input a floating point and an integer value to find the sum of the series

3.input a floating point and an integer value to find the sum of the series

4.input a floating point and an integer value to find the sum of the series

0.exit the menu

'''

```
#P2-PRANAV V RAJ-12A-27
menu='''
1.calculate and display sum,product of digits
2.calculate and display sum,average of even,odd digits
3.calculate and display product of even,odd digits
4.check for fibonacci number
5.dipslay hcf and lcm of numbers
0.exit
'''
while True:
    print(menu)
    op=int(input('enter your option:'))
    if op==1:
        n=int(input('enter an integer:'))
        p=1
        s=0
        c=0
        while n:
          d=n%10
          n//=10
```

```
        s+=d
        p*=d
        c+=1
    print('number of digits',c)
    print('product of digits',p)
    print('sum of the digits',s)
elif op==2:
    n=int(input('enter an integer:'))
    e,s,o,a=0,0,0,0
    while n:
        d=n%10
        n//=10
        if d%2==0:
          e+=1
          s+=d
        else:
         o+=1
         a+=d
    print('number of digits',e)
    print('average of digits',s/e)
    print('sum of the digits',s)
    print('number of digits',o)
    print('average of digits',a/o)
    print('sum of the digits',a)
elif op==3:
    n=int(input('enter an integer:'))
    e,o=0,0
    p,h=1,1
    while n:
```

```
    d=n%10
    n//=10
    if d%2==0:
        e+=1
        p*=d
    else:
        o+=1
        h*=d
   print('number of even digits',e)
   print('product of even digits',p)
   print('number of odd digits',o)
   print('product of odd digits',h)
elif op==4:
    n=int(input('enter an integer:'))
    a,b=0,1
    while a<n:
     c=a+b
     a,b=b,c
    if a==n:
     print('it is a fibonacci number')
    else :
     print('not a fibonacci number')
elif op==5:
  n1=int(input('enter first number:'))
  n2=int(input('enter second number:'))
  m=1
  while n1*m%n2!=0:
   m+=1
  LCM=n1*m
```

```
        HCF=(n1*n2)/LCM
        print('HCF of ',n1,'and',n2,'is',HCF)
        print('LCM of ',n1,'and',n2,'is',LCM)
    elif op==0:
        break
    else:
        print('invalid option')
'''
```

SAMPLE OUTPUT

```
1.calculate and display sum,product of digits
2.calculate and display sum,average of even,odd digits
3.calculate and display product of even,odd digits
4.check for fibonacci number
5.dipslay hcf and lcm of numbers
0.exit

enter your option:1
enter an integer:21
number of digits 2
product of digits 2
sum of the digits 3

1.calculate and display sum,product of digits
2.calculate and display sum,average of even,odd digits
3.calculate and display product of even,odd digits
4.check for fibonacci number
5.dipslay hcf and lcm of numbers
0.exit
```

enter your option:2

enter an integer:3467

number of digits 2

average of digits 5.0

sum of the digits 10

number of digits 2

average of digits 5.0

sum of the digits 10

1.calculate and display sum,product of digits

2.calculate and display sum,average of even,odd digits

3.calculate and display product of even,odd digits

4.check for fibonacci number

5.dipslay hcf and lcm of numbers

0.exit

enter your option:3

enter an integer:9856

number of even digits 2

product of even digits 48

number of odd digits 2

product of odd digits 45

1.calculate and display sum,product of digits

2.calculate and display sum,average of even,odd digits

3.calculate and display product of even,odd digits

4.check for fibonacci number

5.dipslay hcf and lcm of numbers

```
0.exit

enter your option:4
enter an integer:8
it is a fibonacci number

1.calculate and display sum,product of digits
2.calculate and display sum,average of even,odd digits
3.calculate and display product of even,odd digits
4.check for fibonacci number
5.dipslay hcf and lcm of numbers
0.exit

enter your option:5
enter first number:54
enter second number:69
HCF of  54 and 69 is 3.0
LCM of  54 and 69 is 1242
'''
#P3-PRANAV V RAJ-12 A-27
menu='''
1. Perfect number
2. Prime number
3. Palindrome number
4. Armstrong number
0. Exit
'''
while True:
    print(menu)
```

```
op=int(input("Enter your option:"))
if op==1:
    n=int(input('Enter a number:'))
    s=0
    m=n
    f=1
    while f<n:
        if n%f==0:
            s+=f
        f+=1
    if s==m:
        print("it is a Perfect number")
    else:print("it is Not Perfect number")
elif op==2:
    n=int(input("Enter a number:"))
    prime=True
    f=2
    if n>1:
        while f<n:
            if n%f==0:
                prime=False
            f+=1
    if prime:
        print("it is Prime")
    else:print("it is Composite")
elif op==3:
    n=int(input("Enter a number:"))
    r=0
    m=n
```

```
        while n:
            d=n%10
            n//=10
            r=d+r*10
        if r==m:
            print("it is Palindrome")
        else:print("it is not Palindrome")
    elif op==4:
        n=int(input("Enter a number:"))
        c=0
        m=n
        while m:
            d=m%10
            m//=10
            c+=1
        m=n
        s=0
        while m:
            d=m%10
            m//=10
            s+=d**c
        if s==n:
            print("it is Armstrong")
        else: print("it is not Armstrong")
    elif op==0:
        break
'''
```

SAMPLE OUTPUT

```
Enter your option:1
```

Enter a number:6

it is a Perfect number

1. Perfect number

2. Prime number

3. Palindrome number

4. Armstrong number

0. Exit

Enter your option:2

Enter a number:11

it is Prime

1. Perfect number

2. Prime number

3. Palindrome number

4. Armstrong number

0. Exit

Enter your option:3

Enter a number:121

it is Palindrome

1. Perfect number

2. Prime number

3. Palindrome number

4. Armstrong number

0. Exit

```
Enter your option:4
Enter a number:153
it is Armstrong


1. Perfect number
2. Prime number
3. Palindrome number
4. Armstrong number
0. Exit
'''
#P4-PRANAV V RAJ-12 A-27
menu='''
1. Factorian number
2. Harshad number
3. Happy number
4. n Fibonacci number(sum)
0. Exit
'''
while True:
    print(menu)
    op=int(input("Enter your option:"))
    if op==1:
        n=int(input('Enter a number:'))
        f=0
        m=n
        dl=[]
        while n:
            d=n%10
            n//=10
```

```
        dl+=[d]
    def factorial(n):
        f=1
        for i in range(1,n+1):
            f*=i
        return f
    s=0
    for i in dl:
        s+=factorial(i)
    if s==m:
        print("Factorian number")
    else:print("Not Factorian number")
elif op==2:
    n=int(input("Enter a number:"))
    s=0
    m=n
    while n:
        d=n%10
        n//=10
        s+=d
    if m%s==0:
        print('Harshad number')
    else:print('Not Harshad number')
elif op==3:
    n=int(input("Enter a number:"))
    l=[]
    def digitssum(n):
        s=0
        while n:
```

```
            d=n%10
            n//=10
            s+=d*d
        return s
    s=n
    while s!=1:
        s=digitssum(s)
        if s in l:
            break
        l+=[s]
    if s==1:
        print('Happy number')
    else:print('Not Happy number')
elif op==4:
    n=int(input('enter an integer:'))
    a,b=0,1
    s=0
    while a<n:
     c=a+b
     a,b=b,c
     s+=a
    if a==n:
      print('it is a fibonacci number')
      print('sum of fibonacci numbers',s)
    else :
      print('not a fibonacci number')
elif op==0:
    brea
k
```

'''

SAMPLE OUTPUT

Enter your option:1

Enter a number:90

Not Factorian number

1. Factorian number

2. Harshad number

3. Happy number

4. n Fibonacci number(sum)

0. Exit

Enter your option:2

Enter a number:4

Harshad number

1. Factorian number

2. Harshad number

3. Happy number

4. n Fibonacci number(sum)

0. Exit

Enter your option:3

Enter a number:10

Happy number

1. Factorian number

2. Harshad number

3. Happy number

4. n Fibonacci number(sum)

0. Exit

Enter your option:4

enter an integer:13

it is a fibonacci number

sum of fibonacci numbers 33

1. Factorian number

2. Harshad number

3. Happy number

4. n Fibonacci number(sum)

0. Exit

'''

#P5-PRANAV V RAJ-12 A-27

```
from random import randint
menu='''
1. Creating a list
2. Sum and average
3. Sum and average of odd integers
4. max and min value
5. AM,GM,HM
0. Exit
'''
while True:
    print(menu)
    op=int(input("Enter your option:"))
```

```
n=int(input('Enter a number:'))
lst=[randint(0,9999) for i in range(n)]
if op==1:
    for i in lst:
        print(I,end=’ ‘)
    print(lst)
elif op==2:
    c,s=0,0
    for ele in lst:
        c+=1
        s+=ele
    print("Sum and average are :",s,s/c)
    print(lst)
elif op==3:
    c,s=0,0
    for ele in lst:
        if ele%2!=0:
            c+=1
            s+=ele
    print("Sum and average of odd numbers are :",s,s/c)
    print(lst)
elif op==4:
    hi=lst[0]
    lo=lst[0]
    for i in lst:
        if hi<i:
            hi=i
        if lo>i:
            lo=i
```

```
        print('Highest :',hi)
        print('Lowest :',lo)
        print(lst)
    elif op==5:
        s,rs,p=0,0,1
        for ele in lst:
            s+=ele
            rs+=1/ele
            p*=ele
        AM=s/n;GM=p**(1/n);HM=n/rs
        print('AM :',AM);print('GM :',GM);print('HM :',HM)
        print(lst)
    elif op==0:
        break

'''
```

SAMPLE OUTPUT

```
1. Creating a list
2. Sum and average
3. Sum and average of odd integers
4. max and min value
5. AM,GM,HM
0. Exit

Enter your option:1
Enter a number:4
Enter your option:1
Enter a number:4
3431 985 8546 9113 [3431, 985, 8546, 9113]]
```

1. Creating a list

2. Sum and average

3. Sum and average of odd integers

4. max and min value

5. AM,GM,HM

0. Exit

Enter your option:2

Enter a number:5

Sum and average are : 26342 5268.4

[6428, 1221, 7666, 6335, 4692]

1. Creating a list

2. Sum and average

3. Sum and average of odd integers

4. max and min value

5. AM,GM,HM

0. Exit

Enter your option:3

Enter a number:4

Sum and average of odd numbers are : 17387 5795.666666666667

[2090, 7711, 6439, 3237]

1. Creating a list

2. Sum and average

3. Sum and average of odd integers

4. max and min value

5. AM,GM,HM

0. Exit

Enter your option:4

Enter a number:4

Highest : 7728

Lowest : 2469

[6761, 5942, 7728, 2469]

1. Creating a list

2. Sum and average

3. Sum and average of odd integers

4. max and min value

5. AM,GM,HM

0. Exit

Enter your option:5

Enter a number:5

AM : 4609.6

GM : 2594.024725225382

HM : 626.8887488826421

[3988, 139, 9187, 4077, 5657]

'''

#P6-PRANAV V RAJ-12 A-27

menu='''

1. count upper vowel,consonant lower vowel,consonant digit special charaters

2. To upper case

3. To lowercase

4. To toggle characters

5. Palindrome

'''

```
while True:
    print(menu)
    op=int(input('Enter your option :'))
    if op==1:
        s1=input("Enter a string:")
        lv,lc,uv,uc,d,s=0,0,0,0,0,0
        n=len(s1)
        for i in range(n):
            ch=s1[i]
            if 'a'<=ch<='z':
                if ch in 'aeiou':
                    lv+=1
                else:lc+=1
            elif 'A'<=ch<='Z':
                if ch in 'AEIOU':
                    uv+=1
                else:uc+=1
            elif '0'<=ch<='9':
                d+=1
            else: s+=1
        print(uv,'Uppercase vowel')
        print(uc,'Uppercase consonant')
        print(lv,'Lowercase vowel')
        print(lc,'Lowercase consonant')
        print(d,'Digits')
        print(s,'Special character')
```

```
elif op==2:
    s1=input("Enter a string:")
    s2=''
    n=len(s1)
    for i in range(n):
        ch=s1[i]
        if 'A'<=ch<='Z':
            s2+=ch
        elif 'a'<=ch<='z':
            s2+=chr(ord(ch)-32)
    print(s2)

elif op==3:
    s1=input("Enter a string:")
    s2=''
    n=len(s1)
    for i in range(n):
        ch=s1[i]
        if 'a'<=ch<='z':
            s2+=ch
        elif 'A'<=ch<='Z':
            s2+=chr(ord(ch)+32)
    print(s2)

elif op==4:
    s1=input("Enter a string:")
    s2=''
    n=len(s1)
```

```
        for i in range(n):
            ch=s1[i]
            if 'a'<=ch<='z':
                s2+=chr(ord(ch)-32)
            elif 'A'<=ch<='Z':
                s2+=chr(ord(ch)+32)
        print(s2)

    elif op==5:
        s1=input("Enter a string:")
        s2=''
        for i in s1:
            s2=i+s2
        if s1==s2:
            print("Palindrome")
        else:print('Not Palindrome')
    elif op==0:
        break

'''
```

SAMPLE OUTPUT

```
Enter your option :1
Enter a string:CEntral Board 345#$^
1 Uppercase vowel
2 Uppercase consonant
3 Lowercase vowel
6 Lowercase consonant
3 Digits
```

5 Special character

1. count upper vowel,consonant lower vowel,consonant digit special charaters
2. To upper case
3. To lowercase
4. To toggle characters
5. Palindrome

Enter your option :2

Enter a string:BHarat MAta

BHARATMATA

1. count upper vowel,consonant lower vowel,consonant digit special charaters
2. To upper case
3. To lowercase
4. To toggle characters
5. Palindrome

Enter your option :3

Enter a string:ORGanic cheMISTRY 34

organicchemistry

1. count upper vowel,consonant lower vowel,consonant digit special charaters
2. To upper case
3. To lowercase
4. To toggle characters
5. Palindrome

Enter your option :4

Enter a string:TOMato troLLEy

tomATOTROlleY

1. count upper vowel,consonant lower vowel,consonant digit special charaters

2. To upper case

3. To lowercase

4. To toggle characters

5. Palindrome

Enter your option :5

Enter a string:LOL

Palindrome

'''