**Part 1. Average Rainfall**

**Problem Statement:**Write a program utilizing nested loops to collect data and calculate the average rainfall over a span of years. The program initiates by prompting the user for the number of years. The outer loop iterates once per year, while the inner loop iterates twelve times, representing each month. During each iteration of the inner loop, the user is prompted to input the inches of rainfall for that specific month. After completing all iterations, the program displays the total number of months, the overall inches of rainfall, and the average rainfall per month for the entire period.

**Solution:**The task involves creating two loops, one for the year and one for the month. The user is prompted to input rainfall data for each month, and the program calculates the average rainfall. This necessitates the use of variables to keep track of total rainfall and total months, enabling the calculation of the average as total rain / total months.

**Challenges**:One challenge is handling different inputs and storing them effectively. Since each year consists of 12 entries, creating individual variables for each month is impractical. To address this, an additional variable is introduced within the inner loop to accumulate the input values.

Other challenges can be while user enters a text value instead of number the program will fail, we can add try catch block to handle that but for now I am not adding it as the problem doesn’t explicitly call upon the error handling.

**Program:**

def averageRainfall():

    num\_years = int(input("Enter number of years to calculate average rainfall: "))

    start\_year = 1

    num\_months = num\_years \* 12

    total\_rain  = 0.0

    while start\_year <= num\_years:

        for month in range(1,13):

            rainfall = float(input(f"enter the rainfall for the year {start\_year} and month {month} in inches: " ))

            total\_rain = total\_rain + rainfall

        start\_year = start\_year+1

    avg\_rain = total\_rain/num\_months

    print("\nResults")

    print(f"total number of months : {num\_months}")

    print(f"total rainfall in inches : {total\_rain}")

    print(f"average rainfall in inches : {avg\_rain:.2f}")

averageRainfall()

**Result:**

**A screenshot of a computer

Description automatically generated**

**Part2.**

**Reward Points**

**Problem Statement -** The CSU Global Bookstore has a book club that awards points to its students based on the number of books purchased each month. The points are awarded as follows:

* If a customer purchases 0 books, they earn 0 points.
* If a customer purchases 2 books, they earn 5 points.
* If a customer purchases 4 books, they earn 15 points.
* If a customer purchases 6 books, they earn 30 points.
* If a customer purchases 8 or more books, they earn 60 points.

Write a program that asks the user to enter the number of books that they have purchased this month and then display the number of points awarded.

**Solution –** I am writing a custom function that calculates the points awarded by taking num books as input and then I will use this function in the main block. Main block will ask the end user about the number of books taken from the bookstore and then print the score.

**Challenges -** If a user enters a negative number I need to handle that hence my custom function returns a prompt for the user to enter non negative number. Since the function can return non integer values I am required to handle that in my main block so I am using bult in isinstance function to check that.

**Program :**

def calculate\_points(num\_books):

    if num\_books == 0:

        return 0

    elif num\_books == 2:

        return 5

    elif num\_books == 4:

        return 15

    elif num\_books == 6:

        return 30

    elif num\_books >= 8:

        return 60

    else:

        return "Invalid input. Please enter a non-negative integer."

def rewards():

    num\_books = int(input("Enter the number of books purchased this month: "))

    points = calculate\_points(num\_books)

    if isinstance(points, int):

        print(f"You have earned {points} points.")

    else:

        print(points)

rewards()

**Execution :**

A screen shot of a computer screen

Description automatically generated

**Github -** [SchoolPython/Module5 at main · ArunSaxena200/SchoolPython (github.com)](https://github.com/ArunSaxena200/SchoolPython/tree/main/Module5)