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| **SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE** | | | | | **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING** | | | | |
| **Program Name:** B. Tech | | | | **Assignment Type: Lab** | | | **Academic Year:**2025-2026 | | |
| **Course Coordinator Name** | | | | Dr. Rishabh Mittal | | | | | |
| **Instructor(s) Name** | | | | |  | | --- | | Mr. S Naresh Kumar | | Ms. B. Swathi | | Dr. Sasanko Shekhar Gantayat | | Mr. Md Sallauddin | | Dr. Mathivanan | | Mr. Y Srikanth | | Ms. N Shilpa | | Dr. Rishabh Mittal (Coordinator) | | Dr. R. Prashant Kumar | | Mr. Ankushavali MD | | Mr. B Viswanath | | Ms. Sujitha Reddy | | Ms. A. Anitha | | Ms. M.Madhuri | | Ms. Katherashala Swetha | | Ms. Velpula sumalatha | | Mr. Bingi Raju | | | | | | |
| **CourseCode** | | | 23CS002PC304 | **Course Title** | | AI Assisted Coding | | | |
| **Year/Sem** | | | III/II | **Regulation** | | R23 | | | |
| **Date and Day**  **of Assignment** | | | **Week3 –** | **Time(s)** | | 23CSBTB01 To 23CSBTB52 | | | |
| **Duration** | | | 2 Hours | **Applicable to**  **Batches** | | All batches | | | |
| **Assignment Number: 5.4**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **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).    **Explanation:-**  The program collects basic user details using input functions. To ensure privacy, comments explain that sensitive information such as emails should be hashed and passwords should never be stored in plain text. Encryption and secure storage methods are suggested. This helps prevent misuse of personal data and protects user privacy.  **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).    **Explanation:-**  The function analyzes text and predicts whether the sentiment is positive, negative, or neutral. The program discusses possible biases in training data, such as overrepresentation of certain opinions. Comments suggest balancing datasets and removing offensive words to reduce bias. This ensures fair and accurate predictions  **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.        **Explanation:-**  The system analyzes user behavior to suggest relevant products. Comments explain transparency by showing why recommendations are made. Fairness is ensured by avoiding favoritism toward specific brands. A feedback option is included so users can improve recommendations.  **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.      **Explanation:-**  The program uses a sanitize function to remove emails, passwords, tokens, and API keys before logging. Log rotation is used to manage storage. Comments explain privacy laws and ethical logging practices. This prevents leakage of personal data through log files.  **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.      **Explanation:-**  The Random Forest model is trained and evaluated for accuracy. Feature importance is used for explainability. Comments explain accuracy limits, fairness issues, and model limitations. Guidelines are given for retraining and monitoring performance.  **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 - |  |