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CS 61B Discussion Quiz 1

Write your name and SID above. Detach this page from your discussion handout, and turn it in when your TA instructs you to do so. **These quizzes are used as attendance.**

Questions

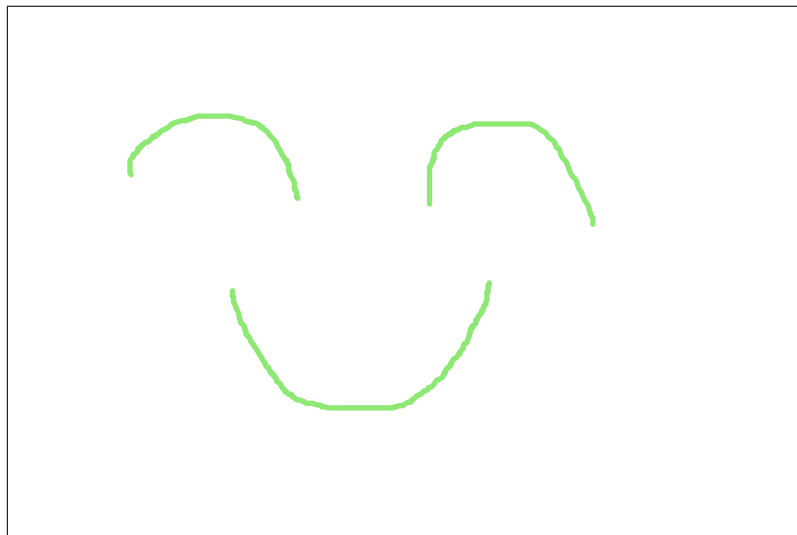
1. Tell us a little about yourself.

我是一个怎样的人？我是一个向往成功、渴望胜利的人。我现在在太原科技大学读本科，毕业后要去合肥君正从事系统软件的工作，我深知如果不是老大的平台和师兄师姐的抬举，我绝不可能有这种机会，毕竟，没有一家公司愿意相信一个二本学校的毕业生具有从事系统软件工作的能力。我也深深地知道，我以后的同事都是985/211的研究生，他们必然比我聪慧，毕竟能够考得上985/211就已经能够说明问题了，而且他们又比我多读了3年书，所以我必须足够努力、基础足够扎实，才能够在竞争中不落下风。师兄看得起我，给了我从事系统软件工作的机会，我不能让师兄和老师汗颜。我是一个怎样的人？我是一个孤独的追求者。

2. What do you expect to learn from the course?

希望能够系统地学习一遍数据结构与算法，夯实自己的基础知识。以前虽然也学过，也参加过算法竞赛、拿过算法竞赛的奖项，但是之前的学习总是觉得不够系统，不成体系，因为算法竞赛的要求不一样，所以学习的知识也不同。但是数据结构与算法是基础，所以我希望通过这门课程的学习，打好基础，同时锻炼一下自己的Java编程能力，之前都是用C++打比赛的，这次用Java，是一种别样的体验，而且我以后从事系统软件的工作，现在体验一下开发应用软件的Java，也不是一件坏事。

3. Please draw how you feel today in the box below. :)



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1 Our First Java Program

Below is our first Java program of the semester. Next to each line, write out what you think the code will do when run. *This exercise is adapted from Head First Java.*

```
1  int size = 27;
2  String name = "Fido";
3  Dog myDog = new Dog(name, size);
4  int x = size - 5;
5  if (x < 15) {
6      myDog.bark(8);
7  }
8      if x is less than 15, the object 'myDog' will invoke the method 'bark' and pass an argument '8'
9  while (x > 3) {
10     x -= 1;
11     myDog.play();
12 }
13     while x is greater than 3, x will be subtracted by 1 and the object 'myDog' invokes the method 'play', loop until x is less than or equal to 3.
14 int[] numList = {2, 4, 6, 8};
15 System.out.print("Hello ");
16 System.out.println("Dog: " + name);
17     Create an array numList, the array has four elements. Print "Hello Dog: Fido" in the terminal.
18 System.out.println(numList[1]);
19 if (numList[3] == 8) {
20     System.out.println("potato");
21 }
```

2 Mystery

This is a function (a.k.a. method). It takes an array of integers and an integer as arguments, and returns an integer.

```
1  public static int mystery(int[] inputArray, int k) {
2      int x = inputArray[k]; // 4
3      int answer = k; // 2
4      int index = k + 1; // 3
5      while (index < inputArray.length) {
6          if (inputArray[index] < x) {
7              x = inputArray[index];
8              answer = index; // 10 4
9          }
10         index = index + 1; // 4
11     }
12     return answer;
13 }
```

Describe in English what mystery returns if `inputArray = [3, 0, 4, 6, 3]` and `k = 2`.

Return 4, aka. the last following elements' index that is less than `inputArray[k]`.

Extra: This is another function. It takes an array of integers and returns nothing.

```
1 public static void mystery2(int[] inputArray) {
2     int index = 0;
3     while (index < inputArray.length) {
4         int targetIndex = mystery(inputArray, index);
5         int temp = inputArray[targetIndex];
6         inputArray[targetIndex] = inputArray[index];
7         inputArray[index] = temp;
8         index = index + 1;
9     }
10 }
```

Describe what `mystery2` does if `inputArray = [3, 0, 4, 6, 3]`.

Swap 3 and 0

3 Writing Your First Program

Implement `fib` which takes in an integer `n` and returns the n th Fibonacci number.

The Fibonacci sequence is 0, 1, 1, 2, 3, 5, 8, 13, 21,

```
public static int fib(int n) {
    if (n <= 1) return n;           // index start from 0
    if (n == 2) return 1;
    return fib(n-1) + fib(n-2);
}
```

}

Extra: Implement `fib` in 5 lines or fewer. Your answer must be efficient.

```
public static int fib2(int n, int k, int f0, int f1) {
```

```
    int a = 0;
    int b = 1;
    for (int i = 0; i < n; ++i) {
        int c = a + b;
        int a = b;
        int b = c;
    }
    return a;
}
```

}