

Quiz: Iteration and Arrays

1. Write the statement that will declare a variable and initialize it to an array:

a) of twenty doubles, all initialized to 0.0.	<code>double[] arr = new double[20];</code>
b) of five integers and initialize it with values 1 through 5	<code>int[] arr = { 1, 2, 3, 4, 5 };</code>
c) of String array containing three English names	<code>String[] arr = { "Adam", "Bill", "Zoe" };</code>

2. Without using the `Math` library, and given the method header, write a `for` loop that calculates the power of the base: `answer = baseexponent`. Do not print any output.

```
1 public static double pow(double base, int exponent) {  
2     double answer = base;  
  
3     for(int i=2; i<=exponent ; i++) {  
4         answer *= base;  
5     }  
  
6     return answer;  
7 }
```

3. Write method `swap` that will swap the position of two elements of the array. This method is to have no return value, and take three parameters: the integer array containing the elements to swap, and the two indexes of the elements to swap.

```
1 public static void swap(int[] a, int i, int j) {  
2     int n = a[i];  
3     a[i]=a[j];  
4     a[j]=n;  
5 }
```

4. Write an **enhanced for** loop that prints all the elements of an integer array, `arr`, in order.

```
1 for(int x: arr) {  
2     System.out.print(x + " ");  
3 }
```

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5. Write a for loop that changes every element in an array, `arr`, to its square root.

```

1 for(int i = 0; i < arr.length; i++) {
2     arr[i] = Math.sqrt(arr[i]);
3 }

```

6. Write a for loop that searches the array, `arr`, in reverse order to find and return the index of the last element in the array that matches `value`, or `-1` if the element is not found in the array.

```

1 public static int linearSearchReverse(String[] arr, String value) {

3     for(int index=arr.length-1; index >= 0; index--) {
4         if(arr[index].equals(value)) {
5             return index;
6         }
7     }
8     return -1;

9 }

```

7. Study the following code for method `modifyArray`.

```

1 public static void modifyArray(int[] arr) {
2     for(int i=1; i < arr.length-1; i++) {
3         arr[i+1] = arr[i] + arr[i+1];
4     }
5 }

```

- a) Given the value of `arr = {10, 20, 30, 40, 50}`, complete the trace table.
You may not need all the rows of the table.

values at the start of each loop (line 2)				arr at the end of the each loop				
i	arr[i]	arr[i+1]	arr[i]+arr[i+1]	[0]	[1]	[2]	[3]	[4]
1	20	30	50	10	20	50	40	50
2	50	40	90	10	20	50	90	50
3	90	50	140	10	20	50	90	140
4								