

Quiz #8  
SOLUTIONS

Instructions:

1. Do not turn this page until told to do so.
2. This quiz is *closed book* and *closed notes*.
3. *Write your name on every page.*
4. You must give your answer to a question on the *same sheet of paper that the problem appears on*. If you run out of space on the front of the page, you may continue to the back of that page only. If you put your answer on a different page, *you will not receive credit for that problem!*
5. For problems that ask you to write code, you should only write the method indicated in the problem. You can assume the following import statement and keyboard declarations:

```
import java.util.Scanner;
```

```
Scanner keyboard = new Scanner (System.in);  
or Scanner kbd = new Scanner (System.in);  
or Scanner input = new Scanner (System.in);
```

6. You may use "SOP" as an abbreviation for "System.out.print" and "SOPln" for "System.out.println".
7. You do not need to do any error checking of input values, *unless the problem specifically asks you to do so!*
8. If you are caught looking at other papers or communicating with other students in any way, you will receive an **F** for this quiz.

**Question 1 (20 pts) Tracing.**

What is the output of the following Java program?

```
public static void main(String[] args)
{
    int i, j = 1, k, n = 4;

    for(i=0; i<n; i++)
    {
        System.out.print("i");
    }

    System.out.println();

    while (j <= n*2)
    {
        System.out.print(j);
        j = j + 2;
    }

    System.out.println("j is now " + j);

    n = 3 + 4 * 10 + 2;
    System.out.println("n is " + n);

    k = 6;
    j = 3;
    i = 2;
    do
    {
        System.out.println("j is " + j);
        while(i<j)
        {
            i++;
            System.out.print("BLAH");
        }
        System.out.println();
        j=j+3;
    }
    while (j <= k);

    System.out.println("j is " + j);
    System.out.println("k is " + k);
}
```

**Output**

```
iiii
1357j is now 9
n is 45
j is 3
BLAH
j is 6
BLAHBLAHBLAH
j is 9
k is 6
```

**Question 2 (20 pts) Coding.**

Write the Java method *xMarksTheSpot* that takes a positive integer *n*, which you should assume is odd and at least 5. The method returns a reference to a new two-dimensional array of characters with *n* rows and *n* columns initialized as follows:

- all cells in the diagonal of the array contain the character 'X',
- all other cells contain the period character: '.'

	0	1	2	3	4	5	6
0	X	.	.	.	.	.	X
1	.	X	.	.	.	X	.
2	.	.	X	.	X	.	.
3	.	.	.	X	.	.	.
4	.	.	X	.	X	.	.
5	.	X	.	.	.	X	.
6	X	.	.	.	.	.	X

---

```
public static char[][] xMarksTheSpot(int n){
    char[][] arr = new char[n][n];

    for(int i = 0; i < arr.length; i++){
        for(int j = 0; j < arr[i].length; j++){
            if(i == j || i + j == arr.length - 1)
                arr[i][j] = 'X';
            else
                arr[i][j] = '.';
        }
    }

    return arr;
}
```