

## CS4815 Week10 Lab Exercise

**Lab Objective:** We will put together many of the ideas we have seen over the last few weeks in building a small figure editing program. This is inspired by the hugely popular `xfig` or `ipe` figure editing programs and we will name ours `yfig`.

Here's a **quick summary** of the tasks:

- ❶ Starting from scratch (or from the program in the past that you think will be most useful), rename it `yfig.cc` and put it in `week10`'s sub-dir;
- ❷ When first initialised the program should display a “blank canvas” and it will then respond to three types of input: keyboard, menu selection and mouse movement that will allow us to do such things as specify pen thickness, colour, specify the shape we wish to create and where.
- ❸ Submit your completed program using the `handin` command  
`handin -m cs4815 -p w10`
- ❹ A more complete list of features is given below.

### In Detail

The program should implement the following features, grouped into general, menu and command.

#### General features:

- The program should begin by presenting a “blank canvas” to the user centred at (0,0) with thin blue lines extending to the sides for the two axes;
- by clicking middle and dragging it should be possible to move different parts of the canvas into camera view;
- by using the mouse wheel when the control key is held it should be possible to zoom in / out the camera, presenting the area of view in higher / lower resolution;
- it should be possible to resize the viewport; when this is done it should not cause a rescaling of the canvas, but rather, display more (or less) of the canvas area.

**Menu features:**

Via a set of hierarchical menus it should be possible to set from some small range of possibilities

- the pen thickness
- the pen colour

**Command features:**

The program should be able respond to the following keystroke commands and draw the appropriate shapes using two clicks of the left button as detailed below.

l	draws a line starting at first mouse click, ending at second mouse click
r	draws a rectangle with bottom-left / top-right corners given by the two mouse clicks
c	draws a circle centred at the first mouse click, with radius extending to the second mouse click

Good luck.