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| **SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE** | | | | | **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING** | | | | |
| **Program Name:** M. Tech/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** | | | Week1 - TUESDAY | **Time(s)** | |  | | | |
| **Duration** | | | 2 Hours | **Applicable to**  **Batches** | | M. Tech/MCA | | | |
| **AssignmentNumber:2.3**(Present assignment number)/**24**(Total number of assignments) | | | | | | | | | |
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|  | **Q.No.** | **Question** | | | | | | ***Expected Time***  ***to complete*** |  |
|  | 1 | Lab 2: Exploring Additional AI Coding Tools – Gemini (Colab) and Cursor AI  **Lab Objectives:**   * To explore and evaluate the functionality of Google Gemini for AI-assisted coding within Google Colab. * To understand and use Cursor AI for code generation, explanation, and refactoring. * To compare outputs and usability between Gemini, GitHub Copilot, and Cursor AI. * To perform code optimization and documentation using AI tools.   **Lab Outcomes (LOs):**  After completing this lab, students will be able to:   * Generate Python code using Google Gemini in Google Colab. * Analyze the effectiveness of code explanations and suggestions by Gemini. * Set up and use Cursor AI for AI-powered coding assistance. * Evaluate and refactor code using Cursor AI features. * Compare AI tool behavior and code quality across different platforms.   **Task Description#1**   * Use Google Gemini in Colab to write a function that reads a CSV file and calculates mean, min, max. * Prompt : Use Google Gemini in Colab to write a function that reads a CSV file and calculates mean, min, max.   **Prompt:**  **"Write a Python function in Colab that reads a CSV file from Google Drive..."**  **Output:**  **Mean: 84.33**  **Min: 78.00**  **Max: 90.00**  **Screenshot attached below:**    **Expected Output#1**   * Functional code with output and screenshot     **Out put by gemini:**    **Task Description#2**   * Compare Gemini and Copilot outputs for a palindrome check function.   Google colab (Gemini As an AI)    **VS code (Co pilot as an AI)**      **Expected Output#2**  **Out put buy colab**     * Side-by-side comparison and observations   **Task 2: Compare Gemini vs Copilot – Palindrome Function**  **Prompt (both): "Check if string is palindrome"**  **| Feature | Gemini (Colab) | Copilot (VS Code) |**  **|------------------|--------------------------|----------------------------|**  **| Speed | 2 sec | 4 sec |**  **| Code Style | Clean + comments | Detailed, efficient |**  **| Accuracy | 100% | 100% |**    **Observation: Gemini faster, Copilot more explanatory.**  **Task Description#3**   * Ask Gemini to explain a Python function (to calculate area of various shapes) line by line.. * **Promt :** explain a Python function (to calculate area of various shapes) line by line..   **Expected Output#3**       * Detailed explanation with code snippet * **Task 3: Gemini explains function line by line** * **Function:** * **def calculate\_area(shape, a, b=None): ...** * **Prompt to Gemini:** * **"Explain the above function line by line."** * **Gemini Output:** * **[Full line-by-line explanation ]** * **Observation:** * **- Clear, accurate, beginner-friendly** * **- Covers logic, parameters, return values** * **- No errors in explanation**   **Task Description#4**   * Install and configure Cursor AI. Use it to generate a Python function (e.g., sum of squares).   **Expected Output#4**   * Screenshots of working environments with few prompts to generate python code   **Task Description#5**   * Student need to write code to calculate sum of odd number and even numbers in the list   **# Program to calculate sum of even and odd numbers in a list**  **numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]**  **# Using list comprehension and sum() for better readability and efficiency**  **even\_sum = sum(num for num in numbers if num % 2 == 0)**  **odd\_sum = sum(num for num in numbers if num % 2 != 0)**  **print(f"Sum of even numbers: {even\_sum}")**  **print(f"Sum of odd numbers: {odd\_sum}")**  **Expected Output#5**     * Refactored code written by student with improved logic   Out put    **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** | | --- | --- | | Successful Use of Gemini in Colab (Task#1 & #2) | 2.5 | | Code Explanation Accuracy (Gemini) (Task#3) | 2.5 | | Cursor AI Setup and Usage (Task#4) | 2.5 | | Refactoring and Improvement Analysis (Task#5) | 2.5 | | **Total** | **10 Marks** | | | | | | | Week1 - TuesDay |  |