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| **Assignment Number: 5.4** | | | | |
| **Name-Tejesh Hall:2303A51812 Batch-26** | | | | |
|  | **Q.No.** | **Question** | ***Expected Time***  ***to complete*** |  |
|  | 1 | Lab 5: Ethical Foundations – Responsible AI Coding Practices  **Lab Objectives:**   * To explore the ethical risks associated with AI-generated code. * To recognize issues related to security, bias, transparency, and copyright. * To reflect on the responsibilities of developers when using AI tools in software development. * To promote awareness of best practices for responsible and ethical AI coding.   **Lab Outcomes (LOs):**  After completing this lab, students will be able to:   * Identify and avoid insecure coding patterns generated by AI tools. * Detect and analyze potential bias or discriminatory logic in AI-generated outputs. * Evaluate originality and licensing concerns in reused AI-generated code. * Understand the importance of explainability and transparency in AI-assisted programming. * Reflect on accountability and the human role in ethical AI coding practices.   **Task Description #1:**  **•** Prompt GitHub Copilot to generate a Python script that collects user data (e.g., name, age, email). Then, ask Copilot to add comments on how to anonymize or protect this data.  **Expected Output #1:**  **•** A script with inline Copilot-suggested code and comments explaining how to safeguard or anonymize user information (e.g., hashing emails, not storing data unencrypted).    **Task Description #2:**  **•** Ask Copilot to generate a Python function for sentiment analysis. Then prompt Copilot to identify and handle potential biases in the data.  **Expected Output #2:**  **•** Copilot-generated code with additions or comments addressing bias mitigation strategies (e.g., balancing dataset, removing offensive terms).    **Task Description #3:**  **•** Use Copilot to write a Python program that recommends products based on user history. Ask it to follow ethical guidelines like transparency and fairness.  **Expected Output #3:**  **•** Copilot suggestions that include explanations, fairness checks (e.g., avoiding favoritism), and user feedback options in the code.    **Task Description #4:**  • Prompt Copilot to generate logging functionality in a Python web application. Then, ask it to ensure the logs do not record sensitive information.  **Expected Output #4:**  • Logging code that avoids saving personal identifiers (e.g., passwords, emails), and includes comments about ethical logging practices.    **Task Description #5:**  **•** Ask Copilot to generate a machine learning model. Then, prompt it to add documentation on how to use the model responsibly (e.g., explainability, accuracy limits).  **Expected Output #5:**  **•** Copilot-generated model code with a README or inline documentation suggesting responsible usage, limitations, and fairness considerations.    **Note: Report should be submitted a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots** | Week3 - |  |