

## Problems for Lab 11

### Objective:

- 1) To understand clipping of parameterized objects in OpenGL
  - 2) To understand the difference between clipping(in object space) and cropping(in image space)
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1. Given  $n$  2D points  $(x_i, y_i)$ , for  $1 \leq i \leq n$ , and a clipping rectangle with diagonal vertices,  $(x_{\min}, y_{\min})$  and  $(x_{\max}, y_{\max})$ , display(in red) the points that are inside the rectangle(2 Marks)
  2. Given  $n$  line segments with end points  $(x_i, y_i)$  for  $1 \leq i \leq n$ , and a clipping rectangle with diagonal vertices,  $(x_{\min}, y_{\min})$  and  $(x_{\max}, y_{\max})$ , display(in green) the portions of the line segments that are inside the rectangle, using Cohen-Sutherland Line Clipping Algorithm(6 Marks)
  3. Download Lena image, and write code in Python/Matlab to crop and display the middle half of the image(2 Marks)

Note: For clipping and cropping built-in functions are not to be used