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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** | | | | 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) | | | | | | |
| **Course Code** | | | 24CS002PC215 | **Course Title** | | AI Assisted Coding | | | |
| **Year/Sem** | | | II/I | **Regulation** | | R24 | | | |
| **Date and Day**  **of Assignment** | | | Week4 - Monday | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicable to**  **Batches** | |  | | | |
| **AssignmentNumber:8.1**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **Q.No.** | **Question** | | | | | | ***Expected Time***  ***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 (Password Strength Validator – Apply AI in Security Context)   * Task: Apply AI to generate at least 3 assert test cases for is\_strong\_password(password) and implement the validator function. * Requirements:   + Password must have at least 8 characters.   + Must include uppercase, lowercase, digit, and special character.   + Must not contain spaces.   Example Assert Test Cases:  assert is\_strong\_password("Abcd@123") == True  assert is\_strong\_password("abcd123") == False  assert is\_strong\_password("ABCD@1234") == True  Expected Output #1:   * Password validation logic passing all AI-generated test cases.   PROMPT—  Write a Python program to implement a function is\_strong\_password(password) that validates whether a password is strong based on the following rules:   * Password must have at least 8 characters. * Must include at least one uppercase letter, one lowercase letter, one digit, and one special character. * Must not contain spaces.   Additionally, generate at least **3 assert test cases** to automatically verify the correctness of your implementation.    FINAL OUPUT --    Task Description #2 (Number Classification with Loops – Apply AI for Edge Case Handling)   * Task: Use AI to generate at least 3 assert test cases for a classify\_number(n) function. Implement using loops. * Requirements:   + Classify numbers as Positive, Negative, or Zero.   + Handle invalid inputs like strings and None.   + Include boundary conditions (-1, 0, 1).   Example Assert Test Cases:  assert classify\_number(10) == "Positive"  assert classify\_number(-5) == "Negative"  assert classify\_number(0) == "Zero"  Expected Output #2:   * Classification logic passing all assert tests.   PROMPT—  Write a Python program to implement a function classify\_number(n) that classifies a given number as:   * "Positive" if the number is greater than 0. * "Negative" if the number is less than 0. * "Zero" if the number is equal to 0.   **Requirements:**   * Use **loops** where applicable. * Handle invalid inputs such as strings and None (return "Invalid input"). * Include boundary conditions (-1, 0, 1). * Generate at least **3 assert test cases** to automatically verify the correctness of your function.   FINAL OUPTUT--    Task Description #3 (Anagram Checker – Apply AI for String Analysis)   * Task: Use AI to generate at least 3 assert test cases for is\_anagram(str1, str2) and implement the function. * Requirements:   + Ignore case, spaces, and punctuation.   + Handle edge cases (empty strings, identical words).   Example Assert Test Cases:  assert is\_anagram("listen", "silent") == True  assert is\_anagram("hello", "world") == False  assert is\_anagram("Dormitory", "Dirty Room") == True  Expected Output #3:   * Function correctly identifying anagrams and passing all AI-generated tests.   PROMPT --  Write a Python program to implement a function is\_anagram(str1, str2) that checks whether two given strings are anagrams.  **Requirements:**   * Ignore case (case-insensitive). * Ignore spaces and punctuation. * Handle edge cases such as empty strings and identical words. * Generate at least **3 assert test cases** to automatically validate your implementation.   FINAL OUTPUT –    Task Description #4 (Inventory Class – Apply AI to Simulate Real-World Inventory System)   * Task: Ask AI to generate at least 3 assert-based tests for an Inventory class with stock management. * Methods:   + add\_item(name, quantity)   + remove\_item(name, quantity)   + get\_stock(name)   Example Assert Test Cases:  inv = Inventory()  inv.add\_item("Pen", 10)  assert inv.get\_stock("Pen") == 10  inv.remove\_item("Pen", 5)  assert inv.get\_stock("Pen") == 5  inv.add\_item("Book", 3)  assert inv.get\_stock("Book") == 3  Expected Output #4:   * Fully functional class passing all assertions.   PROMPT –  Write a Python program to implement an Inventory class with stock management methods:   * add\_item(name, quantity) → Adds an item to the inventory. * remove\_item(name, quantity) → Removes the given quantity of an item. * get\_stock(name) → Returns the current stock of the item.   **Requirements:**   * Use assert-based test cases to validate functionality. * Generate at least **3 assert test cases** using AI.   FINAL OUPUT –      RESULT –    Task Description #5 (Date Validation & Formatting – Apply AI for Data Validation)   * Task: Use AI to generate at least 3 assert test cases for validate\_and\_format\_date(date\_str) to check and convert dates. * Requirements:   + Validate "MM/DD/YYYY" format.   + Handle invalid dates.   + Convert valid dates to "YYYY-MM-DD".   Example Assert Test Cases:  assert validate\_and\_format\_date("10/15/2023") == "2023-10-15"  assert validate\_and\_format\_date("02/30/2023") == "Invalid Date"  assert validate\_and\_format\_date("01/01/2024") == "2024-01-01"  Expected Output #5:   * Function passes all AI-generated assertions and handles edge cases.   PROMPT –  Write a Python program to implement a function validate\_and\_format\_date(date\_str) that validates and converts dates.  **Requirements:**   * Input must be in "MM/DD/YYYY" format. * Validate whether the given date is valid (e.g., reject 02/30/2023). * If valid, convert and return the date in "YYYY-MM-DD" format. * If invalid, return "Invalid Date". * Use AI to generate at least **3 assert test cases** to verify correctness.   FINAL OUTPUT –    ✅ Deliverables (For All Tasks)   1. AI-generated prompts for code and test case generation. 2. At least 3 assert test cases for each task. 3. AI-generated initial code and execution screenshots. 4. Analysis of whether code passes all tests. 5. Improved final version with inline comments and explanation. 6. Compiled report (Word/PDF) with prompts, test cases, assertions, code, and output.   Top of Form  **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 - Monday |  |