Chapter 6 Arrays

1. See the section "Declaring and Creating Arrays."

2. You access an array using its index.

3. No memory is allocated when an array is declared. The memory is allocated when creating the array.

```
x is 60
The size of numbers is 30
```

4. Indicate true or false for the following statements:

    1. Every element in an array has the same type.
    Answer: True

    2. The array size is fixed after it is declared.
    Answer: False

    3. The array size is fixed after it is created.
    Answer: True

    4. The element in the array must be of primitive data type.
    Answer: False

5. Which of the following statements are valid array declarations?

```
int i = new int(30);
```
Answer: Invalid

```
double d[] = new double[30];
```
Answer: Valid

```
char[] r = new char(1..30);
```
Answer: Invalid

```
int i[] = (3, 4, 3, 2);
```
Answer: Invalid

```
float f[] = {2.3, 4.5, 5.6};
```
Answer: Valid

```
char[] c = new char();
```
Answer: Invalid

6. The array index type is int and its lowest index is 0.

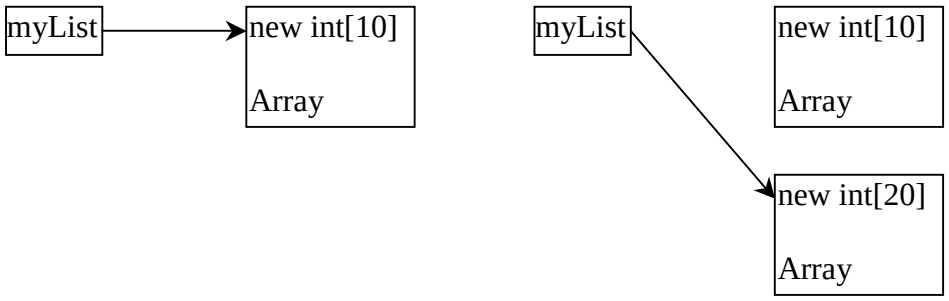
7. `a[2]`

8. A runtime exception occurs.

9. Line 3: the array declaration is wrong. It should be double[]. The array needs to be created before its been used. e.g. new double[10]
Line 5: The semicolon (;) at the end of the for loop heading should be removed.
Line 5: r.length() should be r.length.
Line 6: random should be random()
Line 6: r(i) should be r[i].

10. `System.arraycopy(source, 0, t, 0, source.length);`

11. The second assignment statement myList = new int[20] creates a new array and assigns its reference to myList.



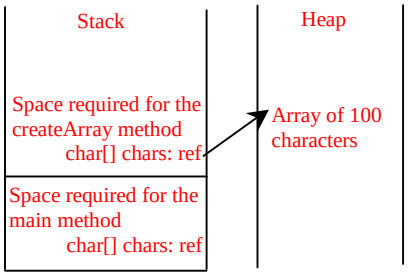
12. `False.` When an array is passed to a method, the reference value of the array is passed. No new array is created. Both argument and parameter point to the same array.

13.

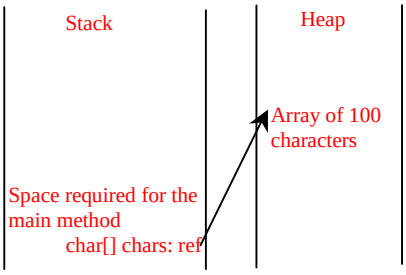
numbers is 0 and numbers[0] is 3

14.

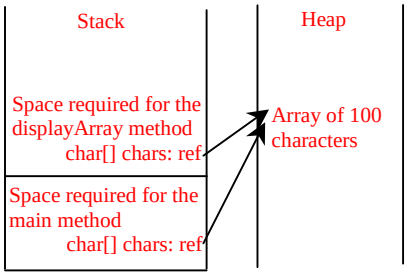
(A) Executing
createArray in Line 6



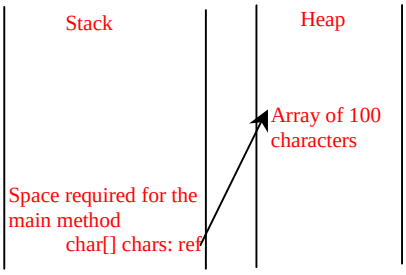
(B) After exiting
createArray in Line 6



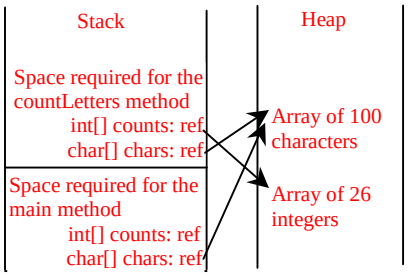
(C) Executing
displayArray in Line 10



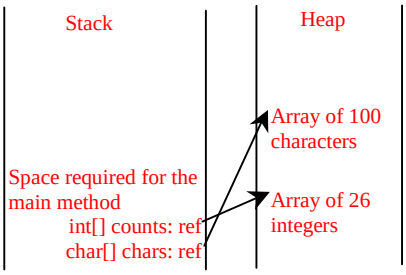
(D) After exiting
displayArray in Line



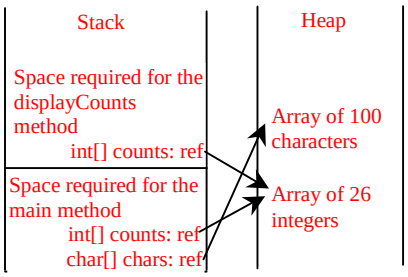
(E) Executing
countLetters in Line 13



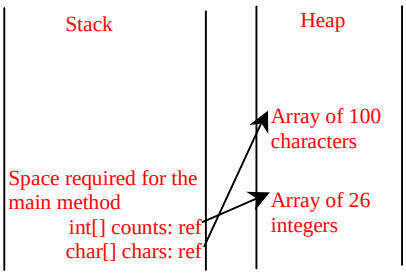
(F) After exiting
countLetters in Line 13



(G) Executing
displayCounts in Line 18



(H) After exiting
displayCounts in Line 18



15. Only one variable-length parameter may be specified in a method and this parameter must be the last parameter. The method return type cannot be a variable-length parameter.

16. The last one

```
printMax(new int[]{1, 2, 3});
```

is incorrect, because the array must of the double[] type.

17. Omitted

18. Omitted

19. Omitted

20 Simply change (currentMax < list[j]) on Line 10 to (currentMax > list[j])

21 Simply change list[k] > currentElement on Line 9 to list[k] < currentElement

22. To apply java.util.Arrays.binarySearch(array, key), the array must be sorted in increasing order.

23. You can sort an array of any primitive types except boolean. The sort method is void, so it does not return a new array.

24. Line 1: list is {2, 4, 7, 10}
Line 2: list is {7, 7, 7, 7}
Line 3: list is {7, 8, 8, 7}
Line 4: list is {7, 8, 8, 7}

25 `int[][] m = new int[4][5];`

26 Yes. They are *ragged array*.

27 array[0][1] is 2.

28.

```
int[][] r = new int[2];
```

Answer: Invalid

```
int[] x = new int[];
```

Answer: Invalid

```
int[][] y = new int[3][];
```

Answer: Valid