

# **GenZTechs**

## **Data Science Internship Program**

### **Assignment # 1**

- 1.** Create a calculator that can perform addition, subtraction, multiplication, division, and exponentiation. The program should take two numbers and an operator from the user and perform the operation.
- 2.** Write a program that randomly generates a number between 1 and 100. The user has to guess the number, and the program should give feedback if the guess is too high, too low, or correct.
- 3.** Create a random password generator that lets the user specify the password length and whether to include special characters, numbers, and uppercase letters.
- 4.** Write a program to check if a given string is a palindrome. Ignore spaces, punctuation, and capitalization in your logic.
- 5.** Simulate a simple banking system with options to check balance, deposit, and withdraw money. Use functions for each option, and ensure the user cannot withdraw more than their balance.
- 6.** Develop a two-player, text-based Tic-Tac-Toe game. The program should display the board after each move and declare the winner when one player achieves three in a row.
- 7.** Write a program that encrypts a message using Caesar Cipher. Shift each letter by a given number (the shift amount) specified by the user, and display the encrypted message.
- 8.** Create a basic to-do list application. The program should allow users to add tasks, mark tasks as complete, delete tasks, and view all tasks.
- 9.** Create a shopping cart system where the user can add, remove, and view items. Each item should have a name, quantity, and price, and the program should display the total cost of items in the cart.
- 10.** Write a program that converts units between different measurement systems (e.g., inches to centimeters, pounds to kilograms). The user should specify the type of conversion and enter the value to convert.
- 11.** Create a script that organizes files in a directory into folders based on their file types (e.g., images, documents, videos). Use lists to define file extensions for each category.
- 12.** Write a program to manage student grades. Let the user add students with their names and scores, calculate the average score, and determine the highest and lowest scores.
- 13.** Create a text-based quiz with at least five questions. Allow the user to answer each question and keep track of their score. Display the final score at the end.

**14.** Write a program that manages a small library of books. Each book should have a title, author, and genre. The program should allow the user to add books, search for books by title, and view all books in the library.

**15.** Create a function that checks if a given number is prime and another function that generates a list of prime numbers up to a given limit.

**16.** Write a program that checks if a given 3x3 list of lists is a magic square (where the sum of every row, column, and diagonal is the same).

**17.** Create a program that reads a text file and counts the frequency of each word in the file. Print the top five most common words along with their counts.

### **Mini Project: Expense Tracker**

**Objective:** Develop a text-based expense tracking application.

#### **Instructions:**

- Allow the user to add expenses with a description, category (e.g., food, travel), and amount.
- Display a summary of total expenses, along with the breakdown by category.
- Add an option to display expenses within a specified date range.
- Allow the user to remove an expense by description or date.
- Provide an option to save and load expenses from a text file, so that the tracker can retain data even after restarting.