

Array/ArrayList Test A**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

_____ 1. What is output by the code below?

```
List<String> list;  
list = new ArrayList<String>();  
list.add("applus");  
list.add("comp");  
list.add("sci");  
System.out.println(list);
```

- a. [sci, comp, applus]
- b. [applus, comp, sci]
- c. [applus]
- d. [comp]
- e. comp, sci

_____ 2. What is output by the code below?

```
List<Integer> list;  
list = new ArrayList<Integer>();  
list.add(8);  
list.add(2);  
list.set( 0, 7 );  
list.add(1, 9);  
Collections.sort(list);  
list.remove(0);  
System.out.println(list);
```

- a. [2, 5, 9]
- b. [8, 9]
- c. [6, 9, 8]
- d. [7, 9]
- e. [2, 9]

____ 3. What is output by the code below?

```
ArrayList<Integer> list;  
list = new ArrayList<Integer>();  
list.add(3);  
list.add(2);  
list.add(-1);  
list.add(6);  
list.remove(1);  
list.add(7);  
Collections.sort(list);  
Collections.reverse(list);  
System.out.println(list);
```

- a. [9, 6, 3, -1]
- b. [7, 3, 6, -1]
- c. [7, 6, 3, -1]
- d. [6, 7, 3, -1]
- e. [7, 2, 3, -1]

____ 4. What is output by the code below?

```
List<String> list;  
list = new ArrayList<String>();  
list.add("a");  
list.add(0, "b");  
list.set(0, "c");  
list.add(1, "d");  
list.set(0, "x");  
list.add(1, "y");  
list.set(2, "e");  
System.out.println(list);
```

- a. [e, a, x y]
- b. [x, y, e, a]
- c. [a, e, x, y]
- d. [y, x, a, e]
- e. [a, b, c, d]

____ 5. What is output by the code below?

```
ArrayList<String> list;  
list = new ArrayList<String>();  
list.add("one");  
list.add("two");  
list.set( 1, "three" );  
list.add("two");  
for(String s : list)  
    System.out.print(s + " ");  
System.out.println();
```

- a. one three two
- b. three two one
- c. three three three
- d. one two three
- e. There is no output due to a runtime error.

____ 6. What is output by the code below?

```
List list = new ArrayList();  
list.add("one");  
list.add("three");  
list.add("two");  
for(int i=list.size()-1; i>=0; i--)  
    out.print(list.get(i) + " ");  
out.println();
```

- a. one two three
- b. three two one
- c. two three one
- d. three
- e. There is no output due to a runtime error.

7. **Method** `removeAllOnes` **should go through the entire** `ArrayList` **and remove all occurrences of the word** `one`. **Examine the code below and determine if the code works or if the code has issues. Select the best description of the code from the answer choices shown below.**

```
public static void removeAllOnes(ArrayList<String> all)
{
    for(int spot=0; spot < all.size(); spot++)
    {
        if( all.get(spot).equals("one") )
            all.remove(spot);
    }
}
```

- a. The code will remove all occurrences of one.
- b. The code will result in a runtime error.
- c. The code will remove only the first occurrence of one.
- d. The code will remove some of the occurrences of one, but not all of them.
- e. The code will remove none of the occurrences of the word one.

- _____ 8. The following method is intended to add the string `s` to the front and back of the `list`.

```
public static void addFrontBack(List<String> list, String s)
{
    list[0] = s;
    list[list.length-1]=s;
}
```

This code is incorrect. For the method to work which of the following changes could be made?

I. Change the lines

```
list[0] = s;
list[list.length-1]=s;
```

to

```
list.add(s);
```

Make no other changes

II. Change the lines

```
list[0] = s;
list[list.length-1]=s;
```

to

```
list.set(0,s);
```

```
list.set(list.size()-1,s);
```

Make no other changes

III. Change the lines

```
list[0] = s;
list[list.length-1]=s;
```

to

```
list.add(s);
```

```
list.add(0,s);
```

Make no other changes

- a. I only
- b. II only
- c. III only
- d. I and II only
- e. I and III only

- _____ 9. What is an advantage of using an `ArrayList` instead of an array?

- a. `ArrayLists` are faster
- b. using arrays is bad practice
- c. `ArrayLists` are resizable
- d. you should never use an `Arraylist` instead of an array
- e. none of these

____ 10. What is the output of the following code?

```
ArrayList<Integer> list = new ArrayList<Integer>();  
list.add(1);  
list.add(1);  
list.add(2);  
list.add(3);  
list.add(1);  
for(int i = 0; i < list.size(); i++)  
    if(list.get(i) == 1)  
        list.remove(i);  
System.out.println(list);
```

- a. [2, 3]
- b. [2, 3, 1]
- c. [1, 1, 2, 3, 1]
- d. [1, 2, 3]
- e. there is no output due to a syntax error

- _____ 11. Consider the following instance variable and incomplete method.
The method `sum` should sum up all of the values in `list`.

```
private List<Double> list; //assume the list contains values

public double sum()
{
    double sum = 0;

    /* blank */

    return sum;
}
```

Which of the following code segments shown below could be used to replace **/* blank */** so that method `sum` will work as intended?

- I.

```
for ( int i = 0; i < list.size(); i++)
    sum = sum + list.get(i);
```
 - II.

```
for ( int i = list.size()-1; i > -1; i--)
    sum = sum + list.get(i);
```
 - III.

```
for ( int i = 0; i < list.size(); i++)
    sum = sum + i;
```
- a. I only
 - b. II only
 - c. III only
 - d. I and III only
 - e. I and II only

- _____ 12. Consider the following instance variable and incomplete method.
The method `getBiggies` should return a new `ArrayList` that contains all values in `list` that are larger than `val`.

```
private List<Double> list; //assume list contains values

public List<Double> getBiggies( double val)
{
    ArrayList<Double> bigs = new ArrayList<Double>();

    /* blank */

    return bigs;
}
```

Which of the following code segments shown below could be used to replace **/* blank */** so that method `getBiggies` will work as intended?

- I.

```
for ( int i = 0; i < list.size(); i++)
    if( list.get(i) > val )
        bigs.add(i);
```
 - II.

```
for ( int i = 0; i < list.size(); i++)
    if( list.get(i) > val )
        bigs.add(val);
```
 - III.

```
for ( int i = 0; i < list.size(); i++)
    if( list.get(i) > val )
        bigs.add(list.get(i));
```
 - IV.

```
for ( double item : list )
    if( item > val )
        bigs.add(item);
```
- a. I only
 - b. II only
 - c. III only
 - d. II and III only
 - e. III and IV only

_____ 13. What is output by the code below?

```
int[] array = {33,14,37,11,27};  
out.println(array[array.length]);
```

- a. 14
- b. 11
- c. 33
- d. There is no output due to a runtime exception.
- e. There is no output due to a syntax error.

_____ 14. What is the output by the code below?

```
int[] array = {5,10,3,6,9,15};  
for(int i=0; i<array.length/2; i=i+2)  
{  
    array[i]=array[array.length-i-1];  
}  
out.println(array[1]);
```

- a. 5
- b. 10
- c. 9
- d. 15
- e. 6

_____ 15. What is output by the code below?

```
int[] array = {33,14,37,11,27};  
out.println(array[7/2]);
```

- a. 14
- b. 11
- c. 33
- d. There is no output due to a runtime exception.
- e. There is no output due to a syntax error.

____ 16. What is output by the code below?

```
int[] nums = new int[10];
for (int i=0; i<nums.length; i++)
{
    nums[i] = i*3;
}
out.println(nums[9]);
```

- a. 18
- b. 21
- c. 15
- d. 24
- e. 27

____ 17. What is output by the code below?

```
int[] array = {7,8,10,11,4,3};
for(int i = 0;i < array.length;i++)
    array[i]++;
System.out.println(array[2]);
```

- a. 8
- b. 9
- c. 10
- d. 11
- e. 12

____ 18. What is output by the code below?

```
int[] array = {7,8,10,11,4,3};
int[] other = array;
array[1] = 5;
System.out.println(other[1]);
```

- a. 7
- b. 11
- c. 5
- d. 15
- e. 9

____ 19. What is output by the code below?

```
int[] array = {7,8,10,11,4,3};  
int[] other = array;  
other[1] = 2;  
array[2] = 5;  
System.out.println(array==other);
```

- a. true
- b. false
- c. null
- d. 0
- e. 1

____ 20. The following code is an example of what?

```
int[] array = {7,8,10,11,4,3};  
int[] other = array;  
other[1] = 2;  
array[2] = 5;
```

- a. array copying
- b. dynamic binding
- c. aliasing
- d. renaming
- e. static binding

____ 21. Which of the following is true about arrays?

- a. they can only store ints
- b. the size of an array cannot change
- c. the size can change if more items need to be added
- d. they are a sub class of class Array
- e. all of the above

____ 22. What is output by the following code?

```
int[] array = {1,2,3,4,0};  
int aplus = array[array[array[array[array[0]]]]];  
System.out.println( aplus );
```

- a. 1
- b. 2
- c. 3
- d. 4
- e. 0

____ 23. Consider the following method below.

```
public static double check(int[] vals)
{
    double[] amounts = {.25,.1,.05,.01};
    if(amounts.length != vals.length)
        return 0.0;
    double total = 0.0;
    for(int i = 0; i < vals.length; i++)
    {
        total += vals[i] * amounts[i];
    }
    return total;
}
```

What will the method `check()` return if passed the array `{7, 0, 6, 4, 3}`?

- a. 19
- b. 2.30
- c. 1.72
- d. 2.34
- e. 0.0

- ____ 24. Consider the following instance variable and incomplete method. The method sum should sum up all of the values in array.

```
private double[] array;    //assume the array contains values

public double sum()
{
    double sum = 0;

    /* blank */

    return sum;
}
```

Which of the following code segments shown below could be used to replace **/* blank */** so that sum will work as intended?

- I.

```
for( int i=0; i<array.length; i++)
    sum = sum + array[i];
```
 - II.

```
for( int i=array.length-1; i>-1; i--)
    sum = sum + array[i];
```
 - III.

```
for( int i=0; i<array.length; i++)
    sum = sum + i;
```
- a. I only
 - b. II only
 - c. III only
 - d. I and II only
 - e. I and III only

____ 25. Which of the following lines correctly fills `/* blank */` in method `getIt()`?

```
//method getIt should return the sum of all numbers in array
public static int getIt(int[] array)
{
    int z=0;
    for(int spot=1; spot <= array.length; spot++)
    {
        /* blank */
    }
    return z;
}
```

- a. `z = z + spot;`
- b. `z = z + array[spot];`
- c. `z = z - array[spot];`
- d. `z = z + array[spot-1];`
- e. `z = z + array[spot+1];`