1. Draw a picture showing the array contents after execution of the following code fragments.

```java
int[][] table = new int[2][3];
for (int i=0; i < table.length; i++)
    for (int j=0; j < table[i].length; j++)
        table[i][j] = i * j + 10;
```

```
0  1  2
0  10 10 10
1  10 11 12
```
2. Consider the following program:

```java
// ProductCodes.java       Author: Lewis/Loftus
import java.util.Scanner;
public class ProductCodes
{
    //-----------------------------------------------------------------
    //  Counts the number of product codes that are entered with a
    //  zone of R and and district greater than 2000.
    //-----------------------------------------------------------------
    public static void main(String[] args)
    {
        String code;
        char zone;
        int district, valid = 0, banned = 0;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter product code (XXX to quit): ");
        code = scan.nextLine();
        while (!code.equals("XXX"))
        {
            zone = code.charAt(9);
            district = Integer.parseInt(code.substring(3, 7));
            valid++;
            if (zone == 'R' && district > 2000)
                banned++;
            System.out.print("Enter product code (XXX to quit): ");
            code = scan.nextLine();
        }
        System.out.println("# of valid codes entered: " + valid);
        System.out.println("# of banned codes entered: " + banned);
    }
}
```

a) Give examples of product code inputs that would cause the program to…

- _TTTTTTTTTTTTTT____ throw a NumberFormatException
- ______XXX______ cause the program to terminate, without error.

b) Suppose you would like to catch and handle NumberFormatException by skipping this input using the following catch clause:

```java
    catch (NumberFormatException exception)
    {
        System.out.println("Bad code: " + code);
    }
```

Annotate `ProductCodes.java` above to:
- show where the `try` and `catch` should be placed; and
- draw a rectangle clearly indicating the code that is included in the try block.
1. Draw a picture showing the array contents after execution of the following code fragments.

```java
int[][] table = new int[4][2];
for (int i=0; i < table.length; i++)
    for (int j=0; j < table[i].length; j++)
        table[i][j] = i - j;
```

```
0 1  
0 0 -1
1 1 0
2 2 1
3 3 2
```
2. Consider the following program:

```java
// ProductCodes.java       Author: Lewis/Loftus
import java.util.Scanner;
public class ProductCodes
{
    //-----------------------------------------------------------------
    // Counts the number of product codes that are entered with a
    // zone of R and and district greater than 2000.
    //-----------------------------------------------------------------
    public static void main(String[] args)
    {
        String code;
        char zone;
        int district, valid = 0, banned = 0;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter product code (XXX to quit): ");
        code = scan.nextLine();
        while (!code.equals("XXX"))
        {
            zone = code.charAt(9);
            district = Integer.parseInt(code.substring(3, 7));
            valid++;
            if (zone == 'R' && district > 2000)
                banned++;
            System.out.print("Enter product code (XXX to quit): ");
            code = scan.nextLine();
        }
        System.out.println("# of valid codes entered: " + valid);
        System.out.println("# of banned codes entered: " + banned);
    }
}
```

a) Give examples of product code inputs that would cause the program to...

- ___TTT______________ throw a StringIndexOutOfBoundsException
- ___AAA3446AAR______ NOT throw any exception but be counted as “banned”

b) Suppose you would like to catch and handle StringIndexOutOfBoundsException by skipping this input using the following catch clause:

```java
    catch (StringIndexOutOfBoundsException exception)
    {
        System.out.println("Bad code: " + code);
    }
```

Annotate `ProductCodes.java` above to:

- show where the `try` and `catch` should be placed; and
- draw a rectangle clearly indicating the code that is included in the try block.