

UC Berkeley Computer Science

Subject: Three Questions
Date: September 26, 2005
From: Ivan Sutherland
UCIES #2005-is09

References:

UCIES# 2005-is02: FLEET – A One-Instruction Computer, Ivan Sutherland, 24 August 2005
UCIES# 2005-is03: Defining Some SHIPs, Ivan Sutherland, 24 August 2005
UCIES# 2005-is04: A Dozen Problems, Ivan Sutherland, 6 September 2005
UCIES# 2005-is05: Notation Questions, Ivan Sutherland, 12 September 2005
UCIES# 2005-is06: Some Ideas About Notation, Ivan Sutherland, 13 September 2005
UCIES# 2005-is07: Literals for FLEET, Ivan Sutherland, 20 September 2005
UCIES# 2005-is08: Function or Addressing, Ivan Sutherland, 20 September 2005
Google “Warnock Algorithm” and see what you get

THE WARNOCK ALGORITHM

Warnock developed an algorithm for sorting polygons against a visible area to find out how to draw a picture with hidden surfaces omitted.

If we wish to implement his algorithm for FLEET we will need a suitable sorting SHIP. Unlike the sorting SHIP described in 2005-is03, this SHIP will have one pipeline input and four pipeline outputs. I am interested in several problems introduced by the prospect of using such a SHIP. Of course there are many problems associated with building such a SHIP, but I’m not concerned with that yet.

Please address the following problems and come to class prepared to discuss them. A couple pages recording your thinking would be welcome. :

- 1) What data format shall we use for polygons in three dimensions? Remember that each polygon can have any number of edges.
- 2) How shall we represent lists of variable numbers of polygons? What SHIPs do we need to read and write such lists?
- 3) We will need to write four lists of polygons concurrently. How can we make a writing SHIP that deals with four such lists simultaneously?