1 Let's start with some syntax.

What does the following code print?

```java
int[] x = {1, 2, 3, 4, 5};
int[] y = x;
y[2] = 7;
int[] z = new int[3];
z[2] = y[3];
int[][] a = new int[3][];
a[0] = x;
a[1] = y;
System.out.println("A: " + Arrays.deepToString(a));
System.out.println("Z: " + Arrays.toString(z));
```

2 Debugging is good for your health

The following code is broken. Please identify and fix the errors.

```java
a)  int[] a;
a = {1, 2, 3};
int[] z = {4, 5, 6};
int[] y;
y = new int[](7, 8, 9);
```

```java
int[] count = {0, 2, 3, 5};
for (; count[0] < count[3]; count[0] = count[0] + 1) {
    System.out.println(count[count[0]]);
}
```

3 Filling in the blanks

Fill in the blanks to complete the following methods.

```java
b)  /** Given an array A of at least 1 element, return the
* average of all the elements.
*/
public static double average(double[] A) {
    double sum = 0.0;
    for (int i = 0; ________; i += 1) {
        sum ____________;
    }
    return sum/________;
}
```
import static java.lang.Math.max;
import static java.lang.Math.min;

/** Given an array A, return a 2 element array B where
 * B[0] is the minimum element of A and B[1] is the
 * maximum element of A.
 */
public static int[] minMax(int[] A) {
    int maxVal = Integer.MIN_VALUE;
    int minVal = Integer.MAX_VALUE;
    int[] B = new int[2];
    for (int i = 0; i < A.length; i++) {
        maxVal = Math.max(maxVal, A[i]);
        minVal = Math.min(minVal, A[i]);
    }
    B[0] = minVal;
    B[1] = maxVal;
    return B;
}

4 GoogitterBook Engineering Interview

Welcome to GoogitterBook, I hear you’re interested in a position here. First, let’s see if you can program. Given an integer x and a SORTED array A[] of N distinct integers, design an algorithm to find if there exists indices i and j such that A[i] + A[j] == x.

b) Let’s start with the naive solution.

    public static boolean findSum(int[] A, int x) {
        for (int i = 0; i < A.length; i++) {
            for (int j = 0; j < A.length; j++) {
                    return true;
                }
            }
        }
        return false;
    }

b) Can we do this faster? Hint: Does order matter here?

    public static boolean findSumFaster(int[] A, int x) {
c) Bonus for Bosses

Very good, now let’s add another dimension to this. Given an array $A[]$ of $N$ distinct integers, there exist indices $i, j, \text{ and } k$ such that $A[i] + A[j] + A[k] = 0$. Design an algorithm to solve this problem. Hint: Use your answer to part b.