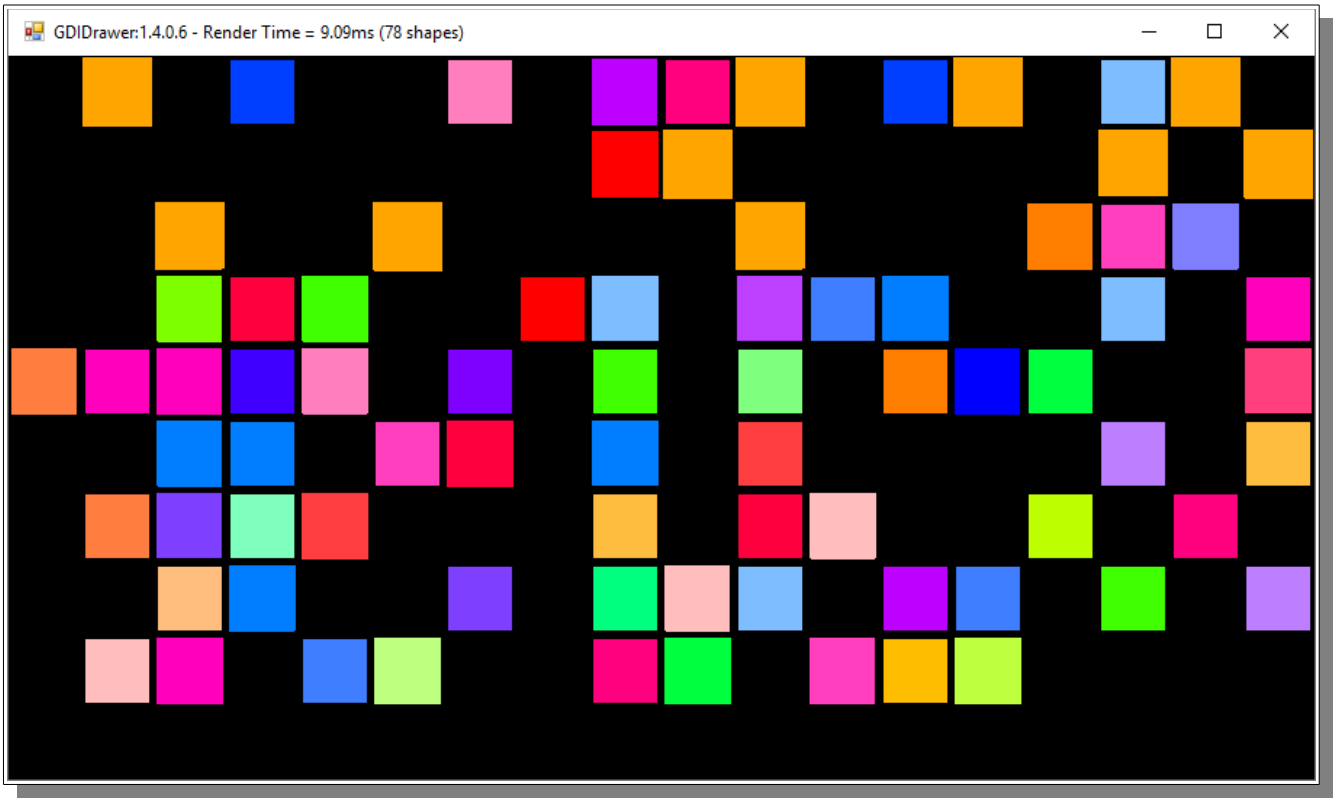
CMPE2300 – ICA01 - TrekLamps

As an introduction to classes we will construct a class that acts like one of those highly informational lights seen on Star Trek (TOS). The lights were characterized by being square/rectangle placed in rows that seemed to variably toggle between on and off.



Construct a class called TrekLamp. Include the members :
_LampColor of type color, _byToggle of type byte, _byTick of type byte and _border of type int. The toggle value provides a point at which the lamp toggles on or off as its tick value iterates over the allowed byte range.

Add a custom Constructor accepting a toggle, color and border value of the appropriate type. Use a default parameter of 2 for the border argument. In the body, initialize their respective corresponding member values and assign _byTick to start at a random byte value (yes your constructor will have a temporary local Random object).

Add a default Constructor. Using the appropriate syntax, **leverage** your custom constructor with a threshold value of 64, a randomly generated color, and a border of 6.

Create a member method called Tick(). It returns nothing and accepts no arguments. The body will increment your current _byTick value by 3. This will have the effect of

wrapping... how might this be useful ?

Create a member method called RenderLamp(). It returns nothing, and accepts a CDrawer reference and an integer. Obviously, the CDrawer reference will be what the lamp will render itself to, and the integer will represent the current lamp number being rendered (0, 1, 2...). Using the CDrawer's ScaledWidth and some simple math (div and mod anyone ?) the position of the lamp can be determined to render the lights left-to-right, top-to-bottom in the CDrawer. The lamp will be rendered as a Rectangle of size 1 at its calculated location **only** if the current _byTick value is greater than the _byToggle value.

Now to put it all together, back to the form.

Use an initializer to declare a list of your TrekLamp class as a form member. Add a CDrawer of size 900x500 and set the background to black with a Scale of 50 (so it effectively becomes a 16x12 grid).

Add a timer, 100ms, enabled by default. In the Tick() handler, iterate through your list invoking Tick() and RenderLamp(). As the RenderLamp() method requires a light number, your looping construct should be evident....

Finally, add an appropriate key handler to get stuff happening. If the :
'F1' key is fired, add a TrekLamp to your list using the default constructor,
'F2' key is fired, add TrekLamp using Orange and 180 as the threshold,
'F3' key is fired, add a TrekLamp using a randomly generated color, a randomly generated value between 60 and 220 for the threshold and a border of 4.
'Escape' key is fired, remove the last added TrekLamp from your collection.

You should be able to visually verify each type of lamp that you have created and added to your bridge display simulation.