

# MAT 2170: Laboratory 2

## Key Concepts

The purpose of this lab is to familiarize you with sending messages to objects (invoking methods), and to give you a chance to become acquainted with the graphics capabilities of the `acmLibrary` and `GraphicsProgram`.

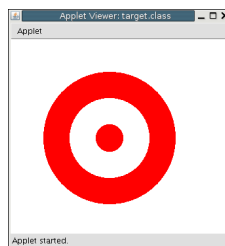
1. The classes: `GRect`, `G Oval`, and `GLine`
2. The methods: `setColor()`, `setFilled()`, and `setFillColor()`
3. Using constructors to make new objects
4. Using the `add` method to display graphics objects
5. Using meaningful object names
6. Using line comments to keep track of what is being drawn

## Instructions

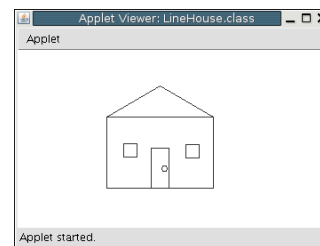
1. Complete Worksheet 2 and be prepared to show it to your instructor when requested during lab. Turn it in before leaving lab.
2. After completing each exercise, **print** the program to turn in at the beginning of Lab 3, and **publish** the project to your web site, choosing window dimensions that allow the entire graphic to be displayed. When you have completed the entire lab, **submit** your `/mat2170/lab2` directory electronically.
3. Login using your EIU userid and password. Start `netbeans`.
4. Create this week's projects in the directory `mat2170/lab2` under your user account (not in any other directory). This can be done at the time each project is created in `netbeans`.

## Exercises

1. (Exer. 6, Pg 55) Create a graphics project, `Target` which displays a bullseye. It should look something like the image on the left below. The two tinted rings should be red, while the middle one is white. The inner circle has a diameter of 40 pixels in this example. Make sure your target is **symmetric** (the circles all have the same center), and that you place **block comments** in the body of your program to indicate which part of the target is being drawn. As always, include **header comments** with your name, section, date, filename, and brief description of what the program does. Remember to print and publish.



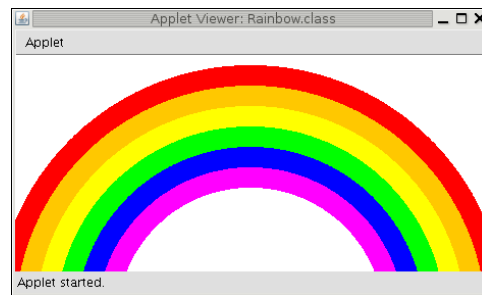
Target



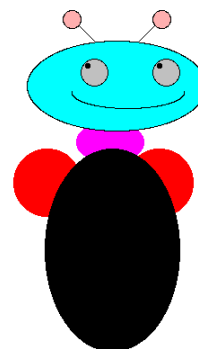
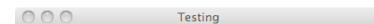
Line House

2. (Exer. 4, Pg 54) Create a graphics project, `LineHouse` which displays a line drawing of a house. It should look something like the image on the right above. In this example, the house is 120 by 80 pixels. Use only the `GLine` class to construct this house — not the `GRect` class. Make sure the house has a roof, door, doorknob (yes, you can use `G Oval`), and two windows. It should be symmetric. Place block comments in your program to indicate which part of the house is being drawn, and include the usual header comments. If you wish, you are encouraged to do some remodeling of your house – add a chimney, a front walk, a tree, clouds – whatever you think might improve its value. Remember to print and publish.

- (Exer. 9, Pg 56) Create a graphics project, **Rainbow** which displays a rainbow. It should look something like the snapshot shown at right. The colors run from red to orange, yellow, green, blue, and magenta. Make sure your rainbow is symmetric (all circles have the same center point). Place block comments in your program to indicate which arc of the rainbow is being drawn, and include the usual header comments. Remember to print and publish.



- Group Exercise:** Teams will be assigned by your instructor. You are to create a graphics project, **Creature**, which displays a robot, bug, or alien. Select the manager of your team and agree on a design. The manager then establishes graphic coordinates of body parts, and assigns sections to the other team members (such as head and ears, face, body, etc.). Everyone is to write out the statements which produce their assigned body part, type them in, and email them to the manager so they can be assembled into the program. A skeleton is provided on our website. Once the program is completed, share the file among all the team members so everyone can publish to their own web sites. You must use `GObvals`, `GRects`, `GLines`, `setFilled()`, `setFillColor()`, `setColor()`, and include a `GLabel` with the names of all team members. Your creature must have a face, and body parts must appear to be connected (so order of drawing may be modified to suit your design).



## Wrap-Up

- Make sure you've published all four exercises to your web page, and tested that they display correctly (republish and correct the window size if they do not).
- Staple program printouts from Lab 2 together and hand in at the beginning of next week's lab, Lab 3. Each team should hand in a single printout of the group exercise (#4); turn it in separately from any individual's other printouts.
- Submit an electronic copy of your completed lab before the beginning of Lab 3.
- Make sure I've checked off Worksheet 2 and you've handed in the printout from Lab 1 before you leave lab. Complete Worksheet 3 before lab next week.