**PM4SUCCESS DATA ANALYTICS PROJECTS**

**8th August 2024**

**Mini Project** 4: Basic List Operations

Task:

• Elements to Use: ["apple", "banana", "cherry", "date", "elderberry"]

• Perform the following operations with the above list:

1. Indexing: Access and print the second ("banana") and fourth ("date") elements.

2. Slicing: Create a sublist containing the second to fourth elements and print it.

3. Appending: Add a new element "fig" to the end of the list.

4. Modifying: Change the third element "cherry" to "coconut".

5. Removing: Remove the first element "apple" from the list.

• Finally, print the modified list.

**Mini Project** 5: List Value Swap

Task:

• Elements to Use: ListA = [10, 20, 30, 40, 50] ListB = [‘A’, ‘B’, ’C’, ‘D’, ‘E’]

• Swap the values of the first list to be that of the second list and the value of the second to be that of the first.

• Print the list before and after the swap.

**Mini Project** 6: Looping Through a List

Task:

• Elements to Use: ["red", "blue", "green", "yellow", "orange", "purple"]

• Use a for loop to iterate over the list and print each element.

• Use another for loop to print the elements along with their indices.

**Mini Project** 7: Counting Occurrences in a List

Task:

• Elements to Use: ["apple", "banana", "apple", "cherry", "apple", "date", "banana", "apple"]

• Use a loop to count the number of times "apple" appears in the list.

• Print the element and its count.

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**Mini Project** 8: List Comprehension

Task:

• Elements to Use: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

• Use list comprehension to create a new list containing the squares of each integer.

• Print the original list and the new list.

**Mini Project** 9: List Filtering Using Loops

Task:

• Elements to Use: [5, -3, 12, -8, 7, -1, 14, -6]

• Use a loop to create a new list that contains only the positive numbers from the original list.

• Print both the original list and the filtered list.

**11TH August 2024**

Project 10: Temperature Converter

Objective: Create a program that converts temperatures between Celsius and Fahrenheit.

Tasks:

1. Input: Prompt the user to enter a temperature value and the unit (Celsius or Fahrenheit).

2. Conversion: Use conditional statements to convert the temperature to the other unit.

3. Output: Display the converted temperature.

Project 11: Simple ATM Simulator

Objective: Develop a basic ATM simulator that allows users to check their balance, deposit money, and withdraw money.

Tasks:

1. Initial Setup: Start with a predefined balance.

2. Menu: Display a menu with options to check balance, deposit money, withdraw money, or exit.

3. Operations: Use conditional statements to perform the selected operation.

4. Loop: Allow the user to perform multiple operations until they choose to exit.

Project 12: Multiplication Table Generator

Objective: Build a program that generates the multiplication table for a number provided by the user.

Tasks:

1. Input: Ask the user to enter a number.

2. Loop: Use a loop to generate and display the multiplication table for that number up to 12.

3. Output: Display the table in a clear format.

Project 13: Sentence Reverser

Objective: Create a program that reverses the words in a sentence provided by the user.

Tasks:

1. Input: Prompt the user to enter a sentence.

2. String Manipulation: Split the sentence into words, reverse the list of words, and join them back into a string.

3. Output: Display the reversed sentence.

Project 14: Simple Number Guessing Game

Objective: Create a basic number guessing game where the user has to guess a number within a certain range.

Tasks:

1. Generate a Number: Generate a random number between 1 and 50.

2. User Guess: Prompt the user to guess the number.

3. Comparison: Use conditional statements to check if the guessed number is too high, too low, or correct.

4. Loop: Allow the user multiple attempts to guess the number by using a loop.

5. Output: Provide feedback on each guess until the correct number is guessed.

Project 15: Text Analyzer

Objective: Build a program that analyzes a piece of text and provides basic statistics.

Tasks:

1. Input: Ask the user to enter a piece of text.

2. Word Count: Count the number of words in the text.

3. Character Count: Count the number of characters in the text.

4. Loop: Use a loop to count specific features like the number of vowels.

5. Output: Display the results to the user.

**August 14, 2024**

**Mini Project** 16: Tuple Basics

1. Create a Tuple:

• Create a tuple called fruits that contains the names of five different fruits.

• Print the fruits tuple.

2. Accessing Elements:

• Access and print the first and last elements of the fruits tuple.

• Try to change the second element of the fruits tuple. What happens?

3. Slicing a Tuple:

• Create a new tuple by slicing the fruits tuple to include the middle three fruits.

• Print the new tuple.

**Mini Project** 17: Tuple Operations

1. Concatenation:

• Create another tuple called vegetables with three vegetable names.

• Concatenate the fruits and vegetables tuples into a new tuple called groceries.

• Print the groceries tuple.

2. Tuple Unpacking:

• Unpack the first three elements of the fruits tuple into three variables and print them.

• Use the \* operator to unpack the remaining elements of the fruits tuple into a list and print the list.

3. Length and Membership:

• Find and print the length of the grocery’s tuple.

• Check if 'apple' is in the groceries tuple and print the result.

**Mini Project** 18: Tuple Methods and Functions

1. Index and Count:

• Create a tuple called numbers with the elements: 1, 2, 3, 2, 4, 2, 5.

• Use the index () method to find the first occurrence of the number 2.

• Use the count () method to find how many times 2 appears in the tuple.

2. Sorting and Reversing:

• Create a tuple of integers and sort it in ascending order without changing the original tuple.

• Reverse the tuple using slicing and print the reversed tuple.

**Mini Project** 19: Student Information System:

Build a simple student information system where:

• A dictionary is used to store student information (e.g., name, age, grades).

• Sets are used to track courses that students are enrolled in, ensuring no duplicates.

• Implement features to add students, enroll them in courses, and retrieve their information.

**Mini Project** 20 Library Management System:

Create a library management system using dictionaries and sets where:

• A dictionary stores information about books (e.g., title, author, available copies).

• A set keeps track of the books currently checked out by users.

• Implement functions to add books, check out books, and return books.

**August 15, 2024**

Mini-Project 21: Simple Calculator

• Description: Create a simple calculator that can perform basic arithmetic operations (addition, subtraction, multiplication, division) using functions.

• Instructions:

1. Define functions for each operation: add, subtract, multiply, and divide.

2. Create a main function that takes user input to select an operation and input numbers.

3. Use the functions to perform the calculation and display the result

**August 16, 2024**

**Mini Project** 23

Tasks:

1a. Addition Function:

• Write a function named add\_numbers that takes two arguments and returns their sum.

1b. Greeting Function:

• Write a function named greet that takes a name as an argument and prints a personalized greeting message.

1c. Lambda Multiplication:

• Create a lambda function to multiply two numbers, then use this function to multiply 7 by 5.

1d. Exponentiation Function:

• Write a function named power that takes two arguments: a base and an exponent. The function should return the base raised to the power of the exponent. The exponent should default to 2 if not provided.

**Mini Project** 24

Recursion: Recursive Palindrome Checker

Description: Build a recursive function to check if a string is a palindrome.

Tasks:

• Implement a recursive function that checks if a given string reads the same forwards and backward.

• Extend the function to ignore case, spaces, and punctuation.

• Add a feature to check for palindromes in a list of strings.

**Mini Project** 25

Lambda Functions: Data Transformation Pipeline

Description: Build a data transformation pipeline using map(), filter(), and lambda functions.

Tasks:

• Create a pipeline that processes a list of numbers:

o First, filter out even numbers.

o Then, square the remaining odd numbers.

o Finally, sort the squared numbers in descending order.

**August 30, 2024**

Using the given data set.

What are the characteristics of customers who are more likely to churn, and how do these characteristics differ across geography, age, credit score, and product usage? Can a dashboard be created to visually present these insights?"

**Objectives:**

Analyze the demographic and financial profiles of churned customers.

Identify patterns in churn behavior by comparing different customer segments such as country, age group, credit score range, and the number of products used.

Describe how factors like having a credit card, being an active member, and account balance levels correlate with the likelihood of a customer churning.

Create a dashboard to visually present these insights, allowing for easy interpretation and identification of key factors contributing to churn.

**Dashboard Focus:**

**Churn Rates Visualization:** Show churn rates across different demographics and segments such as geography, age, and gender.

**Credit Score vs. Churn:** A visual representation of how credit scores relate to the likelihood of churning.

Product Usage Analysis: Charts showing how the number of products a customer uses influences churn rates.

**Financial Indicators:** Visuals depicting the relationship between account balance, estimated salary, and churn.

Also don't forget to add other key insight you may discover.

**September 1, 2024**

**Mini Project** 27: Using the Online Retail Data set, answer the following in excel:

1. What is the total revenue generated by each country in the dataset?

2. Which are the top 10 best-selling products based on the total quantity sold?

3. What is the average order value (AOV) for each customer?

4. What are the monthly sales trends over the year?

5. Who are the top 5 most profitable customers based on their total revenue contribution?

6. What is the sales distribution across different product categories?

7. On which days of the week are the most invoices generated?

8. What is the average quantity of items ordered per invoice?

9. During which hours of the day do most customer purchases occur?

10. Are there any significant seasonal trends in the sales data?

**Mini Project** 28: Using the supermarket sales dataset, answer the following in excel:

1. What is the total value of sales for each product line?

2. Which payment method is most frequently used in each branch?

3. What is the average rating for each gender?

4. What is the average gross margin percentage for each city?

5. Which branch has the highest average unit price?

6. What is the total tax collected for each customer type?

7. What is the average quantity sold per product line?

8. Which city has the highest total sales?

9. What is the average gross income per product line?

10. What is the most common time of day for sales in each city?

11. How does the average rating compare across different branches?

12. What is the total value of sales per payment method?

13. What is the average tax collected per transaction?

14. Which product line has the highest average gross margin percentage?