Your Name: _____ **Student Number:** _____

Lab 5a: to be done in class with a partner – due at the end of the lab (10 marks)

Create a class called Person that has instance variables, setters, and getters for the following data members:

No setter/getter

- First name
- Last name
- Birth year
- Sex
- Weight in pounds
- Highest education level (can be "high school", "undergraduate", or "graduate")

Create several overloaded constructors, as follows:

1. One constructor takes all six values (above) as parameters
2. Another constructor takes five values as parameters, but sets the birth year automatically to 2018
3. A third constructor takes three values as parameters, but sets the birth year automatically to 2018, the sex to female, and the highest education level to "high school".

In the first two constructors, **use a switch statement** to ensure that the highest education level is only one of the three specified, and **use another switch statement** to ensure that the sex is either "male" or "female". Note: to compare Strings you cannot use ==. Use a switch statement instead. **NOTE:** soon we will learn that instead we can use the .equals() method also:

```
if(sex == "male")          // wrong

if(sex.equals("male"))     // right

switch(sex){
    case "male":           // also right
```

}

Create overloaded methods for:

printDetails()
printDetails(boolean kilograms)
printDetails(boolean kilograms, boolean uppercase)

All three methods print sentences in the exact format of:

"Tiger Woods was born in 1975. He weighs 200 pounds and he has an undergraduate degree"

Note: use "She" instead of "he" for females.

Note: convert to kilograms for the second overloaded method if true is passed in.

Note: print the names out in UPPERCASE in the third overloaded method if true is passed in; otherwise use all lowercase:

"TIGER WOODS was born in 1975. He weighs 200 pounds and he has an undergraduate degree" or

"tiger woods was born in 1975. He weighs 200 pounds and he has an undergraduate degree" or

"TIGER WOODS was born in 1975. He weighs 90.9 kilograms and he has an undergraduate degree" or

"tiger woods was born in 1975. He weighs 90.9 kilograms and he has an undergraduate degree"

Create another method with signature public void displayAges() which uses a while loop to print the Person's age in every year of their life, as follows:

In 1975 Tiger Woods was 0 years old.

In 1976 Tiger Woods was 1 year old. (note: print "year" instead of "years")

What year? does it change fro is to

In 1977 Tiger Woods was 2 years old.

...

In 2017 Tiger Woods ~~is~~ was 42 years old.

In 2018 Tiger Woods is 43 years old. (note: print "is" instead of "was")

Submission

This in-class lab is due at the end of this class. Do not upload your lab to BCIT's servers. When you are finished, show your instructor so he can sign your paper.

Checked by: _____

NOTE: keep this paper for your instructor to verify your grades later in the course.

NOTE: EVERY SINGLE STUDENT MUST SHOW THIS LAB AND GET HIS OR HER PAPER SIGNED....

Lab 5b: to be done at home alone – submit to D2L (15 marks)

Create a Math class that has the following methods:

```
public int divide(int x, int y)      // returns x divided by y;
                                     // but if y == 0, print "ERROR" and return 0

public int max(int x, int y)         // returns the bigger number: x or y

public int remainder(int x, int y)// returns the remainder when x is divided by y
                                     // see above if y == 0

public int triple(int x)             // returns x times three

//returns true if the operation is any of "*", "/", "%", "+", or "-"; otherwise false:
public boolean isValidOperation(String operation) // use a switch statement
```

Test your code to make sure it works using BlueJ (i.e., create and instance and run each method) or by creating a Main class with a static main method that does the same.

Submission (15 marks)

Test your code and submit it to the Lab 5 folder on D2L (Activities -> Assignments -> Lab5) by **Wednesday, Oct. 17, 2018 at midnight**. The submission must include the **Math.java** file from your BlueJ project.

Mark Breakdown:

- 0 points if the Math class does not compile
- (3 points) Valid JavaDoc (class and constructor), good names, data types, constants (i.e., no magic numbers)
    - 1 point taken off for each violation
- (12 points) Meets the specifications in the description and returns correct results for each method
    - Your class will be evaluated against a set of tests to make sure the methods return the correct results for a given set of inputs