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| **Assignment-1.4 2303a51812 batch-26 j.tejesh** | | | | | | | |
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|  | | 1 | Lab 1: Environment Setup – *GitHub Copilot and VS Code Integration + Understanding AI-assisted Coding Workflow*  **Lab Objectives:**   * To install and configure GitHub Copilot in Visual Studio Code. * To explore AI-assisted code generation using GitHub Copilot. * To analyze the accuracy and effectiveness of Copilot's code suggestions. * To understand prompt-based programming using comments and code context   **Lab Outcomes (LOs):**  After completing this lab, students will be able to:   * Set up GitHub Copilot in VS Code successfully. * Use inline comments and context to generate code with Copilot. * Evaluate AI-generated code for correctness and readability. * Compare code suggestions based on different prompts and programming styles.   Task 0   * Install and configure GitHub Copilot in VS Code. Take screenshots of each step.   Expected Output   * Install and configure GitHub Copilot in VS Code. Take screenshots of each step.     Task 1: AI-Generated Logic Without Modularization (Prime Number Check Without Functions)   * **Scenario**   + You are developing a **basic validation script** for a numerical learning application. * **Task Description**   Use GitHub Copilot to generate a Python program that:   * + Checks whether a given number is **prime**   + Accepts user input   + Implements logic **directly in the main code**   + Does **not** use any user-defined functions * **Expected Output**   + Correct prime / non-prime result   + Screenshots showing Copilot-generated code suggestions   + Sample inputs and outputs     Task 2: Efficiency & Logic Optimization (Cleanup)   * **Scenario**   The script must handle larger input values efficiently.   * **Task Description**   Review the Copilot-generated code from Task 1 and improve it by:   * + Reducing unnecessary iterations   + Optimizing the loop range (e.g., early termination)   + Improving readability   + Use Copilot prompts like:     - *“Optimize prime number checking logic”*     - *“Improve efficiency of this code”*   Hint: Prompt Copilot with phrases like *“optimize this code”*, *“simplify logic”*, or *“make it more readable”*   * **Expected Output**   + Original and optimized code versions   + Explanation of how the improvements reduce time complexity   Task 3: Modular Design Using AI Assistance (Prime Number Check Using Functions)   * **Scenario**   The prime-checking logic will be reused across multiple modules.   * **Task Description**   Use GitHub Copilot to generate a function-based Python program that:   * + Uses a user-defined function to check primality   + Returns a Boolean value   + Includes meaningful comments (AI-assisted) * **Expected Output**   + Correctly working prime-checking function   + Screenshots documenting Copilot’s function generation   + Sample test cases and outputs     Task 4: Comparative Analysis –With vs Without Functions   * **Scenario**   You are participating in a technical review discussion.   * **Task Description**   Compare the Copilot-generated programs:   * + Without functions (Task 1)   + With functions (Task 3)   + Analyze them based on:   + Code clarity   + Reusability   + Debugging ease   + Suitability for large-scale applications * **Expected Output**   Comparison table or short analytical report      Task 5: AI-Generated Iterative vs Recursive Fibonacci Approaches (Different Algorithmic Approaches to Prime Checking)   * **Scenario**   Your mentor wants to evaluate how AI handles **alternative logical strategies**.   * **Task Description**   Prompt GitHub Copilot to generate:   * + A **basic divisibility check** approach   + An **optimized approach** (e.g., checking up to √n) * **Expected Output**   + Two correct implementations   + Comparison discussing:     - Execution flow     - Time complexity     - Performance for large inputs     - When each approach is appropriate   **Note: Report should be submitted as a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots.** | | | Week1 - Monday |  |