CS 1400-03 Introduction to Programming and Problem Solving
Coding Practice #13
(Due: 11:59 PM, Friday, 5/14/2021)

Except Coding Practice #1, I will not grade your coding practice submissions. Instead, they will be treated as participation points. On blackboard, you will receive full points as long as you work on the exercises, which don't necessary mean they are all correct. Please check your own programs carefully and make sure they do generate the desired output.

Objectives:

- Be able to solve problems with recursion
- Be able to test and debug a program

Change your working directory to `cs1400/codingPractice` for this assignment.

Task #1 Print Array Elements

Write a recursive method `printArray` that takes an integer array as its parameter and displays the elements of the array. Since the array never changes, each recursive call to the method would use the same parameter, resulting in a never-ending recursive call. So, you will need to add a parameter that controls the recursion. Write a driver program `DisplayArray.java` to test the method. For example, if `int[] a1 = {1,3,5,7,9};`
then the output of the program should be `1 3 5 7 9`

Task #2 Print Digits

Write a recursive method `printRightToLeft` that takes a positive integer `n` as its parameter and prints the digits of `n` from right to left. Write a driver program `PrintDigits.java` to test the method. Here is a sample interaction:

```
fcsang@garrison ~/cs1400/codingPractice $ java PrintDigits
enter a positive integer: 12345
print n right to left...
5
4
3
2
1
```

Task #3 Detect Palindromes

A palindrome is any word, phrase, or sentence that reads the same forward and backward. The following are some well-known palindromes.

```
Kayak
Desserts I stressed
Able was I ere I saw Elba
```

Write a recursive method `public static boolean palindrome(String s, int i, int j)` that returns true if `s` is a palindrome, false otherwise. Hint: `s` is a palindrome if every pair of characters in `s` at the corresponding positions `i` and `j` are the same. Write a driver program `PalindromeTest.java` to test the method.

```
fcsang@abbott ~/cs1400/codingPractice $ java PalindromeTest
enter a string: <enter>
"" is a palindrome.

fcsang@abbott ~/cs1400/codingPractice $ java PalindromeTest
enter a string: kayak
"kayak" is a palindrome.

fcsang@abbott ~/cs1400/codingPractice $ java PalindromeTest
enter a string: kayaak
"kayaak" is not a palindrome.

fcsang@abbott ~/cs1400/codingPractice $ java PalindromeTest
enter a string: Desserts I stressed
"desserts i stressed" is a palindrome.

fcsang@abbott ~/cs1400/codingPractice $ java PalindromeTest
enter a string: Desserts, I stressed
"desserts, i stressed" is not a palindrome.
```

Submission:
Generate a `script` file `practice13.txt` with appropriate time stamps and the following steps visible:

1) a `pwd` to show the current working directory
2) a `ls -l` to show in long format the files in your `cs1400/codingPractice` directory
3) display `DisplayArray.java`
4) compile `DisplayArray.java`
5) run `DisplayArray`
6) display `PrintDigits.java`
7) compile `PrintDigits.java`
8) run `PrintDigits`
9) display `PalindromeTest.java`
10) compile `PalindromeTest.java`
11) run `PalindromeTest`

Submit the script file `practice13.txt` on Bb, under the Coding Practice Folder, Practice #13 link.