Assignment Questions on Recursion

1. Sum of first N natural numbers
   Write a recursive function to calculate the sum of numbers from 1 to N.

2. Factorial of a number
   Write a recursive function to calculate factorial of a given number.

3. Print numbers from 1 to N (and N to 1)
   Write two recursive functions:
   - One prints numbers from 1 → N
   - Another prints numbers from N → 1

4. Fibonacci series
   Write a recursive function that prints the Fibonacci series up to N terms.

5. Count digits of a number
   Write a recursive function to count how many digits are in a number.

6. Sum of digits of a number
   Write a recursive function that finds the sum of digits of a given number.

7. Reverse a number
   Write a recursive function that reverses the digits of a number.

8. Check Palindrome (number)
   Using recursion, check if a number is palindrome (e.g., 121, 3443).

9. Find GCD (Greatest Common Divisor)
   Write a recursive function to compute GCD of two numbers.

10. Power of a number
    Write a recursive function to calculate x^y (x raised to y).

Beginner Level (Basic struct usage)

1. Define a `struct Student` with members: roll number, name, and marks. Write a program to input and display the details of one student.
2. Create a `struct Book` with members: title, author, and price. Read details of 3 books and display them.
3. Define a `struct Point` with members `x` and `y`. Write a program to calculate the distance between two points.
4. Create a `struct Employee` with members: id, name, and salary. Write a program to input and display employee details.

Intermediate Level (Arrays of struct & functions)

5. Write a program using `struct Student` to input details of 5 students and print the student with the highest marks.
6. Create a `struct Date` with members: day, month, year. Write a function to compare two dates and display the earlier one.
7. Define a `struct Complex` with members: real and imaginary. Write functions to perform addition and subtraction of two complex numbers.
8. Write a program to store information of 10 employees in an array of structures and display the employee with the highest salary.

Advanced Level (Nested struct, pointers to struct)

9. Define a `struct Address` (with city, state, pincode) and nest it inside `struct Student`. Input and display student details along with address.
10. Use a pointer to a structure to read and display employee details.
11. Create a `struct Cricket` with player name, team name, and batting average. Read details of 10 players and display team-wise player list.
12. Define a `struct BankAccount` with account number, name, and balance. Write functions to:
    - Deposit money
    - Withdraw money
    - Display balance