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Section: A

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Project 6 Report: Social Realism (F22)

Title: Climate Change – Social Realism Recreation with Zelle Graphics

Abstract:

- Key Lecture Concepts for this project include all Zelle graphics commands and functions. Important features include the shape commands: `gr.Rectangle`, `gr.Circle`, `gr.Oval`, and `gr.Polygon`. The function of `gr.Point(x,y)` was also crucial to create each type of shape. I used `gr.Circle` for the litter objects and stars in my project, `gr.Rectangle` for the ocean and sky, and `gr.Polygon` for the rest of the shapes. I also used `gr.Image` to import the bear from the original image, which is something we touched on in lecture earlier this week. Lectures and examples on animation were also very important, which showed me the steps to creating a smooth animation. I also used knowledge from previous lectures and projects to create my while and for loops, as well as concepts on system arguments to choose the final outputs.
- I had a total of 6 different Zelle outputs. 3 of which are my complex shapes, and 2 are my final outputs. The final outputs are full scenes. In my zipped project folder, there is also a video showing the animation of the litter objects in both the day and night outputs. This video is my extension.

Results:
IMAGE 1:



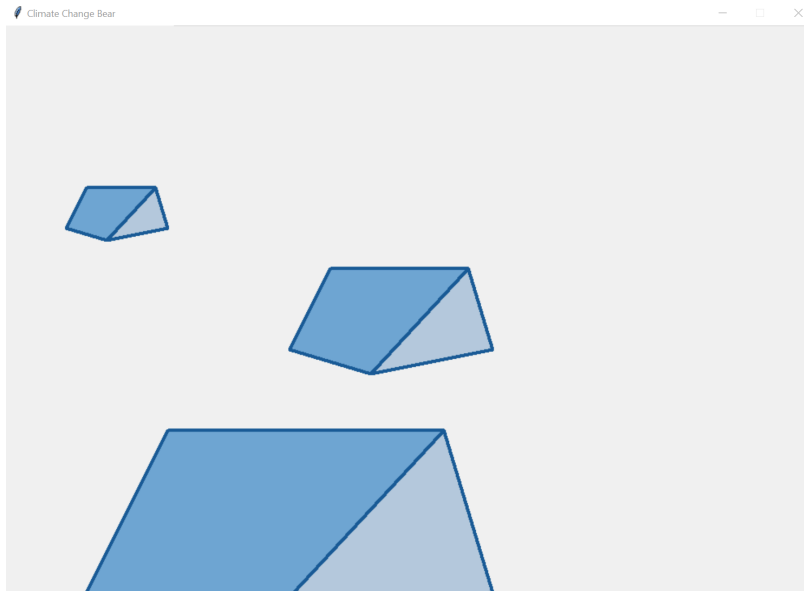
This is a drawing I made when picking out my picture that I was going to design.

IMAGE 2:



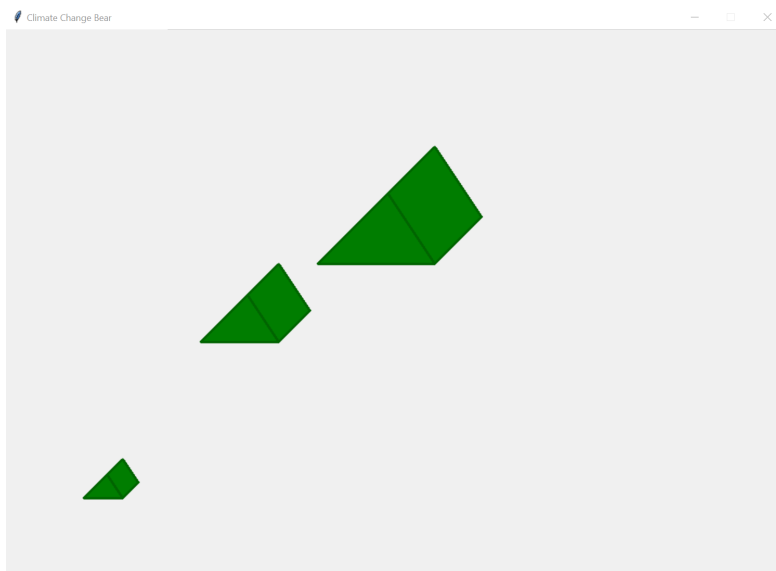
This is the original image that I attempted to replicate in my project with Zelle.

IMAGE 3:



This is my first complex object which takes arguments for position and scale. This complex object is an iceberg and is made up of 2 separate polygons of different colors.

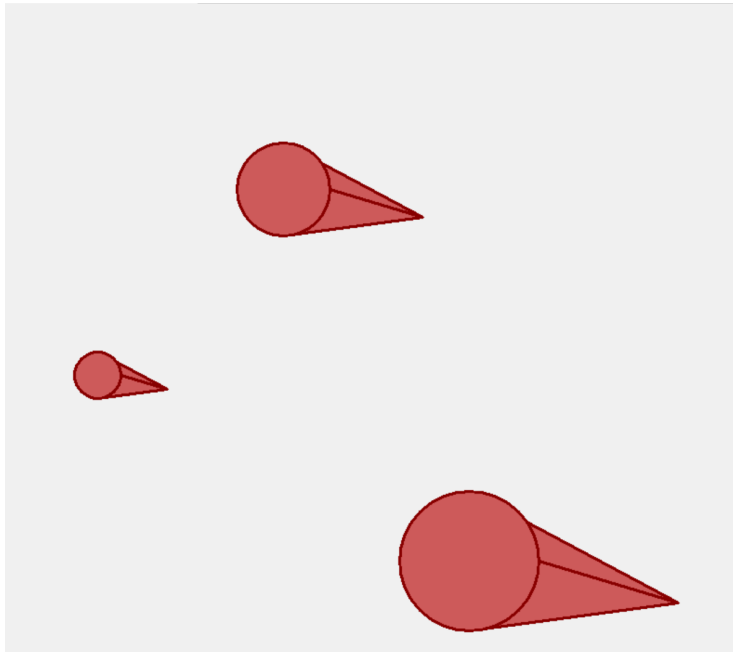
IMAGE 4:



This is my second complex object which replicates the green crate in the image, the trash in the ocean. It also takes parameters for position and scale. It is made of two different polygons, one of which is a triangle. They are both filled green and the outline is set to dark green.

IMAGE 5:

 Climate Change Bear



This is my third and final complex object. It also takes parameters for position and scale, as seen. It is supposed to represent the red barrel sunk in the water in the image, although it did not come out exactly as planned. This is because I couldn't figure out how to make a semi-circle in Zelle graphics. So, I opted to turn the barrel around in terms of the direction it is sinking in. I did this by first making 2 triangles for the edges/sides of the barrel, and layered a circle on top them as the base of the barrel. Then I set the fill to a specific shade of red and the outline to dark red.

IMAGE 6:



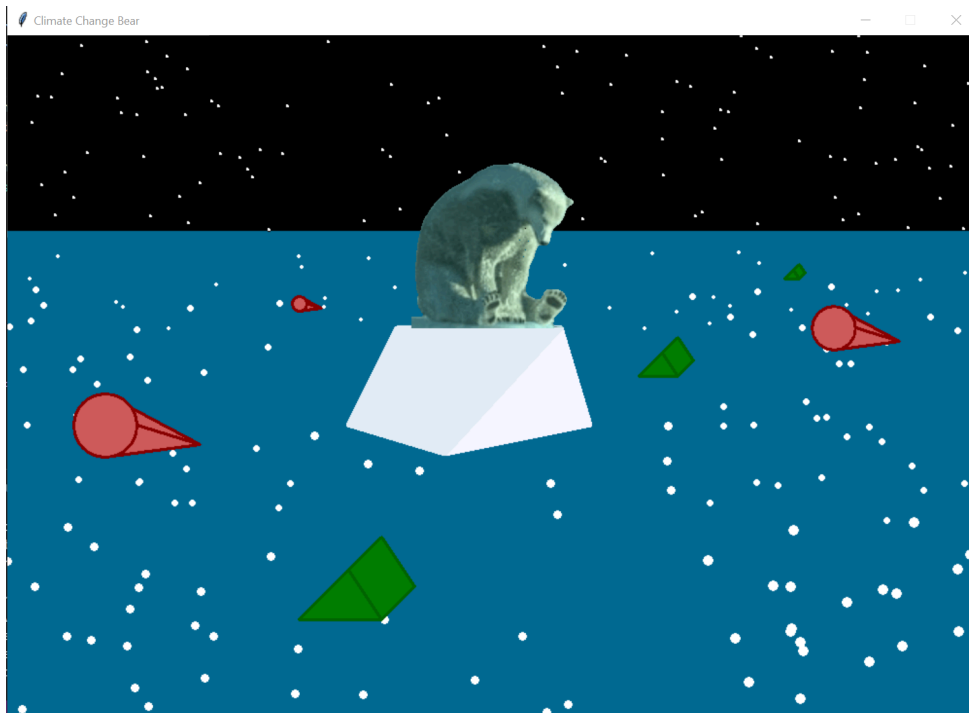
This is my full image with all 3 complex objects. There are also many white circles that represent the bottles and other litter seen in the image, as well as the bear atop the iceberg which I imported. Finally, behind the litter and iceberg and bear is an ocean, which I made by making a rectangle and coloring it sea blue, and a sky, which is 200 rectangles, each with dimensions of 1000x1. I made a while loop to increase the y value on each iteration, which ended when $y = 200$. I also made variables for the RGB values from the top and the bottom of the rectangle and used the equation $r = \text{int}(r1 + (r2 - r1) * y / 200)$ to incrementally increase the integer value. This specific equation is for the red value.

IMAGE 7:



This is the same image as above, but this time it is generated using a command line argument: 'day'. This is the day scene, and can fully be called using 'python(3) realism.py day' in the terminal.

IMAGE 8:



This is the night scene which is called using 'python(3) realism.py night'. It is the same as the day counterpart, the only difference being the sky. Instead of the gradient rectangle, I made another function for the night sky which makes the black rectangle of the same dimensions of 1000x200 and randomly generated 100 stars made with circles.

Reflection and followup questions:

1. Which example of a Social Realism artwork/artist did you choose as inspiration? Why?

I chose [this image](#) because I thought it is a good representation of what is happening in the poles as a result of global warming. Icebergs are melting, and so many animals live on these icebergs. There are images of baby polar bears getting separated from their mothers as icebergs break apart due to severe temperature increases. Additionally, the trash in the ocean demonstrates our planet's lack of care in terms of pollutions, and companies which keep pumping out plastics which are extremely harmful to our environment.

2. What is your understanding of what an object is (e.g. `gr.Rectangle`, `gr.Point`, or `gr.Circle`)?

Objects such as these are basic in Zelle graphics, and are the fundamental shapes which can be combined into more complex ones. `gr.Point` is the basic function to determine a point on the window, which also must be created as an object before drawing other shapes. Zelle graphics shapes show even more that python can be used very well as an object-oriented programming language.

3. If the variable `box` holds a `gr.Rectangle` object, how do you set its fill color?

You can set the fill color with `objectname.setFill(color)`. You can use either a string color such as 'red' or rgb 0-255 values in a tuple data type.

4. What parameters does `object.draw(...)` take? Why would a program need these parameters?

The parameters taken by `object.draw(...)` is the name of the screen object created. For example, in my case, the screen name is `win` (`win = gr.GraphWin(name, x, y)`). Because we have assigned the `GraphWin` function to the variable/object 'win'. If it was screen instead of win, `object.draw` would take 'screen' instead of 'win' as a parameter.

5. What is your favorite animated film?

My favorite animated work is a show rather than a film...it is Avatar The Last Airbender!

Extensions:

If you do an extension for this project, include a **screenshot or video (animation) of the extension work** (deep extensions are better). Explain specific extensions, the extension description and process, and resulting extra extension image(s) that are included to demonstrate your work beyond the required images.

My extension for this project is an animation of the litter objects in my final scene. I did this by first making a parameter called litterShapes in my litter function. After making each litter object, all of which are within for loops, I appended them to this parameter litterShapes. Then, in my main function, I created an empty list also called litterShapes. Below all the calls for the various shapes and scene elements, I made a for loop which iterates 10,000 times. Within this for loop is another for loop which randomly moves each litter object up or down by 1 and side to side by 1. This nested loop iterates through each appended item on the list litterShapes. The animation can be seen in both the day and night scenes in the video attached in my zip file.

Sources, imported libraries, and collaborators are cited, or a note is included indicating that none were referenced: This ensures you are properly crediting the people and sources who help you achieve your results. Not listing them in the report is considered plagiarism or stealing. Please code with honor.

<https://www.schemecolor.com/iceberg.php>

<https://theyellowgloves.com/2019/08/15/can-art-help-mitigate-climate-change/>

<https://icolorpalette.com/color/sea-blue>

<https://www.cs.swarthmore.edu/~knerr/cs21/s15/Labs/graphics.php>

<https://www.tcl.tk/man/tcl8.5/TkCmd/colors.html>

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