

Programming Exercises Using Repetition Structure

1. Bug Collector

A bug collector collects bugs every day for seven days. Write a program that keeps a running total of the number of bugs collected during the seven days. The loop should ask for the number of bugs collected for each day, and when the loop is finished, the program should display the total number of bugs collected.

2. Calories Burned

Running on a particular treadmill you burn 3.9 calories per minute. Write a program that uses a loop to display the number of calories burned after 10, 15, 20, 25, and 30 minutes.

3. Budget Analysis

Write a program that asks the user to enter the amount that he or she has budgeted for a month. A loop should then prompt the user to enter each of his or her expenses for the month, and keep a running total. When the loop finishes, the program should display the amount that the user is over or under budget.

4. Distance Traveled

The distance a vehicle travels can be calculated as follows:

$$\text{distance} = \text{speed} * \text{time}$$

For example, if a train travels 40 miles per hour for three hours, the distance traveled is 120 miles. Write a program that asks the user for the speed of a vehicle (in miles per hour) and the number of hours it has traveled. It should then use a loop to display the distance the vehicle has traveled for each hour of that time period. Here is an example of the desired output:

What is the speed of the vehicle in mph? 40

How many hours has it traveled? 3

Hour	Distance Traveled
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1	40
2	80
3	120

5. Average Rainfall

Write a program that uses nested loops to collect data and calculate the average rainfall over a period of years. The program should first ask for the number of years. The outer loop will iterate once for each year. The inner loop will iterate twelve times, once for each month. Each iteration of the inner loop will ask the user for the inches of rainfall for that month. After all iterations, the program should display the number of months, the total inches of rainfall, and the average rainfall per month for the entire period.

6. Celsius to Fahrenheit Table

Write a program that displays a table of the Celsius temperatures 0 through 20 and their Fahrenheit equivalents. The formula for converting a temperature from Celsius to Fahrenheit is

$$F = 5/9 * C + 32$$

where F is the Fahrenheit temperature and C is the Celsius temperature. Your program must use a loop to display the table.

7. Pennies for Pay

Write a program that calculates the amount of money a person would earn over a period of time if his or her salary is one penny the first day, two pennies the second day, and

continues to double each day. The program should ask the user for the number of days. Display a table showing what the salary was for each day, and then show the total pay at the end of the period. The output should be displayed in a dollar amount, not the number of pennies.

8. Sum of Numbers

Write a program with a loop that asks the user to enter a series of positive numbers. The user should enter a negative number to signal the end of the series. After all the positive numbers have been entered, the program should display their sum.