Your Name: _____

Lab 2a:

Create two classes: Province and Country, as described below.

Class Province has three instance variables:

1. private String name; // e.g. “British Columbia”
2. private String capital; // e.g. “Victoria”
3. private int populationInMillions; // e.g. 4 or 38

The constructor takes all three parameters and assigns them if they follow the rules:

name	capital	populationInMillions
Must be one of the 10 Canadian Provinces	Must be the name of the capital city	Must be between 0 and 38

Example constructor code:

```
If(isValidPopulation(populationInMillions) && (isValidProvince(province) &&
        (isValidCapitalCity(capital)){
                this.populationInMillions     = populationInMillions;
                this.province                 = province;
                this.capital                  = capital;
} else { // if there is any error; create the default data, shown below
        this.populationInMillions  = DEFAULT_POPULATION_MILLIONS; // 4
        this.province              = DEFAULT_PROVINCE;          // "British Columbia"
        this.capital               = DEFAULT_CAPITAL;           // "Victoria"
}
```

NOTE: isValidProvince(String province) is a private method you must write which contains a local Array of the 10 Canadian Province names, and returns true if the String parameter exists in that Array; otherwise it returns false.
Note: Use while-loop

isValidCapitalCity(String capital) is a private method you must write which contains a local Array of the 10 Canadian Province capital names, and returns true if the String parameter exists in that Array; otherwise it returns false. **Note: Use for-loop**

isValidPopulation(int population) is a private method you must write which returns true if the parameter is between 4 and 38 (inclusive); otherwise it returns false.

If an invalid province, capital, or population is input to the constructor, set the data to British Columbia, Victoria, 4 million. There is also a second (default) constructor that takes no parameters and simply sets the data to British Columbia, Victoria, 4 million.

Finally, also add accessor and mutator methods for each instance variable.

Finally, add a method called
public String getDetails() which returns a String in the format:

The capital of British Columbia (pop. 4 million) is Victoria.
etc…

Class Country has two instance variables: a String name (e.g. “Canada”), and an Array of Province objects. The Country class has one constructor, a default constructor, which simply creates an Array of ten Province objects, to match Canada’s real provinces (e.g. see http://en.wikipedia.org/wiki/List_of_Canadian_provinces_and_territories_by_population).

When it’s done, demonstrate your completed project to your instructor.

Checked by: _____

Lab 2b:

This lab continues from lab 2a, above.

Add the following methods to the Country class:

1. public void displayAllProvinces(), which loops through the deck and prints each Province object's getDetails() method. **Note: Use for-each loop.**
2. public int howManyHaveThisPopulation(int min, int max) which takes the population in millions (e.g. 4, 6) and returns how many Provinces there are with populations in that range (e.g. 4-6 million, inclusive).
   Note: Use for-each loop.

Checked by: _____