foreach

https://csci-1301.github.io/about#authors

February 24, 2022 (11:23:46 AM)

Contents

1	Prac	cticing foreach Loops	1
	1.1	Problem 1	1
	1.2	Problem 2	1
	1.3	Problem 3	2
	1.4	Problem 4	6
	1.5	Problem 5	6

1 Practicing foreach Loops

1.1 Problem 1

Create a new project, and replace the content of the Main method with the following code:

```
int[] primes = {2, 3, 5, 7, 11, 13, 17, 19};
for(int i = 0; i < primes.Length; i++)
{
    Console.WriteLine(primes[i]);
}</pre>
```

Execute the code. You should see the elements of the array primes (the prime numbers less than 20) in the console.

Next rewrite the code using a **foreach** statement, then answer the following questions:

- 1. Identify two differences between the for and foreach versions.
- 2. Which one is easier to understand?
- 3. Which one needs fewer variables?

1.2 Problem 2

Can you rewrite the following code with a foreach statement? Why?

```
double[] numbers = {1.2, 4.3, 5.7, 11, -3.13, 1.7};
for(int i = 0; i < numbers.Length; i++)
{
    numbers[i] = numbers[i] * 1.1;</pre>
```

```
Console.WriteLine(numbers[i]);
```

1.3 Problem 3

Can you rewrite the following code with a foreach statement? Why?

```
double[] numbers = {1.2, 4.3, 5.7, 11, -3.13, 1.7};
for(int i = 0; i < numbers.Length - 1; i++)
{
    Console.WriteLine((numbers[i] + numbers[i+1]) / 2);
}</pre>
```

1.4 Problem 4

- 1. Can you think of any loops that can be implemented with *foreach* but not with *for*? If so, write an example.
- 2. Can you think of any loops that can be implemented with for but not with foreach? If so, write an example.

1.5 Problem 5

Download Library project¹, extract it, and open it with your IDE.

Observe the program and its two classes:

- The Book class represents a single book.
- Program creates an array of 10 books.

Next modify the code in Program.cs to perform the following steps:

- 1. Write a foreach loop that displays all the books.
- 2. Add statements where you ask the user to enter a year, then modify the **foreach** loop to display only books published on or after the year user entered.
- 3. Write a for loop implementation that performs the same task of displaying books published on or after the year user entered.

Which one do you prefer to implement the above search? Explain your answer.

¹Library.zip