

cs171: Introduction to Programming  
Programming Assignment 6

**Due Date: changed to Monday, March 6**

**Points: 70**

A sequence of numbers is *periodic* if it repeats over and over again. For example: 1, 2, 3, 1, 2, 3, 1, 2, 3, 1, ... is a periodic sequence but: 1, 2, 3, 4, 1, 2, 3, 1, 2, ... is not. The *period* of a periodic sequence is the length of the repeating part. Our first example above has period = 3 since there are three numbers that repeat over and over again.

- Prompt the user to enter an integer  $n$ . Then create an array to hold  $n$  other integers. Now read in and store these additional  $n$  integers from the keyboard. These  $n$  numbers form a sequence.
- You are to determine whether the sequence of  $n$  numbers entered is periodic or not. Look for any repeating pattern. If there is a possible periodic sequence then print the message

The sequence is periodic with period  $k$ .

where  $k$  is what ever you determine the period to be. If the sequence is not periodic then print the message:

The sequence is not periodic.

- Follow the format of the output above EXACTLY. Do not print any other messages to the screen.
- Follow the guidelines of formatting, variable naming, and commenting.

Name your program `Period.java` and email me the source code before the start of class on Monday, March 6.

Here is some example input (with  $n$  given first, followed by  $n$  numbers for the sequence). Each sequence has the correct answer reported afterward:

6 1 2 3 1 2 3  
The sequence is periodic with period 3.  
6 1 2 3 4 1 2  
The sequence is periodic with period 4.  
6 1 2 3 4 1 3  
The sequence is not periodic.  
6 1 2 3 4 5 6  
The sequence is not periodic.  
6 1 2 3 4 5 1  
The sequence is periodic with period 5.