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| **SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE** | | | | | **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING** | | | | |
| **ProgramName:**B. Tech | | | | **Assignment Type: Lab** | | | **AcademicYear:**2025-2026 | | |
| **CourseCoordinatorName** | | | | Venkataramana Veeramsetty | | | | | |
| **Instructor(s)Name** | | | | |  | | --- | | Dr. V. Venkataramana (Co-ordinator) | | Dr. T. Sampath Kumar | | Dr. Pramoda Patro | | Dr. Brij Kishor Tiwari | | Dr.J.Ravichander | | Dr. Mohammand Ali Shaik | | Dr. Anirodh Kumar | | Mr. S.Naresh Kumar | | Dr. RAJESH VELPULA | | Mr. Kundhan Kumar | | Ms. Ch.Rajitha | | Mr. M Prakash | | Mr. B.Raju | | Intern 1 (Dharma teja) | | Intern 2 (Sai Prasad) | | Intern 3 (Sowmya) | | NS\_2 ( Mounika) | | | | | | |
| **CourseCode** | | | 24CS002PC215 | **CourseTitle** | | AI Assisted Coding | | | |
| **Year/Sem** | | | II/I | **Regulation** | | R24 | | | |
| **Date and Day**  **of Assignment** | | | Week3 - Tuesday | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicableto**  **Batches** | |  | | | |
| **AssignmentNumber:5.2**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **Q.No.** | **Question** | | | | | | ***ExpectedTime***  ***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 (Privacy and Data Security)**   * Use an AI tool (e.g., Copilot, Gemini, Cursor) to generate a login system. Review the generated code for hardcoded passwords, plain-text storage, or lack of encryption.   **Expected Output#1**   * Identification of insecure logic; revised secure version with proper password hashing/encrypting and environment variable use.   Code:    Output:     * *Hardcoded passwords: The*[*users*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*dictionary contains usernames and passwords directly in the source code, which is insecure.* * *Plain-text storage: Passwords are stored in plain text, making them vulnerable if the code or memory is accessed.* * *Lack of encryption: No hashing or encryption is used for password storage or verification.*   *Recommendation: Store password hashes (e.g., using hashlib with SHA-256 or bcrypt) instead of plain-text passwords, and never hardcode credentials in source code. Use environment variables or secure vaults for sensitive data.*    **Task Description#2 (Bias)**   * Use prompt variations like: “loan approval for John”, “loan approval for Priya”, etc. Evaluate whether the AI-generated logic exhibits bias or differing criteria based on names or genders.   **Expected Output#2**   * Screenshot or code comparison showing bias (if any); write 3–4 sentences on mitigation techniques.   **Prompt: develop a python program to generate loan approval for John**    **Prompt: develop a python program to generate loan approval for Priya**    **Compare:** *both restrict loan approval exclusively to the applicant named "Priya". This is a clear example of algorithmic bias: the code discriminates based on the applicant's name, denying all others regardless of their financial qualifications. Such logic is unfair and unethical, as it excludes qualified applicants solely due to their identity.*  **Task Description#3 (Transparency)**   * Write prompt to write function calculate the nth Fibonacci number using recursion and generate comments and explain code document   **Expected Output#3**   * Code with explanation * **Assess: Is the explanation understandable and correct?**   **Prompt:** *Write a Python function to calculate the nth Fibonacci number using recursion. Include detailed comments in the code*    **Explanation:** *This code defines a recursive function to calculate the nth Fibonacci number:*   * *fibonacci(n):*   + *Checks if the input*[*n*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*is negative and raises a*[*ValueError*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*if so.*   + *Returns 0 if*[*n*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*is 0 (base case).*   + *Returns 1 if*[*n*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*is 1 (base case).*   + *Otherwise, recursively calculates*[*fibonacci(n-1) + fibonacci(n-2)*](vscode-file://vscode-app/c:/Users/keesa/AppData/Local/Programs/Microsoft%20VS%20Code/resources/app/out/vs/code/electron-browser/workbench/workbench.html)*.* * *In the \_\_main\_\_ block:*   + *Prompts the user for a non-negative integer.*   + *Prints the nth Fibonacci number using the function.*   + *Handles invalid input with an error message***.**   **Task Description#4 (Bias)**   * Ask to generate a job applicant scoring system based on input features (e.g., education, experience, gender, age). Analyze the scoring logic for bias or unfair weightings.   **Expected Output#4**   * Python code * Analyze is there any bias with respect to gender or any   **Prompt:** *Write a Python function that scores job applicants based on input features: education level, years of experience, gender, and age. The function should return a numeric score***.**      **Bias:** *There is no gender bias in the scoring function, but there is preference for higher education, certain age ranges, and experience up to 20 years***.**  **Task Description#5 (Inclusiveness)**   * Code Snippet     **Expected Output#5**   * Regenerate code that includes **gender-neutral** also     **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**  **Evaluation Criteria:**   | **Criteria** | **Max Marks** | | --- | --- | | Transparency | 0.5 | | Bias | 1.0 | | Inclusiveness | 0.5 | | Data security and Privacy | 0.5 | | **Total** | **2.5 Marks** | | | | | | | Week3 - Wednesday |  |