OPENGL - CONTROL FUNCTIONS

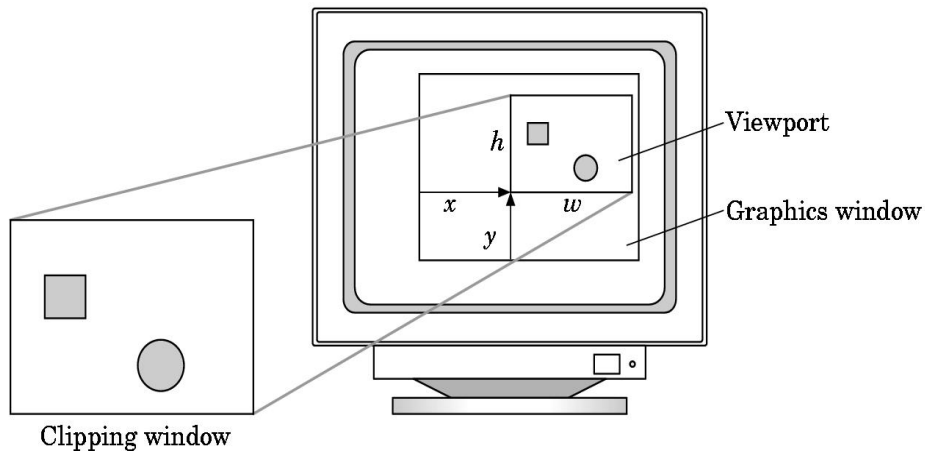## 2.7   Control Functions (interaction with windows)

- Window – A rectangular area of our display.

- Modern systems allow many windows to be displayed on the screen (multiwindow environment).

- The position of the window is with reference to the origin. The origin (0,0) is the top left corner of the screen.

- **glutInit** allows application to get command line arguments and initializes system

- **gluInitDisplayMode** requests properties for the window (the *rendering context*)
    - o RGB color
    - o Single buffering
    - o Properties logically ORed together

- **glutWindowSize** in pixels

- **glutWindowPosition** from top-left corner of display

- **glutCreateWindow** create window with a particular title

Aspect ratio and viewports

- Aspect ratio is the ratio of width to height of a particular object.

- We may obtain undesirable output if the aspect ratio of the viewing rectangle (specified by glOrtho), is not same as the aspect ratio of the window (specified by glutInitWindowSize)

Viewport – A rectangular area of the display window, whose height and width can be adjusted to match that of the clipping window, to avoid distortion of the images.

void glViewport(Glint x, Glint y, GLsizei w, GLsizei h) ;

The figure shows a monitor displaying a Viewport, Graphics window with labels h, x, y, w, and a separate Clipping window.

The main, display and myinit functions

- In our application, once the primitive is rendered onto the display and the application program ends, the window may disappear from the display.
- Event processing loop :
- void glutMainLoop();
- Graphics is sent to the screen through a function called **display callback.**
- **void glutDisplayFunc(function name)**
- The function myinit() is used to set the OpenGL state variables dealing with viewing and attributes**.**

Control Functions

- **glutInit**(int *argc*, char **argv*) initializes GLUT and processes any command line arguments (for X, this would be options like -display and -geometry). **glutInit()** should be called before any other GLUT routine.
- **glutInitDisplayMode**(unsigned int *mode*) specifies whether to use an *RGBA* or color-index color model. You can also specify whether you want a single- or double-buffered window. (If you're working in color-index mode, you'll want to load certain colors into the color map; use **glutSetColor()** to do this.)
- **glutInitDisplayMode**(*GLUT_DOUBLE | GLUT_RGB | GLUT_DEPTH*).
- If you want a window with double buffering, the RGBA color model, and a depth buffer, you might call
- **glutInitWindowPosition**(int *x*, int *y*) specifies the screen location for the upper-left corner of your window

- **glutInitWindowSize**(int *width*, int *size*) specifies the size, in pixels, of your window.
- int **glutCreateWindow**(char **string*) creates a window with an OpenGL context. It returns a unique identifier for the new window. Be warned: Until **glutMainLoop**() is called.