Lab 5 : ChatGPT in Code Generation and Debugging

Objective:

Explore ChatGPT's capabilities to generate programming code and assist in debugging errors across languages like Python, C++, and Java.

Activities:

1. **Code Generation**

   - Provide a natural language prompt describing a programming task.

   - Have ChatGPT generate the corresponding code snippet.

   - Example:
     Prompt: "Write a Python function to calculate the factorial of a number."
     Expected Output: Python code for factorial function.

2. **Debugging Assistance**

   - Provide ChatGPT with a code snippet containing an error or bug.

   - Ask it to identify and fix the bug, explaining the correction.

   - Example:
     Prompt: "Debug this Python code that throws an index error."
     Code snippet: `my_list = [1, 2, 3]; print(my_list[3])`

Sample Prompts and Expected Outputs

Task	Prompt	Expected Output / Behavior	Notes
Code Generation	Write a Python function to compute Fibonacci numbers.	Python function returning Fibonacci sequence	Code runs correctly
Debugging	Fix the error in this Java code snippet (given).	Corrected code with explanation of the fix	Explanation is clear and helpful

Output Comparison Template

Task	ChatGPT Output (Code)	Expected Output (Code)	Output Accuracy	Comments
Factorial func	`python def factorial(n): ...`	`python def factorial(n): ...`	Yes	Code matches expected solution
Debugging error	`python print(my_list[2])`	`python print(my_list[2])`	Yes	Correct fix and explanation