**Assignment Interface and Abstract Class**

1. You will need to develop a system that can track employee information for two Organizations (Google and Microsoft). The Employee information you must track is as follows:

* Name
* Sex
* Job Title
* Organization they work for
* Birthday

As for the Organization that the Employee works for, you must also track this information:

* Organization Name
* Number of Employees

The system must be able to properly compare any two employees against each other to determine if they are the same Person. This means that if you compared two People with the same Name, Sex, Birthday and Organization, the system should think that they are equals to one another. If any of these properties are different, then the two People are not the same Person.

The same rules apply to comparing Organizations to one another. Organizations with the same Organization name are to be thought of as equal, different names means different organizations.

2. The assignment is to simulate the lottery. You will need to implement code that will generate 6 lottery numbers between 1 and 49 (inclusive), you will then need to implement the code that will read in 6 numbers that you will type into the console yourself. Then the numbers you input will be compared against the randomly generated lottery numbers and it will output which numbers match (if any).

Here’s the catch, you will need to make sure there are no duplicate numbers (either when being randomly generated or inputted in the console). It’s just like a real lottery after-all!

3.Your job is to implement the simulation of an assembly line that will build Cars. Each Car is made up of several components: tires, seats, engine and frame. Each of these components takes a different amount of time to build on their own. Here’s the breakdown on the simulated time each component takes to construct:

* Tire – 2 seconds
* Seats – 3 seconds
* Engine – 7 seconds
* Frame – 5 seconds

With these times, you must implement the code that will simulate the construction of each of these components individually, then once all the necessary components are built you must put them together to make a car. To build a car, you’ll need 4 tires, 5 seats, 1 engine and 1 frame. Here’s the catch, the assembly line can only and should only be capable of building 3 Components at any given time. You’ll need to implement this in your code.

Once you’ve completed the assignment and all unit tests are passing, try and fiddle with the order of which the Components are assembled on the line. Is there a particular order that provides the fastest building time for a Car?