

Problem Set 2, Part I

Problem 0: *You will make a separate submission for this question on Gradescope. See the assignment for more details.*

Problem 1: Understanding code that uses an array 1-1)

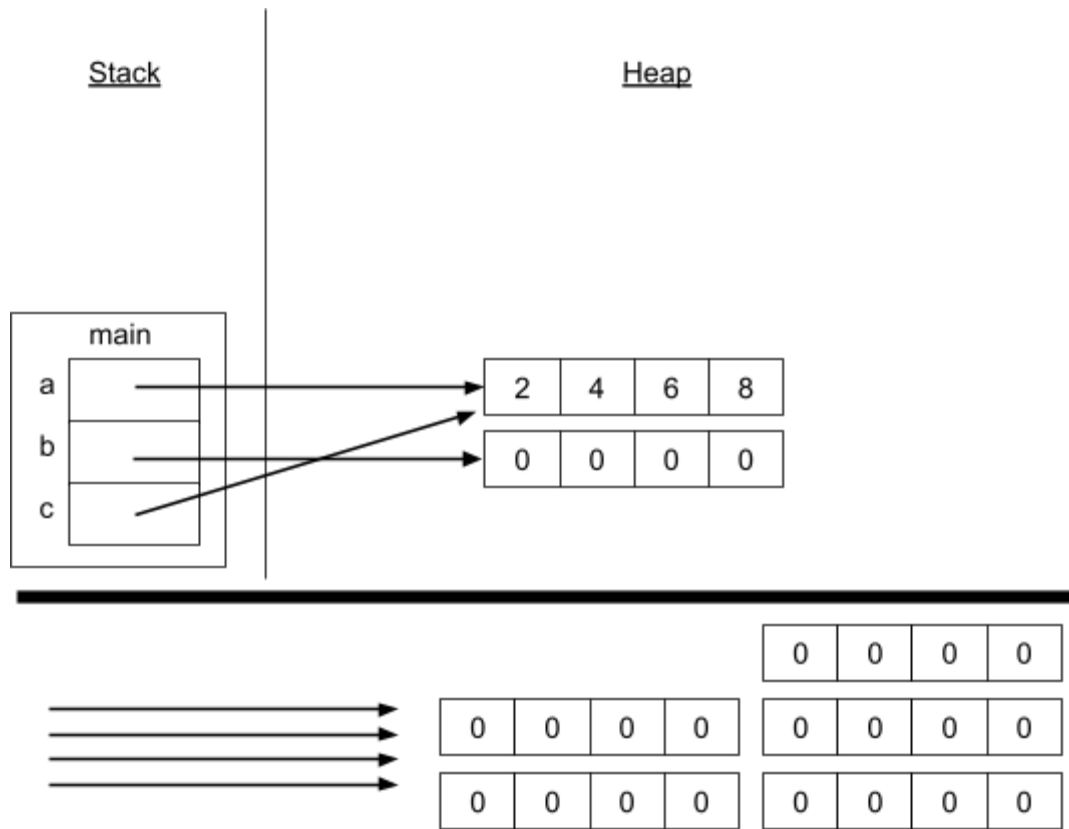
i	values
-	{1, 3, 5, 7, 9, 11, 13}
0	{4, 3, 5, 7, 9, 11, 13}
1	{4, 6, 5, 7, 9, 11, 13}
2	{4, 6, 8, 7, 9, 11, 13}
3	{4, 6, 8, 10, 9, 11, 13}
4	{4, 6, 8, 10, 12, 11, 13}
5	{4, 6, 8, 10, 12, 14, 13}

1-2) contents of array just before the method returns:
{4, 6, 8, 10, 12, 14, 2}

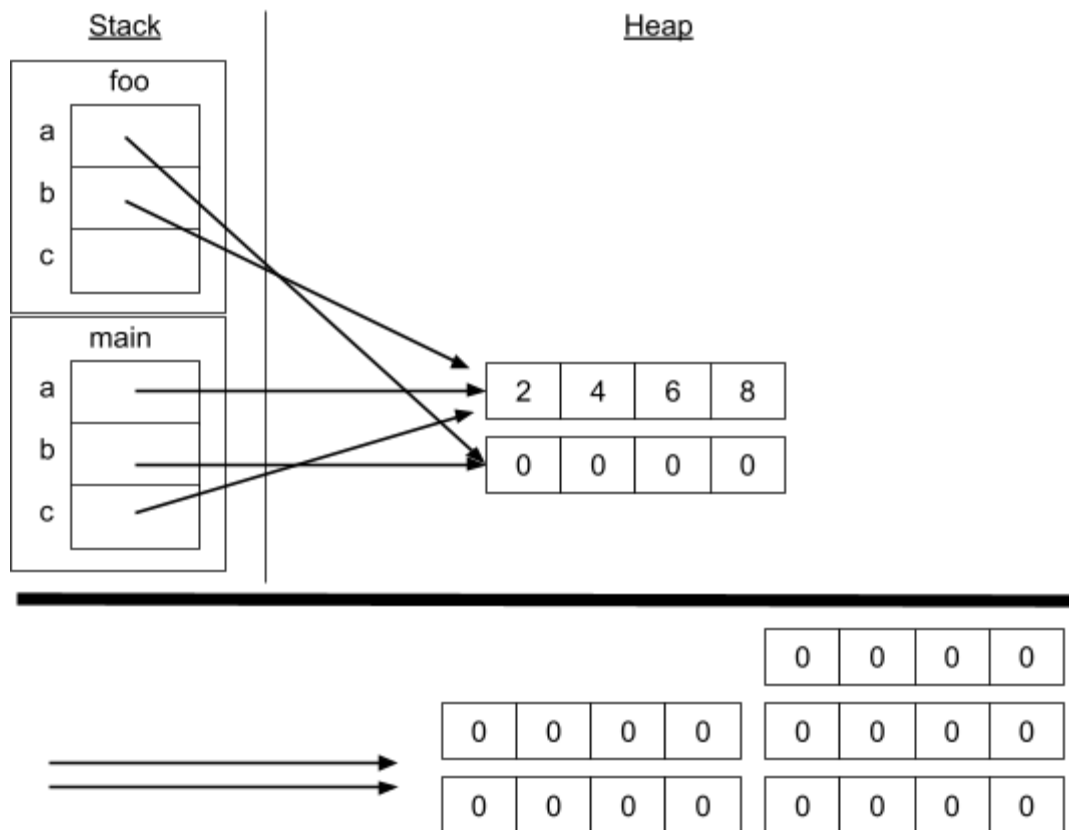
1-3) we would see the changes made by the call to the mystery method. This is because the mystery method is passed arr and ultimately values [] is pointing to the same array that arr points to. Therefore, any changes to values would change arr as well.

Problem 2: Memory management and arrays

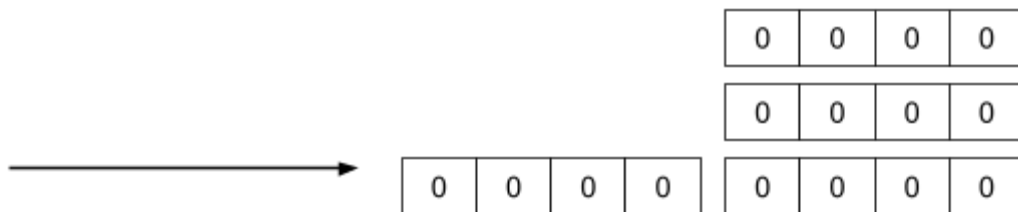
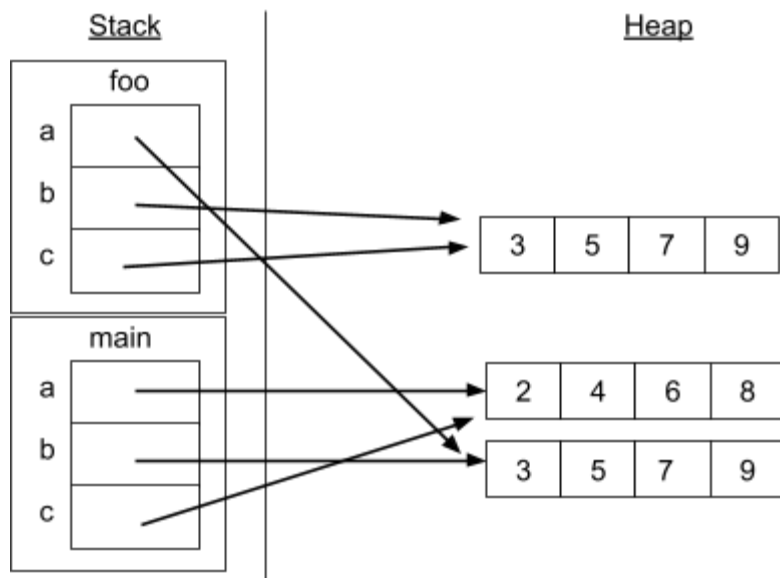
2-1)



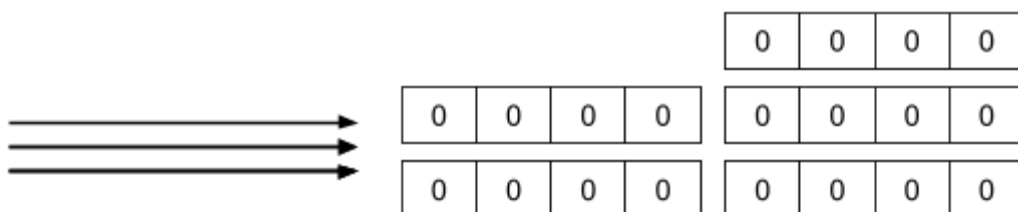
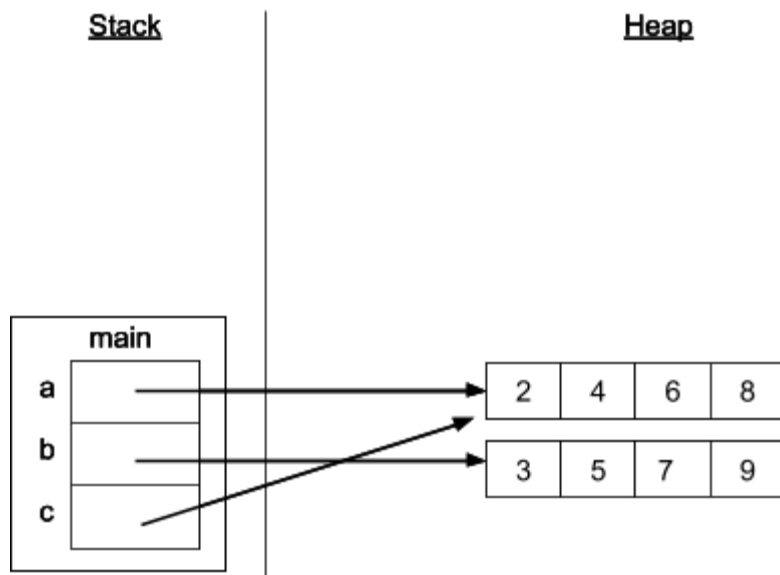
2-2)



2-3)



2-4)



Problem 3: Two-dimensional arrays

3-1) `twoD[1][2]=14;`

3-2)

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

3-3)

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

Problem 4: Our Rectangle class revisited

4-1)

type of method: mutator

Header: `public void shrink(int x){}`

4-2)

type of method: accessor

Header: `public double diagonal() {}`

4-3)

problems in code: when creating the rectangle object, there are 4 parameters. This is incorrect as the constructor only takes in two parameters.

Width is private meaning that to access it, you must use the accessor method `getWidth()`. In addition, in order to change it you must use the mutator method, `setWidth()`.

Similarly height is also a private variable meaning to access it you must use `getHeight()`

rewritten version:

```
Rectangle rect = new Rectangle(10,20);
rect.grow(30,40);
System.out.println("width = " + rect.getWidth());
rect.setWidth(rect.getWidth() + rect.getHeight());
System.out.println(rect);
```