Introduction to Flight Simulation (List 10)

Due: 4 jan 2011

1. Use the following data structures:

   struct halfplane
   {
       linalg::vector point;
       linalg::vector normal;
   }

   struct convobject
   {
       std::vector< halfplane > planes;
   };

Define the house of Pawel and Agnieszka as a convex object.

2. Write a function that determines whether a point is inside a convex object.

   bool convobject::inside( linalg::vector point ) const;

3. Write a function that computes the corners of a convex object:

   struct corner
   {
       unsigned int s1;
       unsigned int s2;
       unsigned int s2;
       // The numbers of the surfaces that define the point.
       linalg::vector p;
       // The point itself.
   };

   std::vector< corner > convobject::getcorners( ) const;
// First compute all corners, then remove the corners
// that are not in the object.

In order to write this, you need to be able to solve a three dimensional
system of equations.

4. Write a function

    convobject::isempty() const;

(You can use getcorners().)