20.2 Program 1: Passwords

Objectives

* Use 1D and 2D arrays
* Code in an IDE and upload to grading program
* Use String class methods
* Use class level variables
* Write "test program" as a static main method
* Use documentation and code structure according to class guidelines

Program 1: Password

In this assignment, you are to implement a class called **PasswordProg1** that you will turn in through Zybooks.

The class will have a global 2-D array of type String that will store a set of three student passwords over four months at the end of each month in order to analyse the number of times a given student is to change his password over a period of time. Dimension 1 (rows) should represent the student and Dimension 2 (columns) should represent the password. For example, [1][2] should return the third password of the second student. Do note that array indexing starts with zero in Java. This is the only global variable that you will be required to have.

The following non-static public methods have to be declared in your class:

* Constructor
  + The constructor will accept in an 1-D array of type String that contains the twelve password for the three students over four months. You are to then assign the 2-D global array the passwords provided in this 1-D array in the constructor. The order in which the password are stored is as per the following format:

[Student1Password1, Student1Password2, Student1Password3, Student1Password4, Student2Password1, ... , Student3Password4]

(Note your array may have duplicate passwords if a student did not update their password that month.)

* hasWord()
  + The method will accept in a password of type String and return true if the password has been used by any student; false otherwise.
* unlockAll()
  + The method will overwrite all the passwords in the global 2D array with the password "unlock". The method does not accept any parameters and does not return anything.
* longest()
  + The method will return a String containing the longest password. If there are two or more passwords with the same length, the method should return the password appearing first in the array.
* mostFrequent()
  + The method will return an int that is the index of the student that has changed the password most frequently. If two or more students have the same number of changes (that is also the most), the index of student that comes earlier in the array will be returned.
* getId()
  + Here it is again! You first saw it in Guidelines.java. This method returns a String :

Program 1, Your Name

Turning in the Program

When you are satisfied with the program (or are out of time and want some partial credit), submit the following file:

* PasswordProg1.java
* See the "Uploading source file to ZyBooks lab" video on our Canvas course web site for help.
* Your program will be graded automatically against the requirements.
* You may submit as many times as necessary.
* The automatic grading program is very specific. If you feel you have the correct solution but are not receiving full credit, please
  + Carefully review the output -- you might need to scroll all the way to the right to find what is wrong with a particular output.
  + Verify you have the correct names for the program itself and all methods.
  + Check your calculations by hand: was there a logic error?
  + Review the requirements: did you miss a step? misinterpret a requirement?
  + If all these check out, contact the T.A. for assistance.