CS 480/680 Computer Graphics

Spring 1999 - Dr. George Bebis

Homework 2

Due date: 3/2/99

1. Extend the midpoint algorithm to handle lines at any angle and endpoint order.

2. Consider the 2-D line segment from (-3/2, 1/6) to (1/2, 3/2) and a clipping window defined by a square whose lower-left and upper-right coordinates are (-1,-1) and (1,1) correspondingly. Apply the Sutherland-Cohen algorithm to clip the line against the window. To get credit, you must show each step carefully.

3. (**graduate students only**) Consider the same line again. Apply the Cyrus-Beck algorithm this time to clip the line against the window. To get credit, you must show each step carefully.

4. The scan line polygon fill algorithm begins by creating a table of information from the polygon's edges.

(a) Given and edge from (7,1) to (13,5) determine *what* information you should store and *where* you should store it in the table.

(b) Given active edge list below for scan line 9, determine which pixels are inside the polygon.

scan line 9: (9,2,0)-->(9,2,-5/2)-->(11,10,3/2)-->(11,13,0)

(c) Determine the active edge list for scan line 10, assuming that no new items are added from the table.