Northeastern Illinois University **Name:_____**
CS 200: Programming I
Professor Yehuda Gutstein **NEIU-ID:_____**

Quiz #7
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.

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Question 1 (20 pts) Tracing.
What is the output of the following Java program?

```
public class Tracing{
   public static void main(String[] args){
      String[] words = {"ONE","TWO","THREE","FOUR","FIVE"};
      int k = 0;

      for(int i = 0, j = 1; i < words.length; i++){
         k = j;
         System.out.println(j + ": " + words[i]);
         updateWord(words, i, j++);
      }

      for(int i = words.length - 1, j = k; i >= 0; i--)
         System.out.println(j-- + ": " + words[i]);
   } // end of main

   public static void updateWord(String[] w, int a, int b){
      if(w.length % b == 0)
         w[a] = w[a] + b;
      else
         w[a] = a + w[a];
   } // end of updateWord
} // end of class
```

Output

```
1: ONE
2: TWO
3: THREE
4: FOUR
5: FIVE
5: FIVE5
4: 3FOUR
3: 2THREE
2: 1TWO
1: ONE1
```

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Question 2 (20 pts) Coding.

- We say that a value is "everywhere" in an array if for every pair of adjacent elements (i.e. elements that are next to each other) in the array, at least one element of the pair is that value.
- Write a Java method named **isEverywhere** that accepts two parameters: an integer array, **arr** and an integer, **num**.
- The method should return true if the integer **num** is "everywhere" and false otherwise.
- Samples:

Example 1: Assume array = {1, 2, 1, 3} then isEverywhere(array, 1) returns true.

Example 2: Assume array = {1, 2, 3, 1} then isEverywhere(array, 1) returns false.

Example 3: Assume array = {1, 2, 1, 3} then isEverywhere(array, 2) returns false.

```
public static boolean isEverywhere(int[] arr, int a){
     boolean everywhere = true;
     int i = 0;
     while (everywhere && i < array.length - 1)
     {
          if (array[i] != a && array[i + 1] != a)
               everywhere = false;
          else
               i++;
     }
     return everywhere;
}
```