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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** | | | Week4 - Wednesday | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicableto**  **Batches** | |  | | | |
| **AssignmentNumber:8.3**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **Q.No.** | **Question** | | | | | | ***ExpectedTime***  ***to complete*** |  |
|  | 1 | Lab 8: Test-Driven Development with AI – Generating and Working with Test Cases  **Lab Objectives:**   * To introduce students to test-driven development (TDD) using AI code generation tools. * To enable the generation of test cases before writing code implementations. * To reinforce the importance of testing, validation, and error handling. * To encourage writing clean and reliable code based on AI-generated test expectations.     **Lab Outcomes (LOs):**  After completing this lab, students will be able to:   * Use AI tools to write test cases for Python functions and classes. * Implement functions based on test cases in a test-first development style. * Use unittest or pytest to validate code correctness. * Analyze the completeness and coverage of AI-generated tests. * Compare AI-generated and manually written test cases for quality and logic   **Task Description#1**  Use AI to generate test cases for is\_valid\_email(email) and then implement the validator function.  **Requirements:**   * Must contain @ and . characters. * Must not start or end with special characters. * Should not allow multiple @.   PROMPT:  Generate test cases (both valid and invalid) for the function is\_valid\_email(email) based on these rules:   * Must contain @ and . characters. * Must not start or end with special characters (@, ., \_, -). * Should not allow multiple @.   Implement the function is\_valid\_email(email) in Python to pass all generated test cases.  Show the output of test execution.  CODE;      **Expected Output#1**   * Email validation logic passing all test cases     **Task Description#2 (Loops)**   * Ask AI to generate test cases for assign\_grade(score) function. Handle boundary and invalid inputs.   **Requirements**   * AI should generate test cases for assign\_grade(score) where: 90-100: A, 80-89: B, 70-79: C, 60-69: D, <60: F * Include boundary values and invalid inputs (e.g., -5, 105, "eighty").   PROMPT:  Generate test cases for the function assign\_grade(score) with the following grading rules:   * 90–100: A * 80–89: B * 70–79: C * 60–69: D * <60: F   Include **boundary test cases** (e.g., 59, 60, 69, 70, 79, 80, 89, 90, 100).  Include **invalid inputs** such as negative numbers (e.g., -5), numbers greater than 100 (e.g., 105), and non-numeric inputs (e.g., "eighty", None).  Provide the expected outputs for each test case.  Implement the assign\_grade(score) function in Python to handle valid and invalid inputs properly.  Show the test execution results  CODE:        **Expected Output#2**  Grade assignment function passing test suite      **Task Description#3**   * Generate test cases using AI for is\_sentence\_palindrome(sentence). Ignore case, punctuation, and spaces   **Requirement**   * Ask AI to create test cases for is\_sentence\_palindrome(sentence)   (ignores case, spaces, and punctuation).   * Example:   "A man a plan a canal Panama" → True  PROMT:  Generate test cases for the function is\_sentence\_palindrome(sentence) that checks if a sentence is a palindrome while **ignoring case, spaces, and punctuation**.  Include:   * Simple palindromes (e.g., "Racecar", "Madam"). * Multi-word palindromes (e.g., "A man a plan a canal Panama"). * Sentences with punctuation and mixed case (e.g., "Was it a car or a cat I saw?"). * Non-palindrome examples. * Edge cases such as an empty string, single character, and strings with only spaces/punctuation.   Provide the **expected output (True/False)** for each test case.  Implement the is\_sentence\_palindrome(sentence) function in Python.  Show the test execution results.  CODE:      **Expected Output#3**   * Function returns True/False for cleaned sentences * Implement the function to pass AI-generated tests.     **Task Description#4**   * Let AI fix it Prompt AI to generate test cases for a ShoppingCart class (add\_item, remove\_item, total\_cost).   **Methods:**  Add\_item(name,orice)  Remove\_item(name)  Total\_cost()  PROMT:  Generate **test cases** for a ShoppingCart class with the following methods:   * add\_item(name, price) → adds an item to the cart. * remove\_item(name) → removes an item from the cart (handle if item doesn’t exist). * total\_cost() → returns the total price of all items.   Include **valid and invalid test cases**, such as:   * Adding multiple items. * Removing items that exist. * Trying to remove items not in the cart. * Checking total cost with no items, one item, and multiple items. * Edge cases like negative price, zero price, or duplicate items.   Provide **expected outputs** for each test case.  Implement the ShoppingCart class in Python.  Run all test cases and display results.  CODE;      **Expected Output#4**   * Full class with tested functionalities     **Task Description#5**   * Use AI to write test cases for convert\_date\_format(date\_str) to switch from "YYYY-MM-DD" to "DD-MM-YYYY".   **Example: "2023-10-15" → "15-10-2023"**  **PROMT:**  **Write test cases for a function convert\_date\_format(date\_str) that changes a date from "YYYY-MM-DD" to "DD-MM-YYYY".**   * **Include normal dates, boundary dates, invalid formats, empty string, and wrong values (like "2023-13-01").** * **Show the expected outputs.** * **Then write the Python function and run the test cases.**   **CODE:**        **Expected Output#5**   * Function converts input format correctly for all test cases       **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** | | --- | --- | | Task #1 | 0.5 | | Task #2 | 0.5 | | Task #3 | 0.5 | | Task #4 | 0.5 | | Task #5 | 0.5 | | **Total** | **2.5 Marks** | | | | | | | Week4 - Wednesday |  |