* **NUMBER SERIES:-**

**1.WRITE A PROGRAM TO PRINT SERIES 0 2 6 12 20 30 42 … N.**

**PROGRAM:-**

**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**

**0 2 6 12 20 30 42**

**2.WRITE A PROGRAM TO PRINT SERIES 0 ,2,8,14,24,34 …N.**

**PROGRAM:-**

**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):6**

**0 2 8 14 24 34**

**3.WRITE A PROGRAM TO PRINT ARITHMETIC SERIES 1 4 7 10 …N.**

**PROGRAM:-**

**print("Enter the First Number:")**

**first\_num=int(input())**

**print("Enter the range of number(Limit):")**

**n=int(input())**

**print("Enter the Difference Between two Number:")**

**diff=int(input())**

**while(first\_num<=n):**

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

**first\_num+=diff**

**OUTPUT:-**

**Enter the First Number:**

**1**

**Enter the range of number(Limit):**

**10**

**Enter the Difference Between two Number:**

**3**

**1 4 7 10**

**4.WRITE A PROGRAM TO FIND THE SUM OF SERIES 13+23+33+43…..+N3**

**PROGRAM:-**

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

**sum=0**

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

**sum+=pow(i,3)**

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

**OUTPUT:-**

**Enter the range of number:5**

**The sum of the series = 225**

**5.WRITE A PROGRAM TO FIND THE SUM OF SERIES 2+4+6+8…….+N**

**PROGRAM:-**

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

**sum=0**

**i=0**

**while i<=n:**

**sum+=i**

**i+=2**

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

**OUTPUT:-**

**Enter the range of number:12**

**The sum of the series = 42**

**6.WRITE A PROGRAM TO FIND THE SUM OF SERIES 1+11+111+1111….+N**

**PROGRAM:-**

**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:3**

**The sum of the series = 123**

**7. WRITE A PROGRAM TO FIND THE SUM OF SERIES 1/2!+2/3!+3/5!+4/6!+…..N/(N+1)!**

**PROGRAM:-**

**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:5**

**Sum of the series is: 3.5500000000000003**

**8.WRITE A PROGRAM TO PRINT THE FIBONACCI SERIES**

**PROGRAM:-**

**print("Enter the range of number(Limit):")**

**n=int(input())**

**i=1**

**a=0**

**b=1**

**c=a+b**

**while(i<=n):**

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

**c = a + b**

**a = b**

**b = c**

**i+=1**

**OUTPUT:-**

**Enter the range of number(Limit):7**

**1 1 2 3 5 8 13**

**9.WRITE A PROGRAM TO FIND THE SUM OF SERIES 1+3+5+7…+N**

**PROGRAM:-**

**print("Enter the range of number:")**

**n=int(input())**

**sum=0**

**i=1**

**while(i<=n):**

**sum+=i**

**i+=2**

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

**OUTPUT:-**

**Enter the range of number:**

**15**

**The sum of the series = 64**

**10.WRITE A PROGRAM TO FIND THE SUM OF SERIES 1+2+3+..+N**

**PROGRAM:-**

**print("Enter the range of number:")**

**n=int(input())**

**sum=0**

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

**sum+=i**

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

**OUTPUT:-**

**Enter the range of number:7**

**The sum of the series = 28**

**11.WRITE A PROGRAM TO FIND THE SUM OF SERIES 1!+2!+3!+…+N!**

**PROGRAM:-**

**print("Enter the range of number:")**

**n=int(input())**

**sum=0**

**fact=1**

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

**fact\*=i**

**sum+=fact**

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

**OUTPUT:-**

**Enter the range of number:**

**9**

**The sum of the series = 409113**

**12.WRITEA PROGRAM TO FIND THE SUM OF SERIES 9+99+999+9999……+N**

**PROGRAM:-**

**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**

* **NUMBER PATTERN:-**

**1.WRITE A PROGRAM TO PRINT FOLLOWING PATTERN USING LOOP**

**1**

**2 2**

**3 3 3**

**4 4 4 4**

**5 5 5 5 5**

**PROGRAM:-**

**rows = 6**

**for i in range(rows):**

**for j in range(i):**

**print(i, end=' ')**

**print(' ')**

**OUTPUT:-**

**1**

**2 2**

**3 3 3**

**4 4 4 4**

**5 5 5 5 5**

**2.PYRAMID PATTERN OF NUMBERS**

**PROGRAM:-**

**rows = 5**

**for i in range(1, rows + 1):**

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

**print(j, end=' ')**

**print(' ')**

**OUTPUT:-**

**1**

**1 2**

**1 2 3**

**1 2 3 4**

**1 2 3 4 5**

**3.INVERTED PYRAMID PATTERN OF NUMBERS**

**PROGRAM:-**

**rows = 5**

**b = 0**

**# reverse for loop from 5 to 0**

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

**b += 1**

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

**print(b, end=' ')**

**print('\r')**

**OUTPUT:-**

**1 1 1 1 1**

**2 2 2 2**

**3 3 3**

**4 4**

**5**

**4.INVERTED PYRAMID PATTERN WITH THE SAME DIGIT PATTERN:-**

**PROGRAM:-**

**rows = 5**

**num = rows**

**# reverse for loop**

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

**for j in range(0, i):**

**print(num, end=' ')**

**print("\r")**

**OUTPUT:-**

**5 5 5 5 5**

**5 5 5 5**

**5 5 5**

**5 5**

**5**

**5.ALTERNATE NUMBERS PATTERN USING WHILE LOOP**

**PROGRAM:-**

**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**

**3 3**

**5 5 5**

**7 7 7 7**

**9 9 9 9 9**

**6.REVERSE PYRAMID OF NUMBERS**

**PROGRAM:-**

**rows = 6**

**for i in range(1, rows):**

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

**print(j, end=' ')**

**print(" ")**

**OUTPUT:-**

**1**

**2 1**

**3 2 1**

**4 3 2 1**

**5 4 3 2 1**

* **PYRAMID PATTERNS:-**

**1.SIMPLE HALF PYRAMID:-**

**rows = 5**

**for i in range(0, rows):**

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

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

**print("\r")**

**OUTPUT:-**

**\***

**\* \***

**\* \* \***

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

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

**2.DOWNWARD HALF – PYRAMID PATTERN OF STAR**

**PROGRAM:-**

**rows = 5**

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

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

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

**print(" ")**

**OUTPUT:-**

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

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

**\* \* \***

**\* \***

**\***

**3.DOWNWARD FULL PYRAMID**

**PROGRAM:-**

**rows = 5**

**k = 2 \* rows - 2**

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

**for j in range(k, 0, -1):**

**print(end=" ")**

**k = k + 1**

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

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

**print(" ")**

**OUTPUT:-**

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

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

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

**\* \* \***

**\* \***

**\***

**4.RIGHT DOWN MIRROR STAR PATTERN:-**

**PROGRAM:-**

**rows = 5**

**i = rows**

**while i >= 1:**

**j = rows**

**while j > i:**

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

**j -= 1**

**k = 1**

**while k <= i:**

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

**k += 1**

**print()**

**i -= 1**

**OUTPUT:-**

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

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

**\* \* \***

**\* \***

**\***

**5.EQUILATERAL TRIANGLE PATTERNOF STAR:-**

**PROGRAM:-**

**print("Print equilateral triangle")**

**size = 7**

**m = (2 \* size) - 2**

**for i in range(0, size):**

**for j in range(0, m):**

**print(end=" ")**

**m = m - 1**

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

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

**print(" ")**

**OUTPUT:-**

**\***

**\* \***

**\* \* \***

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

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

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

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

**6.RIGHT STAR PATTERN OF STAR:-**

**PROGRAM:-**

**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:-**

**\***

**\* \***

**\* \* \***

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

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

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

**\* \* \***

**\* \***

**\***

* **PROBLEMS:-**

1**.CONVERT DECIMAL TO BINARY NUMBER**

**PROGRAM:-**

**decimal\_num = int(input("enter the decimal number:"))**

**binary\_num = 0**

**i = 0**

**while(decimal\_num!=0):**

**remainder = decimal\_num%2**

**binary\_num = binary\_num+remainder\*(10\*\*i)**

**decimal\_num = decimal\_num/2**

**i = i+1**

**print("the binary equivalent =",binary\_num**)

**OUTPUT:-**

**Enter the decimal number : 7**

**The binary equivalent = 111**

**2.CONVERT BINARY TO DECIMAL NUMBER**

**PROGRAM:-**

**binary\_num = int(input("enter the binary number:"))**

**decimal\_num = 0**

**i = 0**

**while(binary\_num!=0):**

**remainder = binary\_num%2**

**decimal\_num = decimal\_num+remainder\*(10\*\*i)**

**binary\_num = binary\_num/2**

**i = i+1**

**print("the decimal equivalent =",decimal\_num)**

**OUTPUT:-**

**Enter the binary number : 1101**

**The decimal equivalent is 13**

**3.CHECK THE GIVEN NUMBER IS ARMSTRONG NUMBER**

**PROGRAM:-**

**num = int(input("Enter a number: "))**

**sum = 0**

**temp = num**

**while temp > 0:**

**digit = temp % 10**

**sum += digit \*\* 3**

**temp //= 10**

**if num == sum:**

**print(num,"is an Armstrong number")**

**else:**

**print(num,"is not an Armstrong number")**

**OUTPUT:-**

**Enter a number: 333**

**333 is not an Armstrong number**

**4.REVERSING A NUMBER**

**PROGRAM:-**

**Num = int(input("enter the number :"))**

**print("the reversed number is :",)**

**while(num! =0):**

**temp = num%10**

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

**num = num/10**

**OUTPUT:-**

**enter the number : 123**

**the reversed number is : 3 2 1**

**5. PRINT ALL THE PRIME NUMBERS FROM 1 – 50**

**PROGRAM:-**

**for i in range(1,50):**

**if i>1:**

**for j in range(2,i):**

**if i%j==0:**

**break**

**else:**

**print(i)**

**OUTPUT:-**

**2**

**3**

**5**

**7**

**11**

**13**

**17**

**19**

**23**

**29**

**31**

**37**

**41**

**43**

**47**

**6. PRINT ALL THE LEAP YEAR FROM 1900 – 2000**

**PROGRAM:-**

**print("leap years from 1900-2000 are :")**

**for i in range(1900,2000):**

**if(i%4==0):**

**print(i,end='')**

**OUTPUT:-**

**1900 1904 1908 1912 1916 1920 1924 1928 1932 1936 1940 1944 1948 1952 1956 1960 1964 1968 1972 1976 1980 1984 1988 1992 1996**

* **REFERENCE**
* **OPEN AI**
* **PYNATIVE**
* **GEEKS FOR GEEKS**
* **W3RESOURCE**
* **TECHNOTIP.COM**
* **QUORA**
* **PROGRAMIZ**