

Lesson 3 Problem Set

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Do these problems for additional practice and challenge.

Reminder: If you have not submitted the last homework assignment, then please do so. Also, if you didn't get GCF from the last assignment, please do it and submit it along with this week's homework.

1. **Times Table:** Given an array of integers, print out the times table for each integer up to 10. For example, if the input is {1,2}, your program should print out:

1x1 = 1
1x2 = 2
1x3 = 3
...
1x10 = 10
2x1 = 2
2x2 = 4
2x3 = 6
...
2x10 = 20

The array will contain a random set of integers that may or may not be in order.

2. **Range Finder:** The range of a set of numbers is defined as the difference between the largest and the smallest number in that set. For example, given the set of numbers {1,2,3,4}, the range of this set would be 3 (4-1). Create a program that given an array of doubles will print out the range of the array.

Challenge:

Sorting: Given an array of integers, sort them in ascending order. For example, the array $\{3,2,1,4\}$ would be sorted into $\{1,2,3,4\}$. Include two paragraphs describing how you came up with the sorting algorithm and a brief description of how the algorithm sorts the array. Note: There are a multitude of sorting algorithms on the internet and it happens that sorting is a major problem in the field of computer science. While it is likely that your sorting algorithm will be similar to that of an established one, please don't copy one from the internet as it prevents us from gauging your understanding.