**C# Coding Exercise**

Let’s say you are developing an API which draws a diagram on a screen canvas. The diagram is composed of different types of shapes – circles, rectangles, lines, etc. Each shape knows how to draw itself on the canvas. Multiple shapes placed at different locations within the canvas area makes up a diagram image.

Define an object model which can be used to represent the shapes (just target circle, rectangle, and line shape types), the diagram and the canvas. Note that this object model should be extensible so that other types of shapes (like pentagon, star, etc.) can be supported later without having to change the diagram class. The canvas class will use the diagram object to draw shapes that make up the image. The canvas class should support the concept of shape decorators where one or more decorators can be registered with the canvas object. These decorator objects can perform actions on different types of shapes like applying styling, etc. The user should be able to define a decorator that targets a specific type of shape object or multiple/all types as needed and multiple decorators may target same shape type.

Note that you do not need to provide working code and we are not expecting anyone to write the code that performs the actual drawing of shapes. Just add a comment where you want to let us know what will happen in that part of the method, etc. But provide code where you want to show the interaction between the various types of this object model.

Either document your code to explain you approach/ideas or create a separate document explaining it. For brownie points, feel free to provide your general observations or ideas beyond the ask.