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## ASSIGNMENT 4: FUNCTIONS

Note: Good programming practices to write functions.

- a. Always design reusable functions.
- b. Make function declarations global.
- c. Avoid displaying results into the functions i.e. return the results from functions.
- d. Avoid accepting inputs from user into the function i.e. pass them as arguments.
- e. Before using any of the pre-defined function (library functions) reading its prototype from help is extremely important.

### A. ITERATION

1. Write a function to calculate factorial of a given number.
2. Write a function to calculate power.
3. Write a function to implement four function calculator. Function would take operands and operator as arguments and returns result.
4. In above program, division may fail if denominator is zero. Use global variable as an error flag to avoid this problem.
5. Write a function to print a given character for a given number of times.
6. Write a function to print Pascal triangle of given number of rows.
7. Write a function to print given number of terms of Fibonacci series.
8. Write a function to return next term of Fibonacci series with each call to the function.
9. Write a function to indicate whether given number is prime or not. Write another function to print prime numbers in the given range.
10. Write function to check whether given year is leap or not. Write another function to print number of days in given month.

### B. ITERATION

1. Write a function to calculate factorial of a given number using recursion.
2. Write a function to calculate power using recursion.
3. Write a function to calculate GCD of given numbers using recursion.
4. Write a function to calculate  $n^{\text{th}}$  term of the Fibonacci series using recursion. Write another function to print given number of terms of Fibonacci series.
5. Write a function to print a given number in binary format.
6. Write a function to print a given number in hexadecimal format.

### C. POINTERS

7. Write a function to calculate sum and product into a single function.
  - a. Using global variables (for result)
  - b. Without using global variables
8. Write a function to swap two numbers.
9. Write a function to implement four function calculator. The return value indicates the error (due to zero denominator in case of division). The result is returned via out-parameter.

### D. SELF – STUDY (IMPORTANT)

10. Read the prototypes of the library functions from the help documents.
    - a. printf()
    - b. scanf()
    - c. sqrt()
    - d. getchar()
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