CS 329E - Spring 2018 - Homework 1

Due date: **1/30/18 by midnight**, late work is not accepted
Points: 20 points
Submit: A zip file of your entire project folder.
Name your zip file: **<last-name><first-name>-hw1.zip**
Example: for Joe Smith SmithJoe-hw1.zip

Description: Create and run an OSX Command Line application using Swift.

Steps:
Project Creation:

1. If you are going to use your own computer for this course, install the latest released version of Xcode. See link below.
2. Create an OSX Command Line Tool application project.
3. In the Product Name field enter "<last-name><first-name>-hw1". (SmithJoe-hw1)
4. In the Language field select Swift.

Application specifics:

1. In a separate file, define a class named Automobile.
    1. Define the following properties:
        1. Name: _make, Data type: string, Accessibility: private
        2. Name: _model, Data type: string, Accessibility: private
        3. Name: _numberOfDoors, Data type: integer, Accessibility: private
        4. Name: _speed, Data type: integer, Accessibility: private
    2. Define the following methods:
        1. An 'init' method, with arguments for each property. Initialize all properties to their passed-in value.
        2. A class-level method named 'create', with arguments for each property. it's purpose is to create and return an instance of an Automobile object, using the passed in initial property values.
        3. Get and set instance methods for each private property, except the speed property, which should only have a get method.
        4. A method named 'increaseSpeed', with one argument named 'speedChange' of integer type. Make sure the resulting speed is not outside the range of 0 to 150.
        5. A method named 'decreaseSpeed', with one argument named 'speedChange' of type integer. Make sure the resulting speed is not outside the range of 0 to 150.
        6. A method named 'description' that will return the following string:
        Make: <make>, Model: <model>, NumDoors: <number-of-doors>, Speed: <speed>
2. In main.swift:
    1. Define a 'main' global-scope function, with no arguments. In this function:
        1. Create 3 Automobile objects with properties that produce the desired output (see item 3 below), using the create method.
        2. Define a loop that iterates 10 times, calling the increaseSpeed method on each Automobile object, passing in a random value that is returned from the randomValueBetween function (see below). Each call to increaseSpeed should use an argument value from a unique call to randomValueBetween. When calling the

randomValueBetween function use minimum and maximum values of 0 and 16, respectively.
    3. After the loop has completed, call each object's description method to output their final state.
    4. The last thing the main function should do is output a message for which automobile won the race, in this format: "<automobile make> <automobile model> won!!". Or, in the unusual event there is a tie, output "There was a tie!". The winner is determined by the greater speed.
        1. Example: Honda Accord won!!
2. At the global level, call the 'main' global-scope function.
3. The output should look like this, with speed values probably different when your program runs:

    Make: Maserati, Model: GranTurismo, NumDoors: 2, Speed: 67
    Make: Honda, Model: Accord, NumDoors: 4, Speed: 128
    Make: Tesla, Model: S 90, NumDoors: 2, Speed: 35
    Honda Accord won!!
4. Build and run the app, and verify the output is correct.

Grading criteria:
1. Does the app run. (6 points)
2. Is the application coded per above. (7 points)
3. Does the application produce the correct output. (7 points)
4. The coding standard is followed. (1 point deducted for each kind of violation)

Random number generation code to include:

```
func randomValueBetween(min:UInt32, max:UInt32) -> UInt32 {
   var randomValue:UInt32 = min + arc4random_uniform(UInt32(max - min + 1))
   return randomValue
}
```

Xcode: https://itunes.apple.com/us/app/xcode/id497799835?mt=12

How to create an Apple ID: https://appleid.apple.com/account#!&page=create