Overview

A Sudoku is a logic-based combinatorial number-placement puzzle. The objective is to fill a 9x9 grid with digits so that each column, each row, and each of the nine 3x3 nonets that compose the grid contains all of the digits from 1 to 9.

Your task: write a set of tools that would be useful in writing a program that generates and solves Sudokus. In particular, write the set of static Java methods called in main of SudokuTools that return the specified values.

Input: the given main shows sample data. When your program is tested, it will be called with different data - the grader will be changing the data in main of the program you turn in. The data will only be changed in ways that do not prevent the program from compiling.
The tools each use a String to represent the digits within a nonet with cell values recorded in the string left to right from row 1 to row 3. For example: the String “821659437” represents the nonet:

```
8  2  1
6  5  9
4  3  7
```

**Question 1**

`boolean isCorrectSyntax(String str)`
Must be a private static method that returns true if and only if the input String has 9 characters, all of which are the digits greater than 0.

**Question 2**

`boolean hasNoRepeatedDigits(String str)`
Must be a private static method that returns true if and only if `isCorrectSyntax` returns true for the input String AND the input String contains no repeated digits.

**Question 3**

`int getNumAt(String str, int col, int row)`
Must be a private static method that returns the integer value in the specified column and row of the specified nonet. Must return 0 if the specified String is not a valid nonet, of if the specified column or row is out of range (1 - 3).

**Question 4**

`int getRowSum(String str, int row)`
Must return the sum of the values in the specified row of the specified nonet. Must return 0 if the specified String is not a valid nonet, or if the specified row is out of range (1 - 3).

**Question 5**

`int getColSum(String str, int col)`
Must return the sum of the values in the specified column of the specified nonet. Must return 0 if the specified String is not a valid nonet, or if the specified column is out of range (1 - 3).
Grading Rubric [20 points total]

Your score is equal to output by a version of main that will be just like the version shown below, except with different parameters passed to each of your static methods.

Note: make sure your program does not crash on one of the tests: then it will not output anything.

```java
public static void main(String[] args) {
    int myGrade = 0;
    if (isCorrectSyntax("123456789") == true) myGrade++;
    if (isCorrectSyntax("1234567899") == false) myGrade++;
    if (isCorrectSyntax("12345678") == false) myGrade++;
    if (isCorrectSyntax("1234x6789") == false) myGrade++;
    if (isCorrectSyntax("012345678") == false) myGrade++;
    if (isCorrectSyntax("123456799") == true) myGrade++;
    if (isCorrectSyntax(null) == false) myGrade++;
    if (hasNoRepeatedDigits("123456789") == true) myGrade++;
    if (hasNoRepeatedDigits("113456789") == false) myGrade++;
    if (hasNoRepeatedDigits("276951338") == false) myGrade++;
    if (hasNoRepeatedDigits("276z51338") == false) myGrade++;
    if (getNumAt("492357816", 1,1) == 4) myGrade++;
    if (getNumAt("492357816", 2,3) == 1) myGrade++;
    if (getNumAt("492357816", 2,4) == 0) myGrade++;
    if (getNumAt("49235x816", 2,2) == 0) myGrade++;
    if (getRowSum("215368794", 2) == 17) myGrade++;
    if (getRowSum("215368794", 0) == 0) myGrade++;
    if (getRowSum("215368794", 0) == 0) myGrade++;
    if (getRowSum(null, 1) == 0) myGrade++;
    System.out.println("Student’s lab grade is " + myGrade);
}
```