

CS100J: Spring 2001

Exercise 9: Due 4/3

Please read this page before proceeding!

The following questions (a) and (b) help you program code that has the following structure:

```
public class Exercise9 {  
    public static void main(String args[]) {  
        // body of main  
    } // method main  
  
    public static int[] char_counts(String s) {  
        // body of char_counts  
    } // method char_counts  
}  
// class Exercise9
```

You need to complete the code for the bodies of methods `char_counts` and `main`. If you get stuck on `char_counts`, you may assume `char_counts` has been correctly programmed so can you finish code for `main`.

Hint: When completed, the code must generate the following output:

```
abc  
===  
131  
110  
  
220  
112  
  
310  
  
102  
032  
400
```

Part a)

Fill in the code for method `char_counts`, started below. You may assume that method `main` calls `char_counts` from within the body of `main`. The method must count how many times each character `a`, `b`, and `c` appears in `String s`. If the method detects an illegal character, the method must *exit* the program with an error message, `Wrong input!`, printed to the user. Method `char_counts` returns a 1-D array of integers. This array stores the number of times `a`, `b`, and `c` appear in string `s` as the first, second, and third elements of the returned array, respectively. Hint: You might wish to use the methods `charAt(int index)` and `length()` from the `String` class somewhere in `char_counts`.

```
public static int[] char_counts(String s) {
```

```
} // method char_counts
```

Part b)

Fill in the code for method `main`, started below. The initializer list, referenced by `A`, stores arrays of strings. The following code should call `char_counts` to find the character count inside each string element of the initializer list. You must use a 3-D array of integers called `key` to store the returned 1-D array from `char_counts`. Instantiate sizes for `key` only as large as necessary in each dimension. Method `main` must also output each array returned by `char_counts`, as shown on page 1. You must include blank lines as depicted in the output displayed on page 1.

```
public static void main(String[] args) {  
    String A[][] = { {"abcbb", "ba"}, {"abba", "accb"},  
                    {"aaba"}, {"cca", "cbcbb", "aaaa"} };  
    System.out.println("abc");  
    System.out.println("===");
```

```
} // method main
```