PROGRAM CODE:

def convert(num):

b=0

i=1

while num!=0:

r=num%2

num=num//2

b=b+i\*r

i=i\*10

return (b)

num=int(input('enter number '))

print('The binary of',num,'is',convert(num))

OUTPUT:

enter number 5

The binary of 5 is 101

PROGRAM CODE:

def pytrip(m,n):

for x in range (m,n+1):

for y in range (m,n+1):

for z in range(m,n+1):

if x\*x+y\*y==z\*z:

print(x,y,z)

l=int(input('enter lower range '))

u=int(input('enter upper range '))

print('The pythagorean triplets are')

pytrip(l,u)

OUTPUT:

enter lower range 1

enter upper range 15

The pythagorean triplets are

3 4 5

4 3 5

5 12 13

6 8 10

8 6 10

9 12 15

12 5 13

12 9 15

PROGRAM CODE:

def fib(n):

if n<=1:

return n

else:

return(fib(n-1)+fib(n-2))

m=int(input('enter number of terms '))

print('The fibonacci series upto',m,'terms are')

for i in range(m):

print(fib(i))

OUTPUT:

enter number of terms 7

The fibonacci series upto 7 terms are

0

1

1

2

3

5

8

PROGRAM CODE:

def fact(n):

if n<=1:

return 1

else:

return n\*fact(n-1)

def permut(n,r):

nPr=fact(n)/fact(n-r)

return nPr

def comb(n,r):

nCr=fact(n)/(fact(n-r)\*fact(r))

return nCr

print('1.permutation')

print('2.combination')

choice=int(input('enter your choice '))

n=int(input('enter the value of n '))

r=int(input('enter the value of r '))

if choice==1:

print(n,'P',r,'=',permut(n,r))

elif choice==2:

print(n,'C',r,'=',comb(n,r))

OUTPUT:

1.permutation

2.combination

enter your choice 1

enter the value of n 5

enter the value of r 3

5 P 3=60.0

1.permutation

2.combination

enter your choice 2

enter the value of n 4

enter the value of r 2

4 C 2 = 6.0

PROGRAM CODE:

import math

def fact(N):

if N <=1:

return 1

else:

return N\*fact(N-1)

def sinfun(y,n):

if n%2!=0:

x=y\*(math.pi/180)

res = x

sign = -1

for i in range (3,n,2):

res = res +((sign\*(x\*\*i))/fact(i))

sign = - sign

return res

else:

print('Number',n,'not odd')

return -50

def cosfun(y,n):

if n%2==0:

x=y\*(math.pi/180)

res=1

sign=-1

for j in range (2,n,2):

res=res+((sign\*(x\*\*j))/fact(j))

sign = - sign

return res

else:

print('Number',n,'not even')

return -50

print('Enter choice as 1 – sine function /2 – cosine function')

choice= int(input('Enter choice: ' ))

if choice == 1:

x=int(input('Enter x in degrees: '))

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

print('sin(',x,')=1',end='')

sign=1

for i in range(3,n+2,2):

sign=-sign

if sign==-1:

print((1\*sign),'(1/',i,'!)',x,'\*\*',i,sep='',end='')

else:

print('+','(1/',i,'!)',x,'\*\*',i,sep='',end='')

result = sinfun(x,n)

if result == -50:

print ('Result not available')

else:

print ('=',result,sep='')

elif choice == 2:

x=int(input('Enter x in degrees: '))

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

print('cos(',x,')=1',end='')

sign=1

for i in range(2,n+2,2):

sign=-sign

if sign==-1:

print((1\*sign),'(1/',i,'!)',x,'\*\*',i,sep='',end='')

else:

print('+','(1/',i,'!)',x,'\*\*',i,sep='',end='')

result = cosfun(x,n)

if result == -50:

print ('Result not available')

else:

print ('=',result,sep='')

else:

print('Incorrect choice')

OUTPUT:

Enter choice as 1 – sine function /2 – cosine function

Enter choice: 1

Enter x in degrees: 90

Enter n: 9

sin( 90 )=1-1(1/3!)90\*\*3+(1/5!)90\*\*5-1(1/7!)90\*\*7+(1/9!)90\*\*9=0.9998431013994987

Enter choice as 1 – sine function /2 – cosine function

Enter choice: 2

Enter x in degrees: 0

Enter n: 8

cos( 0 )=1-1(1/2!)0\*\*2+(1/4!)0\*\*4-1(1/6!)0\*\*6+(1/8!)0\*\*8=1.0

Enter choice as 1 – sine function /2 – cosine function

Enter choice: 3

Incorrect choice