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// Unit 2 Assignment - File Input/Output

import java.io.\*;

public class UniqueYear

{

// Main Method

public static void main(String[] args) throws IOException

{

try

{

// Initialize i/o components

FileReader fileIn = new FileReader("yearinput.txt");

FileWriter fileOut = new FileWriter("yearoutput.txt");

BufferedReader read = new BufferedReader(fileIn);

PrintWriter write = new PrintWriter(fileOut);

// Store the # of lines and create a blank String array for our years

int years = Integer.parseInt(read.readLine());

String[] year = new String[years];

// Store all of the years into the array

for(int i=0;i<years;i++)

year[i] = read.readLine();

write.println(years); // Print out the number of years in the array

// Print out the next year with unique digits for each year in the array

for(int i=0;i<year.length;i++)

write.println(nextUnique(year[i]));

// Close our i/o components

read.close();

write.close();

System.out.println("Calculations completed."); // Inform the user that our program has fulfilled its purpose

}

catch(Exception e)

{

// Print out an error message and store the error to a text file, if the input could not be found

FileWriter fileOut = new FileWriter("yearoutput.txt");

PrintWriter write = new PrintWriter(fileOut);

write.println(e.getMessage());

write.close();

System.out.println("Error.\nThe program was unable to run.\nCheck that the input file is correctly titled \"yearinput.txt\" and is stored in the appropriate folder.\nThe error message has been printed to \"yearoutput.txt\"");

}

} // End Main Method

// Next Unique Method:

// Returns the next year with unique digits after the given year (both as Strings)

public static String nextUnique(String year)

{

boolean unique = false;

while(!unique) // Keep adding one to our year until we find a unique year

{

year = (Integer.parseInt(year) + 1) + ""; // Parse as an integer, add one, then convert back to a String (I would rather do this in one line than create a bunch of unused variables)

if(isUnique(year))

unique=true; // Break the loop if this year is unique

}

return year; // Return the first unique year

} // End Next Unique Method

// Is Unique Method:

// Returns a true or false boolean as to whether our not the given year (as a String) is comprised of unique characters

public static boolean isUnique(String year)

{

for(int i=0;i<year.length()-1;i++) // For each character

{

for(int j=i+1;j<year.length();j++) // For each character ahead of our current character

{

if(year.charAt(i)==year.charAt(j)) // If the two characters are the same...

return false; // Then this string is not comprised of unique digits...

}

}

return true; // Otherwise, the String is comprised of unique digits

} // End Is Unique Method

} // End Main Class