**Assignment No: 0.3 (Functions)**

1. WAP to calculate the factorial of a given number.
2. WAP to calculate the sum of digits of a given number.
3. WAP to display the reverse of a number entered through keyboard.
4. WAP to find the GCD/HCF of two numbers .
5. WAP to check whether a number n is prime number or not. /*Hints: A number is a perfect number if is equal to sum of its proper divisors, that is, sum of its positive divisors excluding the number itself. Write a function to check if a given number is perfect or not. The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and 1 + 2 + 3 = 6*/
6. WAP to print all odd and even numbers separately within a given range. The range is input through user.
7. WAP to evaluate the equation $y=x^n$ where n is a non-negative integer.
8. WAP to check whether an input integer is perfect number or not.
9. WAP to check whether an input integer is strong number or not. (Hint: If the sum of factorials of all digits of a number are equal to the number are equal to the number, it is called a strong number )
10. WAP to find out the prime factors of a number entered through keyboard (distinct). /*Hints: A prime number is any number with no divisors other than itself and 1, such as 2 and 5. Any number can be written as a product of prime numbers in a unique way (except for the order). These are called prime factors of a number. In other words, In number theory, the prime factors of a positive integer are the prime numbers that divide that integer exactly, without leaving a remainder. The process of finding these numbers is called integer factorization, or prime factorization.
    - Enter a number : 100
    - The prime factors of 100 are 2(2) and 5(2)
    - That is, 100 = 2 x 2 x 5 x 5, and those numbers are primes. */
11. WAP to find the first n numbers of a Fibonacci sequence.
12. WAP to print the series as 1 2 7 15 31 .....n, where n is given by user.
13. WAP to print the series as 3 5 7 11 13 17.....n, where n is given by user.
14. WAP to sum the following series S=1+(1+2)+(1+2+3)+...+(1+2+3+...+n)
15. WAP to print the following pattern for n rows. Ex. for n=5 rows

```
*
*   *
*     *     *
*   *     *     *
*   *     *     *     *
```

16. WAP to print the Following pattern for n rows. Ex. for n=5 rows

```
          *
```

```
      *   *
    *   *   *
  *   *   *   *
*   *   *   *   *
```

17. WAP to print the following pattern for n rows. Ex. for n=6 rows

```
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1
0 1 0 1 0 1
```

18. WAP to print the following pattern for n rows. Ex. for n=5 rows

```
A
B A
C B A
D C B A
E D C B A
```

19. WAP to print the following pattern for n rows. Ex. for n=5 rows

```
1
2 1
1 2 3
4 3 2 1
1 2 3 4 5
```

20. WAP to form reverse pyramid of numbers for a given number. Ex. for number 4

```
1 2 3 4 3 2 1
  1 2 3 2 1
    1 2 1
      1
```

21. WAP to generate the pascal triangle pyramid of numbers for a given number. Ex. for number 4

```
      1
    1   1
  1   2   1
1   3   3   1
1   4   6   4   1
```

22. WAP to display the following style o/p for a given string input through keyboard.(Ex.for a string "KIITCSIT")

```
KIITCSITTISCTIIK
KIITCSI  ISCTIIK
KIITCS     SCTIIK
KIITC        CTIIK
KIIT           TIIK
KII              IIK
KI                IK
K                   K
KI                IK
KII              IIK
KIIT           TIIK
KIITC        CTIIK
KIITCS     SCTIIK
KIITCSI  ISCTIIK
KIITCSITTISCTIIK
```

23. WAP to convert a decimal number into its equivalent number with base b. Decimal number and b are the user input.
24. WAP to convert a number with base b into its equivalent decimal number. Number with base b & b are the user input.
25. WAP to convert a binary number to its equivalent octal & hexa-decimal number system.