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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 – Wednusday** | **Time(s)** | | 23CSBTB01 To 23CSBTB52 | | |
| **Duration** | | | 2 Hours | **Applicable to**  **Batches** | | All batches | | |
| **Assignment Number:1.3**(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 ethical risks associated with AI-generated code * To understand security, bias, transparency, inclusiveness, and copyright concerns * To analyze AI-generated code critically instead of blindly accepting it * To promote responsible and ethical use of AI tools in software development   **Lab Outcomes (LOs)**  After completing this lab, students will be able to:   * Identify insecure coding practices generated by AI tools * Detect bias or unfair logic in AI-assisted programs * Evaluate transparency and explainability of AI-generated code * Modify AI-generated code to be inclusive and fair * Understand human responsibility in ethical AI coding   **Task 1: Privacy and Data Security in AI-Generated Code**  **Scenario**  AI tools can sometimes generate insecure authentication logic.  **Task Description**  Use an AI tool to generate a **simple login system** in Python.  Analyze the generated code to check:   * Whether credentials are hardcoded * Whether passwords are stored or compared in plain text * Whether insecure logic is used   Then, revise the code to improve security (e.g., avoid hardcoding, use input validation).  **Expected Output**   * AI-generated login code * Identification of security risks * Revised secure version of the code * Brief explanation of improvements   **PROMPT:** Generate a simple Python login system and then analyze it for security issues such as hardcoded credentials and plain-text password comparison.  **CODE:**    **OUTPUT:**    **OBSERVATION**:  The SimpleLoginSystem has been successfully defined and executed in cell 48ce4922. All test cases (successful login, incorrect password, username not found) produced their expected outputs  **Task 2: Bias Detection in AI-Generated Decision Systems**  **Scenario**  AI systems may unintentionally introduce bias.  **Task Description**  Use AI prompts such as:   * *“Create a loan approval system”* * Vary applicant names and genders in prompts   Analyze whether:   * The logic treats certain genders or names unfairly * Approval decisions depend on irrelevant personal attributes   Suggest methods to reduce or remove bias.  **Expected Output**   * Python code generated by AI * Identification of biased logic (if any) * Discussion on fairness issues * Mitigation strategies   **PROMPT:** Generate a Python-based loan approval system using different applicant names and genders, then analyze whether the logic introduces bias or unfair decisions.  **CODE:**    **OUTPUT:**    **OBSERVATION:**  The biased loan system shows unfair approval patterns based on name and gender, leading to discriminatory outcomes. The revised fair system removes personal attributes and bases decisions only on financial criteria, ensuring equal and unbiased evaluation.  **Task 3: Transparency and Explainability in AI-Generated Code (Recursive Binary Search)**  **Scenario**  AI-generated code should be transparent, well-documented, and easy for humans to understand and verify.  **Task Description**  Use an AI tool to generate a Python program that:   * Implements Binary Search using recursion * Searches for a given element in a sorted list * Includes:   + Clear inline comments   + A step-by-step explanation of the recursive logic   After generating the code, analyze:   * Whether the explanation clearly describes the base case and recursive case * Whether the comments correctly match the code logic * Whether the code is understandable for beginner-level students   **Expected Output**   * Python program for recursive binary search * AI-generated comments and explanation * Student’s assessment on clarity, correctness, and transparency   **PROMPT:** Generate a Python program that performs recursive binary search on a sorted list with clear inline comments and a step-by-step explanation of base and recursive cases.  **CODE:**    **OUTPUT:**    **OBSERVATION**:  The recursive binary search code is clear and well-commented, making the base and recursive cases easy to understand. The explanation aligns perfectly with the code, ensuring high transparency and beginner-friendly readability.  **Task 4: Ethical Evaluation of AI-Based Scoring Systems**  **Scenario**  AI-generated scoring systems can influence hiring decisions.  **Task Description**  Ask an AI tool to generate a **job applicant scoring system** based on features such as:   * Skills * Experience * Education   Analyze the generated code to check:   * Whether gender, name, or unrelated features influence scoring * Whether the logic is fair and objective   **Expected Output**   * Python scoring system code * Identification of potential bias (if any) * Ethical analysis of the scoring logic   **PROMPT:** Generate a single short Python program that scores job applicants based only on skills, experience, and education, and provide an ethical analysis checking if gender, name, or irrelevant features affect scoring  **CODE:**    **OBSERVATION**:  The scoring system is transparent and avoids using sensitive attributes like gender or name, keeping the logic fair and job-relevant. However, scoring based only on skill count may oversimplify applicant evaluation and overlook skill quality.  **Task 5: Inclusiveness and Ethical Variable Design**  **Scenario**  Inclusive coding practices avoid assumptions related to gender, identity, or roles and promote fairness in software design.  **Task Description**  Use an AI tool to generate a Python code snippet that processes user or employee details.  **Analyze the code to identify:**   * Gender-specific variables (e.g., male, female) * Assumptions based on gender or identity * Non-inclusive naming or logic   **Modify or regenerate the code to:**   * Use gender-neutral variable names * Avoid gender-based conditions unless strictly required * Ensure inclusive and respectful coding practices   **Expected Output**   * Original AI-generated code snippet * Revised inclusive and gender-neutral code * Brief explanation of:   + What was non-inclusive   + How inclusiveness was improved   **PROMPT:** Generate a Python code snippet that processes employee details, then analyze it for gender-specific variables, assumptions, or non-inclusive logic and rewrite it using gender-neutral, inclusive practices.  **CODE:**      **OBSERVATION:**  The revised code removes gender-based variables and titles, making the logic fully neutral and inclusive for all users. The update ensures fairness by focusing only on job-relevant details rather than personal identity attributes.  **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.** | | | | | | Week3 - Wednesday |  |