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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:**   * write a python function that reads a CSV file and calculates mean, min, max. * and now change the code to create its own csv file   **Code:**      **Expected Output#1**   * Functional code with output and screenshot     **Task Description#2**   * Compare Gemini and Copilot outputs for a palindrome check function   **Prompt:** write a code to check whether a number is palindrome function  **GitHub copilot code:**    **Gemini code:**    **Expected Output#2**   * Side-by-side comparison and observations   **GitHub copilot output:**    **Gemini output:**    **COMPARISION AND OBSERVATIONS**  **Gemini**   * Goal: Learning & Collaboration. Provides detailed guidance. * Output: High Completeness. Includes docstrings, type hints, and runnable examples. * Focus: Clarity and Defensiveness. Explains *how* and *why* (e.g., handling negative numbers). * Response: Conversational and structured (like providing the full file block).   **GitHub Copilot**   * Goal: Speed & Code Acceleration. Focuses on quick completion. * Output: Minimalist Snippet. Often just the core logic or an inline suggestion. * Focus: Contextual Speed. Optimized for finishing the line you are currently typing in an IDE. * Response: Direct and less conversational.   **Task Description#3**   * Ask Gemini to explain a Python function (to calculate area of various shapes) line by line..   **Prompt:**   * Write a Python function to calculate area of various shapes.     **Code:**    **Expected Output#3**   * Detailed explanation with code snippet     **Code snippet:**    **Line-by-Line Explanation for calculate\_area:**   * import math: Imports the math module (for accessing $\pi$). * def calculate\_area(...): Defines the main function, accepting shape name and dimensions (\*\*kwargs). * if shape == "circle":: Checks if the shape requested is a circle. * return math.pi \* ...: Calculates and returns circle area ($\pi r^2$). * elif shape == "rectangle":: Checks if the shape requested is a rectangle. * return kwargs.get("length", 0) \* ...: Calculates and returns rectangle area ($l \times w$). * elif shape == "triangle":: Checks if the shape requested is a triangle. * return 0.5 \* kwargs.get("base", 0) \* ...: Calculates and returns triangle area ($\frac{1}{2} b h$). * else:: Handles all other unknown shape requests. * return "Unknown shape": Returns an error message for unhandled shapes.   **Task Description#4**   * Install and configure Cursor AI. Use it to generate a Python function (e.g., sum of squares).   **Prompt:**   * Generate a Python function for sum of squares.   **Code:**      **Expected Output#4**   * Screenshots of working environments with few prompts to generate python code     **Asking prompts screenshot:**    **Task Description#5**   * Student need to write code to calculate sum of add number and even numbers in the list   **Prompt:**   * Student need to write code to calculate sum of add number and even numbers in the list     **Expected Output#5**   * Refactored code written by student with improved logic     **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 |  |