Homework for Iterators & Closures

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July 23, 2023

Problem 1: Iterator Basics

- Write a Rust program that defines a vector of integers containing values [1, 2, 3, 4, 5].
- Use an iterator to print out each element in the vector, separated by spaces.

Problem 2. Map and Filter

- Write a Rust program that defines a vector of integers containing values [10, 20, 30, 40, 50].
- Use an iterator and the ‘map‘ method to create a new vector that contains each element of the original vector multiplied by 2.
- Use another iterator and the ‘filter‘ method to create a new vector that contains only the elements from the original vector that are greater than 25.
- Print both resulting vectors.

Problem 3. Fold (Reduce)

- Write a Rust program that defines a vector of integers containing values [1, 2, 3, 4, 5].
- Use an iterator and the `fold` method to calculate the sum of all elements in the vector.
- Print the final sum.

Problem 4. Closures

- Write a closure that takes an integer as an argument and returns the square of that integer.
- Test the closure by passing different integers to it and printing the results.

Problem 5. Closures with Capture

- Write a Rust program that defines a vector of integers containing values [1, 2, 3, 4, 5].
- Define a variable ‘multiplier‘ and set its value to 3.
- Create a closure that takes an integer as an argument and returns the product of that integer and the ‘multiplier‘ variable.

- Use a for loop on the values [1, 2, 3, 4, 5], then run the closure on each value and print the output