Start this only when the previous assignment (or its deadline) is over.

Assignment 4: (Approximately, 3-4 weeks)

Part-I

1. Implement Sutherland-Cohen line clipping algorithm.

2. Develop an area filling algorithm (any from your syllabus).

Part-II

3. Apply line clipping algorithm on pair of endpoints of each sides of a polygon. Then apply polygon clipping algorithm directly on the same polygon. Find the difference of two approaches in terms of output or computation. Hence colour the part of the polygon inside the clipping window using the area filling algorithm developed in Part-I.

4.Consider in a system that supports multiple clipping window, objects are clipped depending on the priority, number of selected window and window merging operations. There may be two subdivisions of such system. When multiple windows are non-overlapping, objects are clipped simply depending on number of windows selected as shown in Fig. 1a and Fig. 1b.

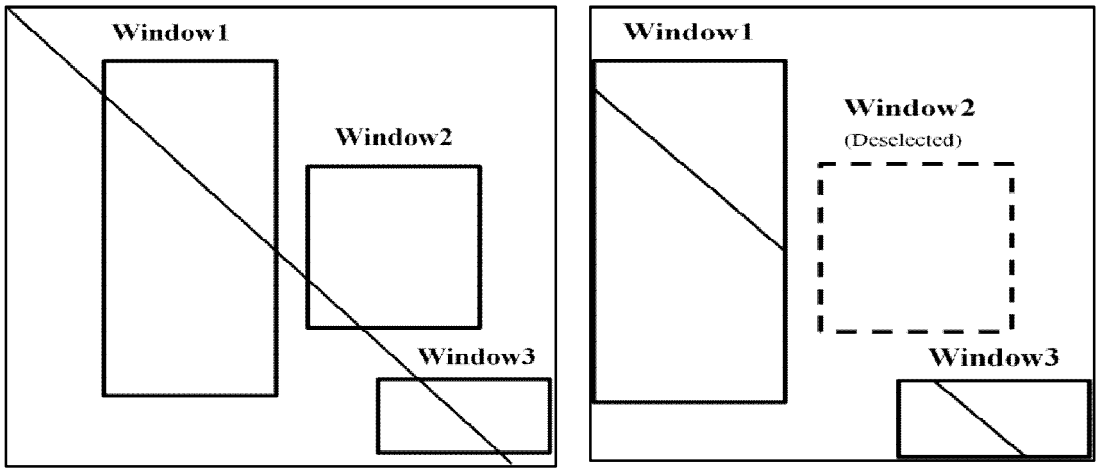

Fig.1: Non-overlapping window system (a)Objects and windows (b) Selected windows and clipped object

For overlapping multi window system, shape of the window changes as demonstrated in Fig 2. In after $\oplus$ operation, windows of Fig 2a merge into the one as in Fig 2b. Similarly after applying $\ominus$ operator , two windows are merged as in Fig 2c , provided window2 has priority over window1.

Clip an object considering finite number of overlapping and non overlapping clipping windows. Set window priority and number of selected windows of your choice.

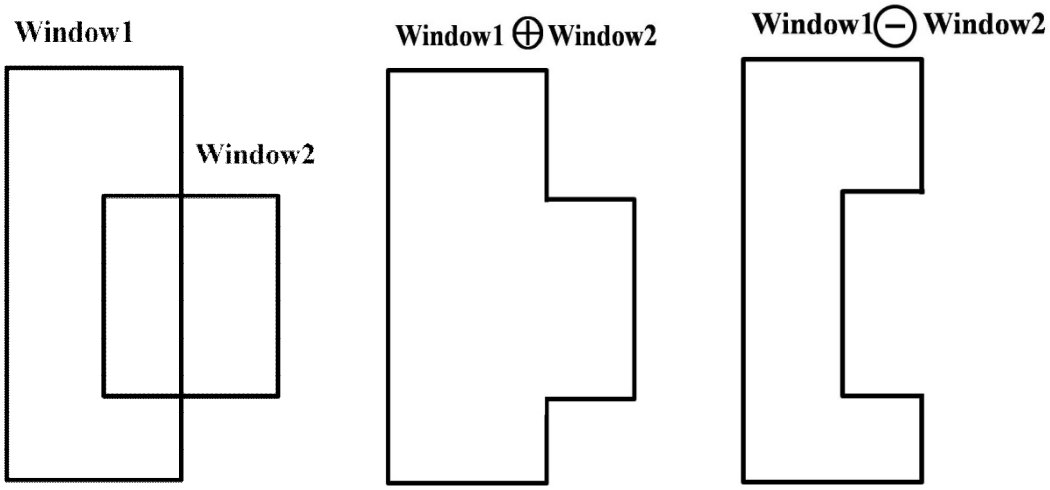

Fig.2: Overlapping window system

(a)Window1 and Window2 (b) ⊕ operation (c) ⊖ operation

5. On your screen construct two windows of different size and using a button, copy the object of one window into another maintaining object and the source window proportion.