

FLIGHT SIM TOOLKIT

TUTORIAL

Introduction

This tutorial is designed to take you through the process of creating a simulation and then creating shapes. We recommend that you use this tutorial to familiarise yourself with the various editors before you attempt to 'go-it-alone' as it will save you time in creating your first simulation. The tutorial refers to the manual throughout so have it to hand for convenience.

Creating your own simulation

Before proceeding any further read the chapter on Creating a Simulation in the manual.

This section of the tutorial will take you through step by step the process for creating your own simulation

- 1 Read the Installation chapter (page 5 in the manual)

Hard Disc users - Project directory:

- a) Create a new directory on your hard disc called project, Copy the IFlight application into this directory.
- b) Open the IFlight application (Shift Click) in your project directory, we will refer to this directory (...Project.IFlight) as the work directory.

Floppy Disc users - Project disc:

- a) Format a floppy disc, name it Project (using the icon bar floppy disc menu option)
- b) Copy the contents of the Tools disc onto your work disc. From now on we will not need the Tools disc.
- c) Delete ISysMerge from your Project disc (this is only required for Hard disc machines).
- d) Open the IFlight application (Shift Click), we will refer to this directory (adsf::Project.IFlight) as the work directory

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2.
 - a) Copy all the Shapes from the Shapes directory on the Examples disc(directory) into your work directory shapes, we will be using these shapes to create the simulation.
 - b) Delete world from your work directory (we are going to start from scratch!)
 - c) Open manual and refer to the IWorld chapter to run the IWorld application

(From now on I will assume that you are using a floppy so hard disc users will have to read directory for floppy).

3. Open the world window, by clicking on the FST Icon, set the grid to 1k and zoom in until you can see that there is a diamond at the origin. This is the players object which the system automatically positions in the centre of the grid. We will set the attributes of this object later on.
4. Open the shapes directory on the project disk, select the runway shape and drag it into the world window. Place it over the player object in the centre of the grid. You may need to adjust your zoom so that you can see all of the runway.
5. You need to set the Land on flag for the runway (described on page 54 of the manual).
6. Now to adjust the runway object attributes; Open the attributes window from the menu. You will see that most of the attributes have been set and do not need to be changed. However as the runway initially points North - South you may want to change its orientation. You do this by clicking on the rotation box at the bottom left of the Attributes window and entering the number of degrees you want to rotate the object by. Rotate the runway to 270 degrees, you will also have to rotate the player by 270 degrees so that it lines up with the runway. Now move the player object so that it starts at the end of the runway. You will have to turn Grid Lock off to do this.
7. Now you need to add an enemy runway and aircraft to your scenario. Zoom out to 12500. Drag another runway into the window and position it somewhere in the top right hand corner of the window. This will give you a reasonable gap between the two runways. Set the land on flag as you did for the player runway.

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Enemy runways need hangars to supply the aircraft so zoom in to the new runway (Zoom always centres on the selected object) and then drag a hanger shape into the window and position it next to the runway. Now set the object's class to be Hanger. Open the Attribute window (if it is not already open). Set the Strength to Indestructible. Rotate the hanger shape so that the route that the aircraft takes on exiting is the same direction as the runway (270 degrees). Drag an aircraft shape file into the A/C shape box and the model file (from data) into the A/C model box. Set the initial supply by typing in the number of aircraft you want the the hanger to start up with (3), and set the Rate of Supply to 1.

8. Let's now put in some scenery: Zoom back out so you can see both runways Drag the hill1 shape into the World window and position it between the two runways (set strength to Indestructible). This object may be copied using the copy function but you should first make sure that all the attributes are set correctly as these are copied along with the shape. Section one of the manual describes the creation of rivers and roads from page 19 onwards.
9. Now you have added some scenery we will put in a depot. Drag in a depot shape from the shape file and position this in the world and set it's Class to; Depot, drag the truck shape on to the Vehicle shape icon in the Attributes window, set the vehicle speed, set Initial supply to, say, 5, the rate of supply to 1, and leave the Group interval and Group size at the defaults (these may be changed if you want).
10. The trucks from a depot need to be given a route to follow so enter a route as follows:

Click on the Route Enter Function in the toolbox (mouse will change to crosshairs in the world window).

Use the left button to enter the start, turning points and finish point on the route ending with the right mouse button to join the last point of the route to the hanger of the enemy airfield. (The last point should be fairly close to a hanger).

Route points may be adjusted in Route mode by using the right mouse button.

To see the routes in Object mode select Draw Routes in the toolbox.

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11. Now select Object in the toolbox and select the player object.

Now set the object attributes. Drag the aircraft shape on to Object shape and the associated model and cockpit on to the other boxes.

12. You are now ready to save this new world and take your first flight around it.

Save the world into the work directory as described in the manual and run your simulation.

If the simulation fails to run look in the FSTerr file which should contain a message telling you what has gone wrong.

!Shape

Open the manual at the !Shape section.

Getting to know shape:

The hardest part of creating 3 dimensional objects using shape is understanding the 'planes' system. To get you past that hurdle we will take you through the creation of a simple pyramid or mountain.

First of all start !Shape as described in the manual on page 32.

Open the main window by clicking on the Icon bar Icon. The window contains a grid which is 1000m to a square. This is much too big for most shapes and especially for our mountain. Use the centre mouse button in the window to call up the menu and then go to grid and set the size to 100m. You now have a window which has been filled with a small grid. You must now zoom in by clicking with the left mouse button on the zoom button in the Toolbox. Keep zooming until you see the number 1000 next to the zoom button. If you go too far use the right mouse button to zoom back out.

The first thing to do is create the shape you will see when you are close to the mountain. This is called the shape's Near level. You will note that the Near button on the toolbox is highlighted in red indicating that this is the level of the object that you are editing. You will also notice that the y axis is selected and that 'Select point' is also highlighted. The next thing to do is to enter the points for the base of the mountain. These are entered in the Y plane as the 0.000 Y plane is ground level.

Decide on how big the mountain is going to be, a base of 600m to a side is convenient for this exercise. NOTE always try to draw an object in the centre of the grid as the editor assumes that this is the origin (the centre) of any shape that is created.

Click on the Enter point button in the toolbox to get into enter point mode and then place a point in the centre of the grid by pointing and clicking with the left mouse button. A red Square will appear at the intersection of the centre lines of the grid indicating that a point has been entered. This point is to help orient yourself and will be deleted later on. Now enter points in the same way to form a square 600M to a side with the reference point at its centre. These points are the corners of the mountain at ground level. (With the grid at 100M these points will be at (-3,3) (3,3) (3,-3) (-3,-3) squares relative to the origin).

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The next step is to create a new plane which is at the top of the mountain. (Refer to the New Plane paragraph on page 38 of the manual). For convenience make the mountain 600m high so you need to create a new plane at 600m by typing that number into the M box and then clicking on OK. The level of your new plane now appears in the box next to the axis buttons in the toolbox window. You will notice that your points have disappeared. This is because they only exist on the 0.000 plane and the editor is now in the new plane. But as you have created the base around the origin you should be able to easily reference new points on this plane. You need a point for the apex of the pyramid which coincides with the reference point on the lower plane. To enter this just click on the centre of the plane with the left mouse button. To check whether this point is in the right place click on the down arrow button in the Toolbox and see if the point is in the same place relative to the reference point.

You have now entered all the points needed to create your mountain. What you need to do now is enter polygons around these points. (Refer to the Entering and Adjusting Polygons section on page 36 of the manual).

Next select the colour that you want the mountain to be drawn in. Select the colour option on the toolbox which will call up the palette and select the desired colour by pointing and clicking. From now on all polygons will be this colour unless you reselect the colour option and change it.

To enter the polygon to the front of the mountain first click on the Enter polygon option in the toolbox and then using the up/down cursor keys on the keyboard go to the 600.00 plane, position the triangular cursor over the apex point and click using the left mouse button. Then use the down cursor key to go to the 0.000 plane and point to the lower right point and click again with the left button, you will see a blue line appear between the position of the apex point and this point. Finally point at the lower left point and click with the right mouse button to complete the polygon which should now be shown as a blue triangle. Select point will automatically have been selected in the toolbox. You will notice that you entered the points in a clockwise direction when viewing the polygon from the outside of the mountain. This ensures that the polygon is visible in the world.

Repeat this procedure for the left face of the mountain again starting with the apex and moving down (clockwise) to the bottom left base point and then finally the top left base point. Remember to always finish a polygon with the right mouse button. (If you forget to click on the last point in the polygon with the right mouse button you can end the polygon by clicking on the End Polygon button in the popup polygon menu window).

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Now you have two faces it will be easier to visualise your shape using the wireframe options in the main menu. (Refer to page 44 in the manual). The most useful in this case is 3D View, click on the menu item to open the 3D View window and then call up the control option with the centre mouse button to zoom and rotate the shape so that you can easily pick out all the points. (You will have to set the scale to about 1 : 70). Now to complete the shape enter the last two polygons as before remembering to enter the points clockwise as viewed from the outside of the shape.

The final stage is to create the Mid and Far levels. (Refer to page 38 of the manual). These are created by using the main window menu Edit=>Copy Level function and clicking on Near=>mid and then Mid=>far. Once you have done this you can use the View option in the main menu to look at your shape in solid 3D. (Refer to the View section of the manual for operating instructions). You will have to zoom out using the centre button on the mouse to see your shape.

It is normal to make the shape simpler or change its colour at the mid and far levels. for example the far shape need only be a flat polygon on the ground.

Go back to the Shape editor and click on Far in the toolbox (if it is not already selected). Ensure that you are in select polygon mode and then select each polygon in turn and delete them by using Ctrl X or Delete Polygon from the menu. Once you have done this you will be left with the points you first entered. Go to the 600 plane and delete the apex point by first selecting "Select Point" mode in the toolbox then clicking on the apex point to select it and then using Ctrl X or Selected=>Delete in the menu. Return to the 0.000 plane and join the 4 base points together using Enter polygon. The last operation is to go through each of the Near, Mid, Far levels and delete the reference point.

You have now successfully created your first shape and can save it as described on page 34 of the manual.

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the right button) on the bottom right point. Repeat for the other side remembering to keep the polygon clockwise.

To create the ends of the roof go to the X axis and create the polygons for the ends of the roof as you did for the end walls of the main part of the house. do not forget to change the colour back to the main body colour of the house.

You now have a basic house shape which you can add detail to. First though copy the near level to the Mid and Far detail levels. we will edit these later. Return to the near detail level. We will now add windows to the house. Go to the Z axis and then set the grid size to 1M, move to the plane containing the near wall (-10.00M) and add four points for a window at the left end of the wall. Join these points to form a polygon and change its colour to be black.

We will now copy this window. Click on the Tools button in the toolbox and click on select group. Click on a point in the window with the left button to start a group and then click on the other three points with the right button to add them to the group. Now we will copy this group (ensure that the grid is set to 1M because copy group creates a new group 1 grid square away from the original). use menu Selected=>Copy to copy the window. it will appear 1M higher than the original and become the new selected group. Now we will move this window, click on Translate in X (left most translate icon) enter 10M and OK it. Now translate the window down by -1M in Y. (You can also rotate and scale the selected group).

Creating Mid and Far level shapes

We have already copied the basic house shape to the Mid and Far detail levels. Select the far level and delete all the polygons in it. Now join all the points with lines (polygons with 2 points), this will give a wireframe effect which will look OK from a distance and is faster to draw. (Look at this with view). You may want to change the colour of the shape to a darker shade or black to make it stand out at long range.

If you are happy with the finished result then save it as described in the manual.

Extra enhancements

You may like to choose colours for the walls of your house that make it look as if the sun is shining on it from a particular direction to add realism. To do this choose lighter shades for those surfaces that are towards the sun and darker shades for those in shadow. Remember all shapes should look as if the light comes from the same side.