CSC 142 Project 3 **ISBN Identifier** **25 points**

Project Background Information

An ISBN (International Standard Book Number) identifies a unique publication and can be used to look up your course textbooks. An ISBN is ten digits. The first nine digits must each be one of the decimal digits (0 – 9), and the tenth digit can either be a decimal digit or a capital X. The ISBN may contain three single dashes, with each falling anywhere in between any other two characters. An ISBN may have either zero or exactly three dashes. It may not begin or end with a dash, and consecutive dashes are not allowed.

Sample (valid) ISBNs:

0-201-88337-6
0-13-117334-0
0821211315 (no dashes okay)
1-57231-866-X (checksum X)

The last character of the ISBN is a checksum. The checksum is determined by the first nine digits: it is computed by taking modulo 11 (the remainder after dividing by 11) of the sum of each decimal digit multiplied by it's position in the ISBN. The capital letter X corresponds to a checksum of 10, and the location of the dashes are ignored (i.e. a digit's place is determined only by the digits in the ISBN, not the dashes).

Checksum sample computations:

0-201-88337-6
(0*1 + 2*2 + 0*3 + 1*4 + 8*5 + 8*6 + 3*7 + 3*8 + 7*9) mod 11 = 6 (last digit checksum)

1-57231-866-X
(1*1 + 5*2 + 7*3 + 2*4 + 3*5 + 1*6 + 8*7 + 6*8 + 6*9) mod 11 = 10 (X last digit checksum)

Some invalid ISBNs:

0-201-8A337-6 (bad digit)
0-201-88337-63 (too many digits)
0-201-88-337-6 (too many dashes)
0-201883376 (not enough dashes)
0-201-88337-3 (wrong check sum)
-013-117334-0 (beginning or ending dash)
157231--866-X (sequential dashes)
013-1134-0 (too few digits)

For more information on ISBN's, check out www.isbn.org

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Project Description

Write a Java program that will validate user-entered ISBN's. For each ISBN, the program should state that it is valid or that it is invalid along with the appropriate error message (see above invalid ISBN's). The program should run until the user inputs ISBN numbers to test (valid or invalid) and should quit when the user enters "q" or "Q" to quit.

Additional Details:

- Comment your program with a complete header, including program name, programmer name, course name or number, date and program description.
- Your code should contain comments for each method, including pre/post conditions and purpose of each method.
- Your code should contain descriptive comments throughout the code.
- Program should begin by calling a function that prints the program description to the console.
- The user should then be given the option to enter an ISBN or Q to quit, and the program should run until user decides to quit.
- Submit your source code file (*.java) via course Canvas page,
- Submit a word file (*.doc) containing your reflections on this project. Include comments on things like the following questions: How difficult was this project and why? What did you learn from this project? Approximately how long did the project take? What was the hardest part of the assignment for you and why? Where did you need help? What was the best part of assignment and why?

Grading Rubric

- Complete descriptive commenting (5 points)
- User-input interface (instruction, error messages, quit function) (5 points)
- Correctly catching invalid ISBN's, with correct error message (10 pts)
- Validating checksum for valid ISBN's (3 pts)
- Reflections document (2 points)