Lab 8 – Object Inheritance

Before you start

This lab builds on the Week 6 lab. Make sure you have completed, and fully understand, the cake slicer class from last week before you start

Aim

The main aim of this lab is for you to get lots of practice controlling the display of images. You will need this for Coursework 3. This includes:

- Creating a new class (ImageDisplay) for image handling, by extending JPanel and overriding paint() (using inheritance).
- Creating new instances of ImageDisplay with different location and size, and adding them to a container JFrame window.
- Reading image files from disk, and displaying them in ImageDisplay objects in a window.
- Overloading a method.
- Getting creative!

Drawing a Cow

Using an ImageDisplay, we can create image objects and display them on screen.

- Download the Zoo project folder from ICE. You should already be familiar with the code. Read it carefully. What does it all do? If you are not sure, ask.

- Run the code, you should see the image below:

- Can you improve this image? Change the size of the window to make it a bigger screen

- Change the size and location of the cow. Can you make a large cow that appears that the bottom right of the screen?

Lines of Cows

So far we have been drawing a single cow on the screen. So now we are going to paint lines of cows!

- Look at the addImage() method:

```java
private void addImage(String imagePath){
    BufferedImage myImage = FileUtils.loadImage(imagePath);
    ImageDisplay myImageDisplay =
            new ImageDisplay(myImage, 100, 100, 100,100);
    myWindow.add(myImageDisplay);
    myWindow.repaint();
}
```

- Add a for loop to paint a line of cows across the window

- Add a for loop to paint a line of cows vertically down the window

- Add a for loop to draw a line of cows diagonally

- Add a for loop to show a row of images with each image getting larger

- Add a for loop to show a row of images with each image getting smaller

Cow Grids

Instead of adding a line of cows, we can used nested for loops to print a grid of cows. See the lecture notes for help.

- You might want to add global variables for the window height and width to the controller class

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- Try changing the size and spacing of the grid

- Well done! You have finished Part 1. Now for some fun!

Part two: Drawing a Creative Scene

In the previous part, you drew cow scenes. Now you should create your own scene. Use some creativity and your imagination! Here is one we made earlier, but you should draw your own!

- All the resources for this are on ICE. If you want to be really creative and make your own picture, you can use your own.

- Download the resources and put the folder 'res' in your Zoo project folder. It should look something like this:
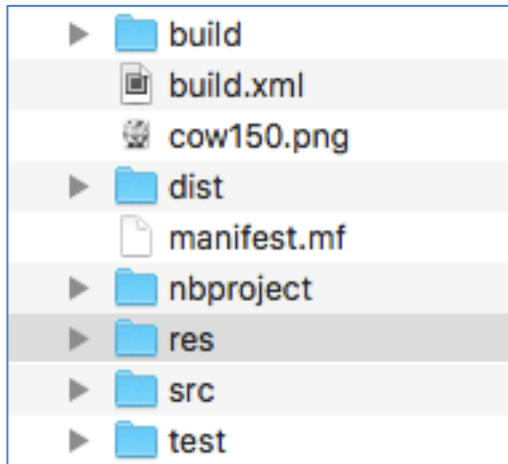
- Overload the addImage method (see lecture notes for details) (near the end)

- in the Zoo1 constructor, create lots of ImageDisplay objects and position them on screen to create your scene.

- Use for loops for lines of images: you have already done this earlier in the lab.

- Enjoy! Make something creative!

Next Steps – Complete Your Image

Work on your image, and submit a screenshot of it on ICE by Tuesday night on Week 9. The best screenshots will win a prize!

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