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| **SCHOOLOFCOMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE** | | | | | **DEPARTMENTOFCOMPUTER SCIENCE ENGINEERING** | | | | |
| **ProgramName:**B. Tech | | | | **AssignmentType: 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 | | | |
| **DateandDay**  **of Assignment** | | | Week6 - WednesDay | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicableto**  **Batches** | |  | | | |
| **AssignmentNumber:12.3**(Presentassignmentnumber)/**24**(Totalnumberofassignments) | | | | | | | | | |
|  | **Q.No.** | **Question** | | | | | | ***ExpectedTime***  ***to complete*** |  |
|  | 1 | **Lab 12 – Algorithms with AI Assistance: Sorting, searching, and optimizing algorithms**  **Lab Objectives**   * To implement classical algorithms (sorting, searching) with the help of AI tools. * To analyze AI suggestions for efficiency and correctness. * To explore AI-assisted optimizations of existing algorithms. * To compare naive vs. optimized approaches generated by AI.   **Learning Outcomes**  After completing this lab, students will be able to:   Implement sorting and searching algorithms using AI suggestions.   Compare AI-generated algorithm variants in terms of readability and efficiency.   Use AI to optimize brute-force algorithms into more efficient ones.   Analyze algorithm complexity (time and space) with AI explanations.   Critically reflect on correctness, clarity, and maintainability of AI-generated algorithms.  **Task Description #1 – Linear Search implementation**  Task: Write python code for linear\_search() function to search a value in a list and extract it’s index.  **Code:**    **Output:**    **Explanation:**  If you have a row of numbered boxes: [1, 3, 5, 7, 9]   * You want to find box number 5 * You start from the left and check each box: "Is this box 5?" * Box 1: No * Box 3: No * Box 5: Yes!   This is box number 2 (counting from 0)    **Task Description #2 – Sorting Algorithms**  Task: Ask AI to implement Bubble Sort and check sorted output  **Code:**    **Output:**    **Explanation:**  If you take a set of numbers it arranges the number from small to big using sort.  Let's say you have: [64, 34, 25, 12]First pass:   * Compare 64 and 34: 64 > 34, so swap → [34, 64, 25, 12] * Compare 64 and 25: 64 > 25, so swap → [34, 25, 64, 12] * Compare 64 and 12: 64 > 12, so swap → [34, 25, 12, 64]   Second pass:   * Compare 34 and 25: 34 > 25, so swap → [25, 34, 12, 64] * Compare 34 and 12: 34 > 12, so swap → [25, 12, 34, 64] * 64 is already in the right place   Third pass:   * Compare 25 and 12: 25 > 12, so swap → [12, 25, 34, 64] * Done! The list is now sorted**.**   **Task Description #3 – Optimization**  Task: Write python code to solve below case study using linear optimization    **Code:**      **Output:**    **Task Description #4 – Gradient Descent Optimization**  Task: Write python code to find value of x at which the function f(x)=2X3+4x+5 will be minimum  **Code:**    **Output:** | | | | | | Week5 - Monday |  |