Storage class specifiers:

1. Auto Storage Class

Write a program to demonstrate the behavior of the auto storage class.

- Inside a function, declare an auto variable.
- Modify it and print its value each time the function is called.
  👉 Observe whether the variable retains its value across multiple calls.

2. Register Storage Class

Write a program that uses the register storage class.

- Declare a register variable inside a loop and use it as a counter.
- Print its value.
  👉 Try to guess why register is used here.

3. Static Storage Class

Write a program with a function that contains a static local variable.

- Call the function multiple times.
- Print the static variable value after incrementing it each time.
  👉 Compare the result with auto variable.

4. Extern Storage Class

Write a program using two files (file1.c and file2.c).

- In file1.c, declare a global variable.
- In file2.c, use extern to access that variable and modify it.

- Print the result.
  👉 Show how extern links variables across files

Recursion Assignment Programs

1. **Factorial of a Number**
   Write a recursive function to calculate the factorial of a given number.

2. **Sum of Natural Numbers**
   Find the sum of first n natural numbers using recursion.

3. **Fibonacci Series**
   Print the first n Fibonacci numbers using recursion.

4. **Power of a Number**
   Write a recursive function to calculate x^n.

5. **Greatest Common Divisor (GCD)**
   Find the GCD of two numbers using recursion (Euclid's algorithm).

6. **Palindrome Check**
   Check if a given string is a palindrome using recursion.

7. **Sum of Digits**
   Find the sum of digits of a number using recursion.

1) Preprocessor Directive: (#define)

Program Task:

Write a C program to calculate the **square and cube** of a number using macros with #define.

Requirements:

1. Use #define to create macros SQUARE(x) and CUBE(x).
2. Take an integer input from the user.
3. Display the square and cube of the number.