The International Standard Book Number (ISBN) is a numeric book identifier found in published books. For instance,

Java Pocket Guide is assigned the ISBN-13   978-1491938690

L'arte la vita e un pizzico di Van Gogh is assigned the ISBN-13   979-12-200-0852-5

The last digit of an ISBN-13 is a check digit based on the first 12 digits.

For this assignment you must design and code a program named `Checkdigit` that generates an ISBN-13 check digit. For each input from the user your program must

a) obtain input from the user as a string using the `Scanner` method `next();`
b) if the length of the input is 9 characters then prepend with "978"
c) generate the check digit

Your program must continue generating check digits until the user enters "stop". "stop" could be entered in any mix of upper and lower case.

Input from the user will be digits without hyphens. For example, the user would enter 979122000852 and not 979-12-200-0852. Test your program with several inputs, for example:

```
149193869
978149193869
979122000852
01234
stop
```

The Wikipedia article https://en.wikipedia.org/wiki/International_Standard_Book_Number has two sections that are directly relevant "ISBN-13 check digit calculation" and "ISBN-10 to ISBN-13 conversion".

The algorithm given in Wikipedia requires the digits (from left to right) to be multiplied by the alternating values 1, 3, 1, 3, … etc. Wikipedia shows the calculation as:

$$r = \left(10 - \left(x_1 + 3x_2 + x_3 + 3x_4 + \cdots + x_{11} + 3x_{12}\right) \bmod 10\right)$$

$$x_{13} = \begin{cases} r & ; r < 10 \\ 0 & ; r = 10 \end{cases}$$

The output for each number entered by the user is a 13 digit number. For example if the input is 979122000852 then the output is 9791220008525.

All classes **must** have comments at the beginning containing your name and student number. **Submit** the file `Checkdigit.java` to the email corresponding **to your lab section** with a **Subject line** Assignment 1

E.g. if you are registered in lab ACS-1903L-070 then the email address to send to is
1903L-070@acs.uwinnipeg.ca

Sample program demonstrating characters and their corresponding integer value → **next page**

```java
/**
 * Program displays several characters and shows
 *    - the character,
 *    - the integer representing the character, and
 *    - an adjusted value
 * For numeric digits, the adjusted value is the value
 * to be used in arithmetic calulations.
 */
public class Example
{
    public static void main(String[] args)
    {
        String number = "ABCabc1234567890";
        int i=0;
        System.out.println("char\tactual\tadjusted");
        while (i<number.length()){
            char c = number.charAt(i); // character
            System.out.print(c);
            int digit = c; // character assigned to an int
            System.out.print("\t"+digit);
            digit = digit -48; // int value minus 48
            System.out.println("\t"+digit);
            i=i+1;
        }
    }

}
```

Output is:
```
char    actual      adjusted
A       65          17
B       66          18
C       67          19
a       97          49
b       98          50
c       99          51
1       49          1
2       50          2
3       51          3
4       52          4
5       53          5
6       54          6
7       55          7
8       56          8
9       57          9
0       48          0
```