**PROBLEM SLOVING AND PYTHON PROGRAMMING**

**ASSIGNMENT NO 2**

**NUMBER SERIES**

1. **Write a program to find series 0 2 6 12 30 42...N**

n=int(input("enter the range of number(limit):"))

i=1

while i<=n:

print((i\*i)-i,end="")

i+=1

**output:**

enter the range of number(limit):7

02612203042

1. **write program for to find series 0,2,8,14,24,34,....N**

n=int(input("enter the range of number(limit):"))

i=1

pr=0

while i<=n:

if(i%2==0):

pr=pow(i,2)-2

print(pr,end="")

else:

pr=pow(i,2)-1

print(pr,end="")

i+=1

**output:**

enter the range of number(limit):8

0281424344862

1. **write the program for arithmetic series 1 4 7 10.....**

series = [1, 4, 7]

for i in range(3,30):

series.append(series[i-1] + 3)

print(series)

**output:**

enter the value of n:5

sum of the series is:225

1. **write a program to a sum of the series 1\*\*3+2\*\*3+3\*\*3+4\*\*3+.....n**

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

sum = 0

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

sum = sum + i\*\*3

print("Sum of the series is:", sum)

**output:**

Enter the value of n: 8

Sum of the series is: 1296

1. **write a program to find the sum of the series 2+4+6+8+....+n**

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

sum=0

i=0

while i<=n:

sum+=i

i+=2

print("The sum of the series is", sum)

**output:**

Enter the value of n: 12

The sum of the series is 42

1. **write a program of the sum series 1+11+111+1111+....+N**

n=int(input("enter the range of number:"))

sum=0

p=1

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

sum+=p

p=(p\*10)+1

print("the sum of the series=",sum)

**output:**

enter the range of number:10

the sum of the series= 1234567900

1. **write a program for sum of the series 1/2!+2/3!+3/5!+4/6!+...N/(N+1)!**

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

sum=0

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

sum=sum+(i/(i+1))

print("Sum of the series is:",sum)

**output:**

Enter the value of n:8

Sum of the series is: 6.171031746031746

1. **write a program for to print the fibonacci series**

f1=int(input("enter the 1 value:"))

f2=int(input("enter the 2nd value:"))

n=int(input("enter the n value:"))

print(f1)

print(f2)

i=0

while (i<n-2):

f3=f1+f2

print(f3)

f1=f2

f2=f3

i=i+1

**output:**

enter the 1 value:7

enter the 2nd value:6

enter the n value:5

7

6

1. **write the python code for the sum of the series 1+3+5+7...+n**

n=int(input("enter the range of number:"))

sum=0

i=1

while(i<=n):

sum+=i

i+=2

print("the sum of the series=",sum)

**output:**

enter the range of number:51

the sum of the series= 676

1. **write a program to sum of the series1+2+3+..+n**

n=int(input("enter the range of number:"))

sum=0

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

sum+=i

print("the sum of the series=",sum)

**output:**

enter the range of number:5

the sum of the series= 15

1. **write a program to find the sum of the series 1!+2!+3!+..+n!**

n=int(input("enter a number"))

fact=1

if(n==0):

fact=1

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

fact=fact\*i

print("the factorial value is",fact)

**output:**

enter a number5

the factorial value is 120

1. **write a program for to find the sum of the series 9+99+999+9999+...+n**

n=int(input("enter the range of number:"))

sum=0

p=9

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

sum+=p

p=(p\*10)+9

print("the sum of the series =",sum)

**output:**

enter the range of number:8

the sum of the series = 111111102

**2(i) python program to print the following simple number pattern using for loop**

for i in range(0,5):

for j in range(i):

print (i, end=" ")

print("\r")

**output:**

1

2 2

3 3 3

4 4 4 4

**2(ii) how to print the following half pyramid pattern of numbers**

n=5

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

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

print(j, end=" ")

print("\r")

**output:**

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

**2(iii) write a python code for inverted pyramid pattern of numbers**

n=6

for i in range (n,0,-1):

for j in range(1,i):

print(j,end="")

print("\r")

**output:**

12345

1234

123

12

1

**2(iv) write a python code for inverted pyramid pattern with same digit**

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

for i in range(n,0,-1):

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

print(n,end=" ")

print("")

**output:**

Enter a number: 5

5 5 5 5 5

5 5 5 5

5 5 5

5 5

5

**2(v) write a python code for alternate odd numbers pattern using while loop**

rows=5

i=1

while i<=rows:

j=1

while j<=i:

print((i\*2-1),end="")

j=j+1

i=i+1

print('')

**output:**

1

33

555

7777

99999

**2(vi) write a python code for reverse pyramid of numbers**.

n=int(input("Enter the number of rows: "))

for i in range(n,0,-1):

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

print(j,end=" ")

print("")

**output:**

Enter the number of rows: 6

1 2 3 4 5 6

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

**3 pyramid patterns for using stars**

**3(i) write a python code for simple half pyramid pattern for using star**.

for i in range(5):

for j in range(i):

print('\* ', end="")

print('')

**output:**

\*

\* \*

\* \* \*

\* \* \* \*

**3(ii) write a python code for downward half-pyramid pattern for using star.**

n=int(input("Enter the number of rows: "))

for i in range(n,0,-1):

print((n-i) \* ' ' + i \* '\* ')

**output:**

Enter the number of rows: 6

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

\* \* \* \* \*

\* \* \* \*

\* \* \*

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\*

**3(iii) write a python code for downward full pyramid pattern of star**.

num=int(input("Enter the number of rows: "))

for i in range (num,0,-1):

for j in range(0,i):

print("\*",end=" ")

print()

**output:**

Enter the number of rows: 5

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

**3(iv) write a python code for right down mirror star pattern.**

n=int(input("Enter number of rows: "))

for i in range(n):

for j in range(n-i-1):

print(end=" ")

for j in range(i+1):

print("\*",end="")

print()

**output:**

Enter number of rows: 10

\*

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**3(v) write a python code for equilateral triangle pattern of star.**

n = int(input("Enter the number of rows: "))

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

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

print(end=" ")

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

print("\*", end=" ")

for j in range(1, i):

print("\*", end=" ")

print()

**output:**

Enter the number of rows: 5

\*

\* \* \*

\* \* \* \* \*

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

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

**3(vi) write a python code for right start pyramid pattern of star**.

rows=5

for i in range(0,rows):

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

print("\*",end='')

print("\r")

for i in range(rows,0,-1):

for j in range(0,i-1):

print("\*",end='')

print("\r")

**output:**

\*

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\*

**PROBLEMS**

**4 (i) write a python code for decimal to binary number.**

dec = int(input('Enter a decimal number: '))

binary = ''

while dec != 0:

binary = str(dec % 2) + binary

dec = dec // 2

print('The binary value is:', binary)

**output:**

Enter a decimal number: 70

The binary value is: 1000110

**4 (ii) write a python code for binary to decimal number**.

binary\_num = list(input("Input a binary number: "))

value = 0

power = len(binary\_num) - 1

while power >= 0:

digit = binary\_num.pop()

if digit == '1':

value += pow(2, power)

power -= 1

print("Decimal value is", value)

**output:**

Input a binary number: 40

Decimal value is 0

**4(iii) write python code for check the given no is amstrong no.**

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

sum=0

temp=n

while temp>0:

d=temp%10

sum+=d\*\*3

temp//=10

if n==sum:

print(n,"is an Armstrong number")

else:

print(n,"is not an Armstrong number")

**output:**

Enter a number: 79

79 is not an Armstrong number

**4(iv) write a python code for reversing a number**.

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

for i in range(1,rows):

for j in range(i,0,-1):

print(j,end='')

print("")

**output:**

Enter a number: 6

1

21

321

4321

54321

**4(v) write a python code for print the all prime numbers 1-50.**

a = 0

b = 50

print("Prime numbers between", a, "and", b, "are:")

for num in range(a, b + 1):

if num> 1:

for i in range(2, num):

if (num % i) == 0:

break

else:

print(num)

**output:**

Prime numbers between 0 and 50 are:

2

3

5

7

11

13

17

19

23

29

31

37

41

43

47

**4(vi) write a python code for print all the leap year from 1900-2000**

start=1900

end=2000

years=[]

for year in range(start,end+1):

if year%400==0:

years.append(year)

elif year%4==0 and year%100!=0:

years.append(year)

print(years)

**output:**

[1904, 1908, 1912, 1916, 1920, 1924, 1928, 1932, 1936, 1940, 1944, 1948, 1952, 1956, 1960, 1964, 1968, 1972, 1976, 1980, 1984, 1988, 1992, 1996, 2000]