Part 1

1. Find the Oldest Person's Age in a List. Imagine you are given a list of ages of a group of people. Write a Python function that finds the oldest person's age.

  - Input Example: `ages = [23, 45, 34, 67, 89, 21, 54]`

  - Expected Output: `89`

2. Search for a Specific Name in a List of Attendees. You are organizing an event and have a list of attendees' names. Write a function that searches for a specific attendee by name and returns their position in the list (index). If they are not in the list, return -1.

  - Input Example: `names = ["Joao", "Antonio", "Ana", "Sara", "Marta"]`

  - Expected Output (searching for " Antonio"): `1`

3. Find All Occurrences of a Particular Grade in a List. You are grading exams and have a list of student grades. Write a function that finds all occurrences of a specific grade (e.g., A, B, C) and returns their indices.

  - Input Example: `grades = ['15', '16', '19', '12', '13', '14', '15']`

  - Expected Output (for 'A'): `[0, 6]`

4. Remove Duplicate Movie Titles from a Watchlist. You have a list of movie titles in your watchlist, but some are duplicated. Write a function that removes all duplicate movie titles.

  - Input Example: `movies = ["Inception", "Avatar", "Inception", "Titanic", "Avatar"]`

  - Expected Output: `["Inception", "Avatar", "Titanic"]`

5. Count How Many Times a Song Has Been Played in a Playlist. You have a playlist that contains song titles, and some songs are repeated. Write a function that counts how many times a specific song was played.

  - Input Example: `playlist = ["Song1", "Song2", "Song3", "Song1", "Song2", "Song1"]`

  - Expected Output (for "Song1"): `3`

Part 2

1. Find a Specific Book in a Library Inventory. Imagine the library has an inventory system where books are stored in rows and columns, with each position representing a book. Write a function that searches for a specific book title in the inventory matrix and returns its position (row, column).

  - Input Example:

  `inventory = [["Book A", "Book B", "Book C"],

       ["Book D", "Book E", "Book F"],

       ["Book G", "Book H", "Book I"]]

- Expected Output (for "Book E"): `(1, 1)`

2. Find the Highest Temperature Recorded in a 7-day Week. You are working on weather data, so have a matrix where each row represents a day and each column represents hourly temperature data. Write a function that finds the highest temperature recorded during the week.

  - Input Example:

  temperatures = [[72, 75, 78, 76],

           [81, 79, 80, 82],

           [85, 88, 87, 86],

           [77, 79, 76, 74],

           [73, 70, 68, 69],

           [82, 85, 84, 83],

           [90, 91, 89, 92]]

  - Expected Output: `92`

3. Count How Many Times a Product is Out of Stock in Multiple Stores. You are analyzing data from different stores, and you have a matrix where each element represents the stock of a specific product at a store (0 means out of stock). Write a function to count how often a specific product is out of stock across all stores.

  - Input Example:

  stock = [[10, 0, 5, 3],

       [7, 2, 0, 0],

       [3, 0, 6, 8]]

  - Expected Output (count how many times a product has 0 stock): `4`

4. Calculate the Total Sales for Each Day from a Sales Matrix. You are analyzing sales data for a store that records daily sales in a matrix, where each row represents a day, and each column represents a different product. Write a function to calculate the total sales for each day.

  - Input Example:

  sales = [[120, 200, 150],

       [180, 100, 250],

       [160, 220, 300]]

  - Expected Output: `[470, 530, 680]`

5. Transpose of a Spreadsheet of Exam Scores. You have a spreadsheet of exam scores where each row represents a student, and each column represents their score in a particular subject. Write a function to transpose the matrix so that rows become columns (i.e., now, each row represents a subject).

   - Input Example:

     scores = [[85, 90, 88],

         [78, 82, 84],

         [92, 96, 89]]

   - Expected Output:

   [[85, 78, 92],

    [90, 82, 96],

    [88, 84, 89]]

6. Find the Average Temperature on the Diagonal of a Temperature Matrix. You are analyzing temperature data in a grid format where the diagonal represents the temperatures recorded simultaneously in different locations. Write a function to find the average temperature of the diagonal elements.

   - Input Example:

   temperature_grid = [[70, 72, 68],

           [75, 80, 78],

           [85, 83, 82]]

   - Expected Output: `77.33`