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| **SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE** | | | | | **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING** | | | | |
| **Program Name:** M.Tech. and MCA | | | | **Assignment Type: Lab** | | | **AcademicYear:**2025-2026 | | |
| **Course Coordinator Name** | | | | Venkataramana Veeramsetty | | | | | |
| **Course Code** | | |  | **Course Title** | | AI Assisted Problem Solving Using Python | | | |
| **Year/Sem** | | | I/I | **Regulation** | | R24 | | | |
| **Date and Day**  **of Assignment** | | | Week3 - Monday | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicable to**  **Batches** | | M.Tech. and MCA | | | |
| **AssignmentNumber:4.3**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **Q.No.** | **Question** | | | | | | ***Expected Time***  ***to complete*** |  |
|  | 1 | Lab 4: Advanced Prompt Engineering – Zero-shot, One-shot, and Few-shot Techniques  **Lab Objectives:**   * To explore and apply different levels of prompt examples in AI-assisted code generation. * To understand how zero-shot, one-shot, and few-shot prompting affect AI output quality. * To evaluate the impact of context richness and example quantity on AI performance. * To build awareness of prompt strategy effectiveness for different problem types.   **Lab Outcomes (LOs):**  After completing this lab, students will be able to:   * Use zero-shot prompting to instruct AI with minimal context. * Use one-shot prompting with a single example to guide AI code generation. * Apply few-shot prompting using multiple examples to improve AI responses. * Compare AI outputs across the three prompting strategies.   **Task Description#1**   * Zero-shot: Prompt AI to write a function that checks whether a given year is a leap year.   **Expected Output#1**   * AI-generated function with no examples provided   I Have Considered Vs code Github Copilot as AI Agent  Prompt:  #Define a function which checks whether the year provided is leap year or not.    **Task Description#2**   * One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches.   **Expected Output#2**   * Function with correct conversion logic   Example Considered:  10 cm = 3.937 inches.    **Task Description#3**   * Few-shot: Provide 2–3 examples to generate a function that formats full names as “Last, First”.   **Expected Output#3**   * Well-structured function respecting the examples     **Task Description#4**   * Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string.   **Expected Output#4**   * Functional output and comparative reflection   **ZeroShot AI generated Function:**    **Verification**    **Few-Shots AI generated function:**    **Verification:**     |  |  |  | | --- | --- | --- | | **Aspect** | **Zero-shot Prompt** | **Few-shot Prompt** | | **Code Generated** | The model created a simple function that uses a loop to count vowels. It worked correctly based only on the instruction. | The function generated here was similar, but because of the examples, the code handled multiple test cases more clearly and consistently. | | **Example Inputs Used** | “Hello World” → Output: 3 | “hello” → 2, “apple” → 2, “Python” → 1 | | **Output Verification** | The result was correct for the given test input (“Hello World”). | All outputs matched the expected results for all the given examples. | | **Result Quality** | The output was correct, but it depended only on how well the model understood the instruction. | The output was more reliable and accurate because the examples helped the model to follow a clear pattern. |   **Task Description#5**   * Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines.   **Expected Output#5**   * Working file-processing function with AI-guided logic     **Verification:**  **Text File Considered:**    **The Output generated for the AI generated Code:**    **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** | | --- | --- | | Zero Shot (Task #1) | 2.5 | | One Shot (Task#2) | 2.5 | | Few Shot (Task#3 & Task #5) | 2.5 | | Comparison (Task#4) | 2.5 | | **Total** | **10 Marks** | | | | | | | Week3 - Monday |  |