Assignment 2

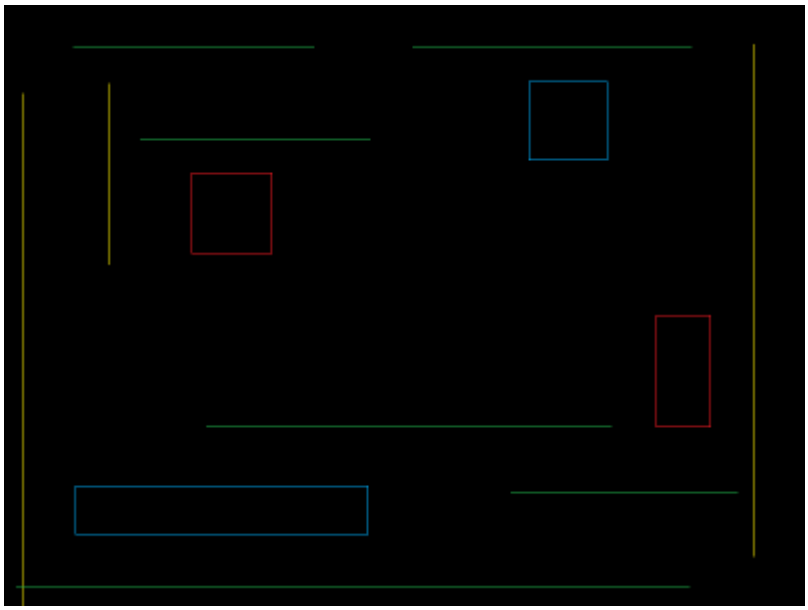
In order to practice concept of Inheritance and its related topics, we are going to create a simple graphical application that only consists of circles, lines and boxes. The idea is to have several moving balls (drawn as simple circles) and several stationary boxes that can affect the moving balls.

You will be given a small skeleton C# solution, found in Assignment2.zip, as a starting point. The solution should work under Windows, Mac OS X (Xamarin) and Linux (Mono Develop). It uses Windows Forms to provide the graphics. For additional information about drawing primitives see MSDN (https://msdn.microsoft.com/en-us/library/system.drawing.graphics(v=vs.110).aspx)

NOTE: This assignment requires knowledge from both Lecture 3 and Lecture 4. So the absolute deadline is Monday Feb. 27th. Although it is strongly recommended (and possible) to finish it by Monday Feb. the 20nd.

Do as follows:

1. Download Assignment2.zip from Blackboard.
2. Run the application. It should draw some moving balls.
3. Read the code, specially the **Shape** and **Ball** classes. Analyze the design and implementation.
4. As your assignment you will have to design and develop classes that achieve the following goals:



   a. The above image shows different objects that will be added to the program and will be visible to the user. Your program must look like this when done. Of course it will also have some moving balls that move around.

b. As you can see there are 2 types of *lines*: *Vertical lines* (yellow) and *Horizontal lines* (green). Vertical lines reflect the ball back by changing their X-speed. Horizontal lines reflect it by changing the Y-speed. To Draw a line use the Graphics.DrawLine method (See MSDN)
c. There are also some *boxes*. To Draw a rectangle use the Graphics.DrawRectangle method (See MSDN)

d. The red boxes are *SpeedUp Boxes*. They allow the balls to pass through them but meanwhile increase their speed. The direction of the ball does not change while moving through them.

e. The blue boxes are *SpeedDown Boxes*. They allow the balls to pass through them but meanwhile decrease their speed. The direction of the ball does not change while moving through them.

5. Design a *class hierarchy* for solving the problem. It's highly recommended that you verify your solution with one of the assistants before starting to implement.
6. Implement the code.
7. Show your work to the teacher assistants again and get their approval.