1. **what is the difference between global and local scope of a variable?**

Ans: **Local Variables :**

- Defined inside a function or block
- Accessible only within the function/block where it's defined.
- Exists only during the function's execution.
- Cannot be accessed outside its function.
- No special keyword is required.
- Stored in the stack.
- Low, as it's confined to its function.

Global Variables :

- Defined outside of all functions or blocks.
- Accessible throughout the entire program.
- Remains in memory for the duration of the program.
- Can be accessed and modified by any function in the program.
- Use the global keyword to modify it inside a function.
- Stored in the data segment of memory.
- Higher, as any function can modify it.

2. **What is recursive function?**

Ans: A recursive function is a function that calls itself in order to solve a problem. It breaks down a problem into smaller, more manageable sub-problems of the same type, eventually reaching a base case that can be solved without further recursion.

Key Characteristics of Recursive Functions

1. **Base Case:** This is a condition under which the function stops calling itself. It prevents infinite recursion and eventually allows the function to return a value.

2. **Recursive Case**: This part of the function contains the logic that calls the function itself with modified arguments, gradually moving toward the base case.