CSC 501 HOMEWORK 4

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Due date is Friday of Week 7.

1. Homework 4A: Missile Launch Code Verification

The country of Sluddobiva has recently acquired nuclear missile technology. The Sluddobivan people are anxious that their missiles should only be used when absolutely necessary to defend their country against aggression. The missile system is controlled by a computer. The Sluddobivan Department of Defense has hired you to program the computer to ensure that the missiles will be cleared for launch only when the Sluddobivan president and vice president independently enter a secret sequence of numbers. The computer system is to clear the missiles for lauch only if the sequence of numbers entered in by the president matches exactly the sequence entered in by the vice president. Here is a sample interaction

```
Numbers in launch code sequence should be entered on
single line, separated by blanks.

Enter length of launch code sequence: 4
Mr. President, Enter the launch code sequence:
34 56 2 89

Mr. Vice President, Enter the launch code sequence:
34 56 21 89

Codes do not check out. Abort missile launch.
```

Here is a second example of how the program should work

```
Numbers in launch code sequence should be entered on
single line, separated by blanks.

Enter length of launch code sequence: 5
Mr. President, Enter the launch code sequence:
13 67 3 2 67

Mr. Vice President, Enter the launch code sequence:
13 67 3 2 67

All equal: Missile system cleared for launch.
```

Write a program that will meet the needs of the Sluddobivan Department of Defense. Make sure your program works correctly: you do not want your program to to mistakenly cause a nuclear Armageddon.

2. Homework 4B: Array Membership, Array Inclusion

Write a program that includes the following two methods:

```
boolean contains(int  x, int [] arr)
```

This method returns **true** if the integer `x` is contained in the array `arr`; and it returns `false` otherwise.

```
boolean contains(int [ ]xArr, int [ ] arr)
```

This method returns **true** if every integer in the array `xArr` is contained in the array `arr`; and it returns `false` otherwise.

You should write these methods without using the `indexOf` method in the `Arrays` class, or any methods in any of the Java Collection classes.

Test the methods you wrote by writing a program that asks the user to enter the size n of an array, creates an array of that size, and then asks the user to enter n numbers to store in the array. After that, the program should prompt the user to keep entering an integer `x`. For each `x` entered, the program states whether or not `x` is in the original array entered. This phase of the program ends when the user enters a value of -1.

After that, your program moves into a second phase. In this phase, it asks the user to enter a size m, reads m, and creates and array of that size. The program then asks the user to enter m integers, which it stores in a second array. The program then determines whether *every* element in the second array is also found in the first (original) array entered, prints this information out, and terminates.

Here is a sample run:

```
Enter the size for the first array: 5
Enter 5 non-negative integers: 10 20 30 40 50
You entered the array: [10, 20, 30, 40, 50]
Keep entering integers to check if they are in the array
and enter -1 to move to the next phase.
Enter an integer (-1 to move on): 45
The value 45 is  not  in [10, 20, 30, 40, 50]
Enter an integer (-1 to move on): 20
The value 20 is  in [10, 20, 30, 40, 50]
Enter an integer (-1 to move on): -1
Enter the size for a second array: 7
Enter 7 integers: 25 50 30 12 20 40 10
The second array is included in the first array.
```

Here is another sample run:

```
Enter the size for the first array: 4
Enter 4 non-negative integers: 10 20 30 40
You entered the array: [10, 20, 30, 40]
Keep entering integers to check if they are in the array
and enter -1 to move to the next phase.
Enter an integer (-1 to move on): -1
Enter the size for a second array: 2
Enter 2 integers: 35 30
The second array is not included in the first array.
```