Problem Set 2, Part I

Problem 1: Variable scope

1)a, b
2)a, b, i
3)a, b, i, c, j
4)a, b
5)x
6)x, y

Problem 2: String objects and their methods

2-1

```
a)str2.substring(0, 5) + str1.substring(5)
b)str2.charAt(1) + str2.substring(8)
c)str1.substring(0, 5).toLowerCase() + str2.substring(5).toUpperCase()
d)str1.charAt(4)
e)str2.substring(2, 3) + str2.substring(11)
f)str1.indexOf(str1.charAt(13))
g)str1.replace(str1.charAt(2), str2.charAt(2))
```

Problem 3: Understanding code that uses an array

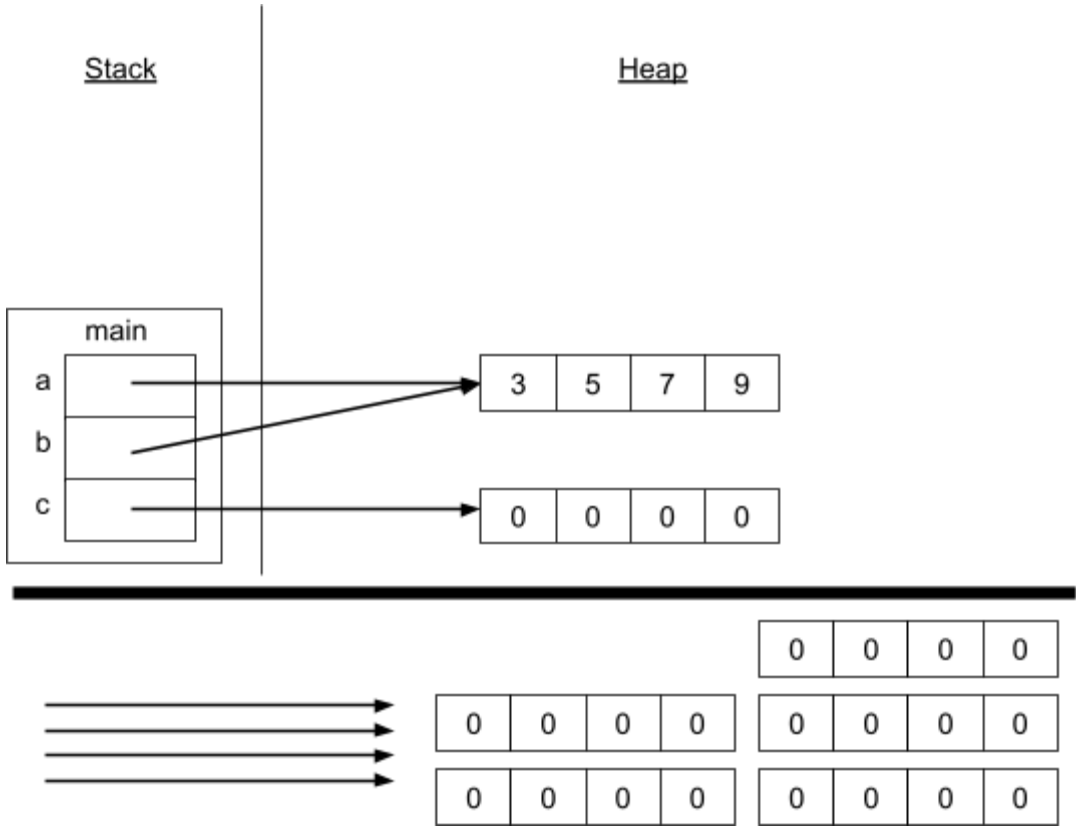
3-1)

i	val1	val2	arr
-	-	-	{1, 3, 5, 7, 9, 11, 13}
0	3	5	{8, 3, 5, 7, 9, 11, 13}
1	5	7	{8, 12, 5, 7, 9, 11, 13}
2	7	9	{8, 12, 16, 7, 9, 11, 13}
3	9	11	{8, 12, 16, 20, 9, 11, 13}
4	11	13	{8, 12, 16, 20, 24, 11, 13}
			{8, 12, 16, 20, 24, 11, 13}

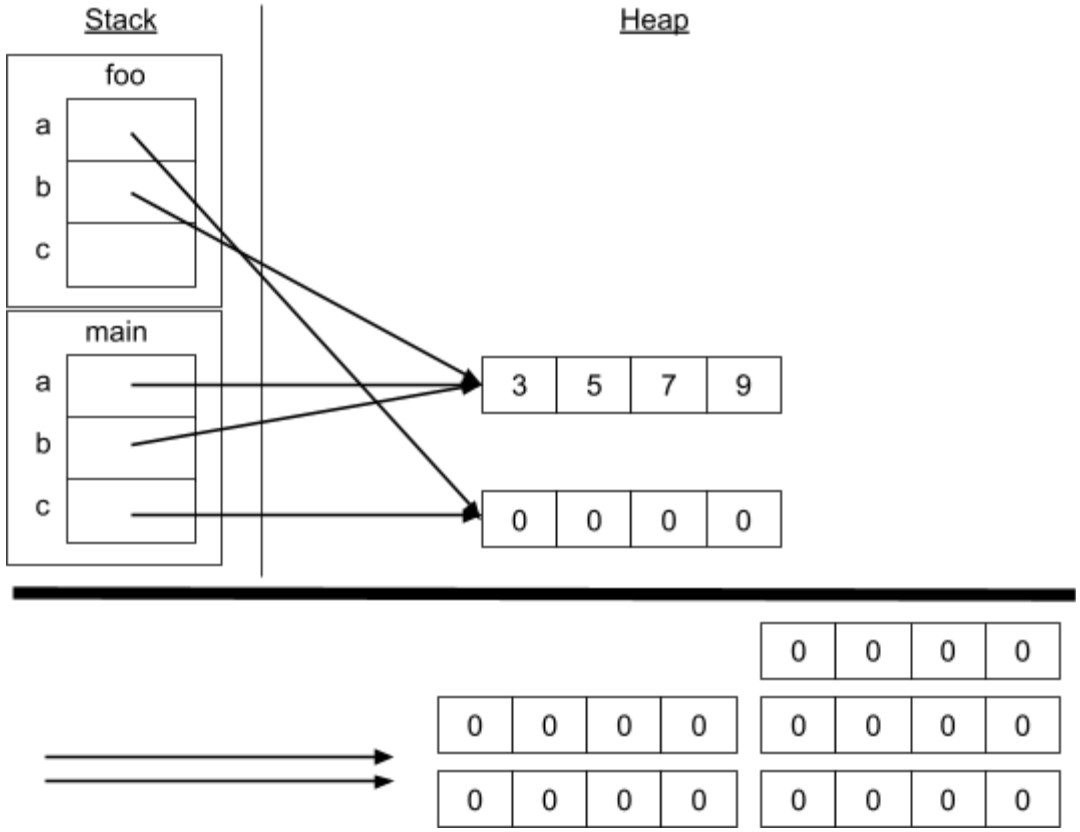
3-2) You would see the changes made to the original array from the function. This is because when you pass an array into a function it only passes a reference to that original array because an array is an object. Therefore, indexing into that reference of an array will alter the original array outside of the function.

Problem 4: Memory management and arrays

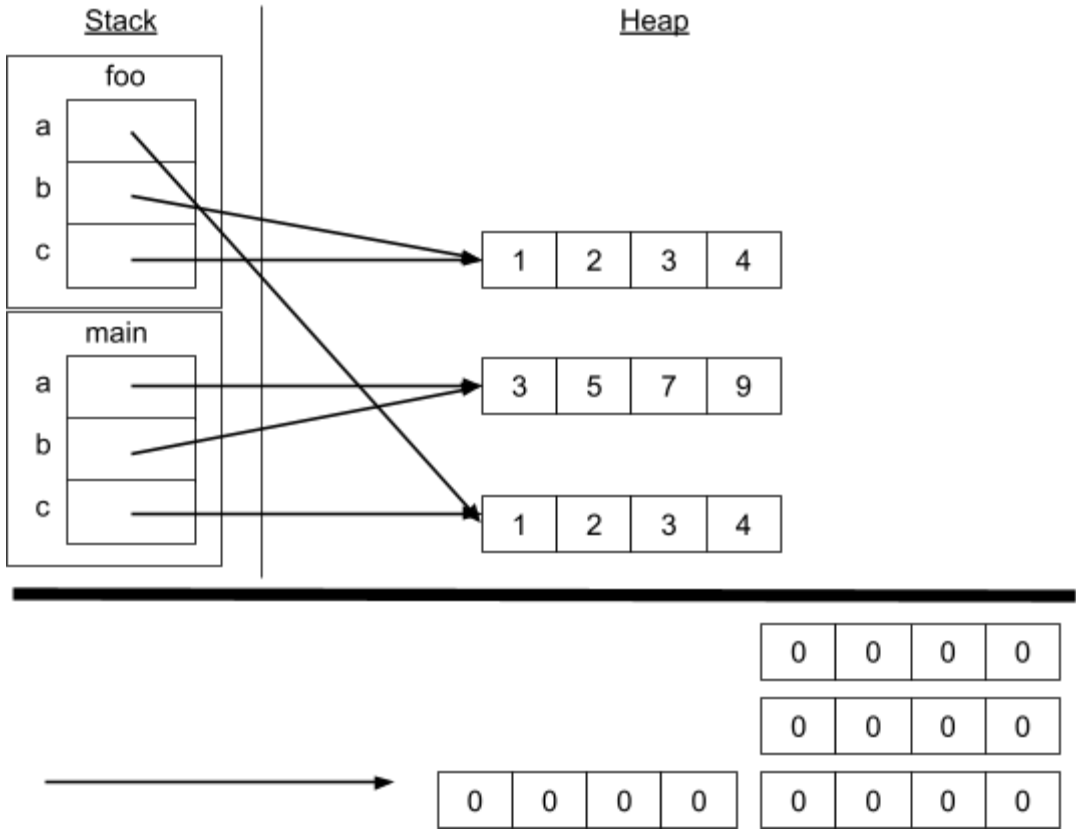
4-1)



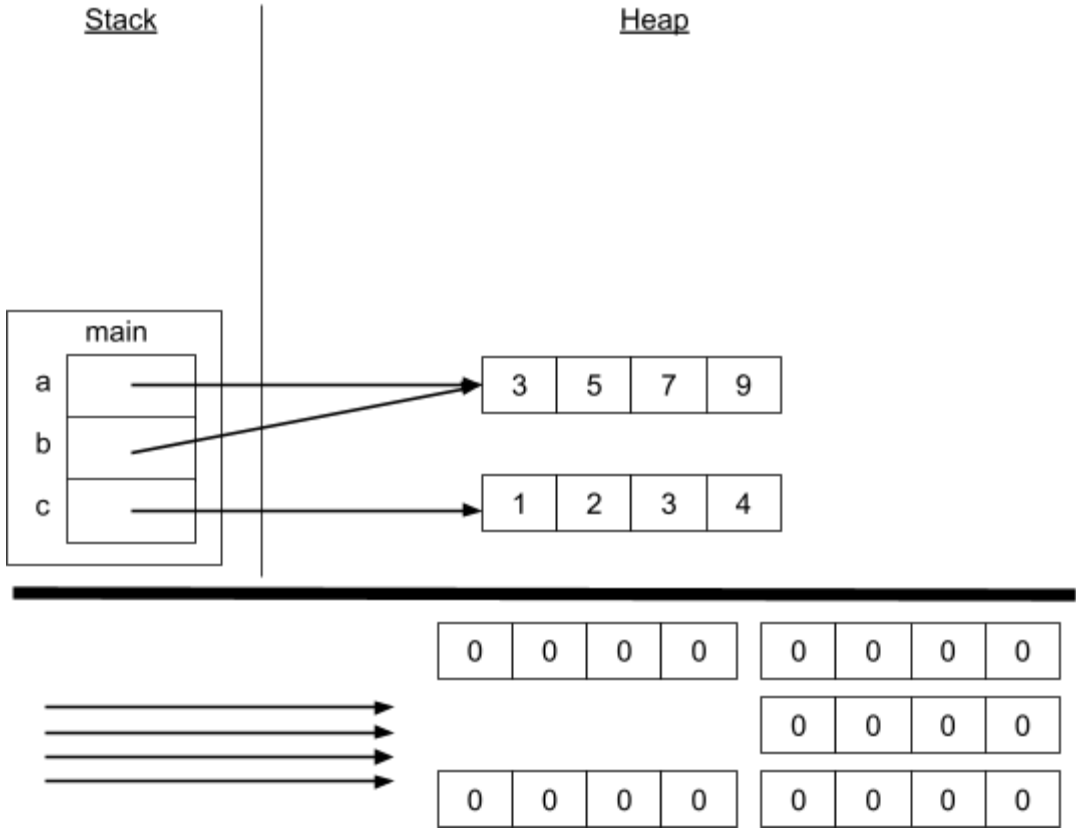
4-2)



4-3)


Stack
Heap
foo
a
b
c
main
a
b
c
1 2 3 4
3 5 7 9
1 2 3 4
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0

4-4)


Stack
Heap
main
a
b
c
3 5 7 9
1 2 3 4
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0

Problem 5: Two-dimensional arrays

5-1)

```
twoD[1][2] = 14;
```

5-2)

```
for (int i = 0; i < twoD.length; i++) {
        System.out.println(twoD[i][0]);
}
```

5-3)

```
for (int i = twoD.length - 1; i >= 0; i--) {
        System.out.println(twoD[i][(twoD.length - 1) - i]);
}
```