Documented Design

The project will require combining skills and techniques which require deeper thought than simple line by line programming.

Since I am utilising HTML Canvas for this project, I will need to use a different style of programming. Canvas works similar to a real canvas, anything I paint onto the canvas, will stay until I decide I want to start again by painting over what I have already done. This leads to a system which is very forgetful, since after the canvas has been cleared, it doesn’t really remember what happened before it.

In programming terms, this means that I have to use variables which stay the same even after one frame has passed. Global variables, while frowned upon for their heavy memory usage and poor programming practice, are very useful to me, as they won’t reset after a function finishes.

Furthermore, events which occur on multiple frames, for instance the dragging of an object. Will require me to check for the right conditions on each frame (i.e. mouse down on 3 frames). Since I can’t just wait for 3 frames to pass and wait on that line of code, I have to let the rest of the processing for that frame complete and check again next frame if the conditions are met (Fig 1). This requires more thought than just using an event based pre-built GUI in another language (Fig 2).

On event Object.Drag

Start Drag

Figure 2 Pseudocode of a drag function which could be programmed with a GUI framework like VCL Forms.

Global drag counter

If mouse is down

Increment drag counter by 1

If drag counter is 3

Start drag

Figure 1 Pseudocode of a drag function in canvas, showcasing how the solution must work on multiple frames

I compare this style of programming to solving a linear problem iteratively. This gives me a better idea of what must happen behind the abstracted events in a normal GUI framework.

Mapping out features on a flow chart gives me a good idea of how to implement them, for instance, dragging, I have very specific requirements for this feature which has lots of different states the user can be in, dragging an object, not dragging an object but selected, just released an object from a drag etc. Visualising problems like this gives me a better idea of the steps and variables needed before I waste time and computing power on a poor solution.

