**2501 Session 8 Lab**

In this lab we will work with Scanner, a text file and toString().

* **Student.java**
  + fields for first name, last name, id number, birth year, percentage grade (a double) and pass (a Boolean)
  + no-arg constructor
  + overloaded constructor for all fields except pass.
    1. Pass will be set based on the grade
       1. Grade of 60 or more will be set to true
       2. Grade under 60 will be set to false
    2. All parameters will be validated and throw IllegalArgumentException for an invalid value
  + Getters and setters will be provided for each non-final field
    1. Setters will validate but will ignore bad parameters and make no change to the field
  + toString() will be overridden
* **Lab8Driver.java**
  + field **HashMap<String, Student> students**;
  + Implements the main(...) method that will call each of two methods
    1. **void readFromPrompt()** will use scanner to allow users to enter student data when prompted. Data entered will be used to create Student objects one at a time and add them to the HashMap.
       1. Uses a do/while loop and a boolean to ask if you want to create a Student. “y” for yes, “n” for no.
       2. If “y” then the program will present a succession of prompts to enter Student data. If “n” then the Boolean will be changed to false and the method will terminate with a message.
       3. See sample hint and sample run below
    2. **void readFromFile()** will read data from the student\_data.txt file (provided) and create Student objects and add them to the same HashMap above. Don’t forget to close the Scanner when finished.
  + **void showStudents()** will display the contents of the HashMap to the console calling Student.toString() for each Student

**HINT: do/while**

**boolean** proceed = **true**;

**do** {

System.***out***.println("Do you wish to create a Student? (y/n): ");

String choice = scanner.next().toLowerCase();

**if** (choice.equals("y")) {

// Here you will prompt for data, create Students and add

// to the HashMap. There will be a separate prompt for

// each piece of data.

} **else** {

proceed = **false**;

}

} **while** (proceed);

**Sample runtime:**

DEBUG: calling readFromPrompt

Do you wish to create a Student? (y/n):

y

Enter first name:

Nosaj

Enter last name:

Nosirrah

Enter id number:

A00123456

Enter birth year as a whole number:

2000

Enter grade (percent) as a decimal number:

94.6

Do you wish to create a Student? (y/n):

n

Data entry finished!

DEBUG: calling readFromFile

List of Students created

Student [firstName=Pike, lastName=Bass, idNumber=A00953177, ageYears=22, gradePct=81.5, pass=true]

Student [firstName=Steed, lastName=Mare, idNumber=A00553954, ageYears =44, gradePct =78.7, pass=true]

Student [firstName=Buck, lastName=Doe, idNumber=A00654321, ageYears =36, gradePct =69.9, pass=true]

Student [firstName=Sunny, lastName=McCloud, idNumber=A00559633, ageYears =25, gradePct =88.8, pass=true]

Student [firstName=Robin, lastName=Crow, idNumber=A00112233, ageYears =43, gradePct =73.9, pass=true]

Student [firstName=Nosaj, lastName=Nosirrah, idNumber=A00123456, ageYears =40, gradePct =94.6, pass=true]

Student [firstName=Catfish, lastName=Sturgeon, idNumber=A00456123, ageYears =78, gradePct =56.7, pass=false]

**Do this lab with your partner. Create the identical code as your partner, and show your instructor before the start of the next class. Keep these papers and bring them to the final exam, to get your marks:**

**Instructor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**