Chapter 1   **NCSA UIFlow Tutorial**

Chapter Overview

This chapter offers a simple tutorial that introduces and describes the basic steps involved in using NCSA UIFlow:

- installing and invoking the program
- loading datasets from files
- creating new datasets
- using tools in the Geometry View window
- saving your work
- exiting the program

Installing NCSA UIFlow

NCSA UIFlow does not require any unusual installation procedures. As you would for any new Macintosh software, create a new folder and copy the contents of the NCSA UIFlow disk to your hard disk. You may also run NCSA UIFlow from a floppy disk; however, datasets can quickly exceed the capacity of floppy disks.

Getting Started

This section outlines the steps needed to begin running NCSA UIFlow and for performing some basic program operations.

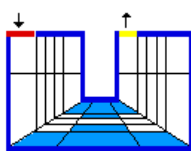**Running NCSA UIFlow**

Figure 1.1   NCSA UIFlow Program Icon

To invoke NCSA UIFlow, double-click on the NCSA UIFlow application or icon (Figure 1.1), or on any dataset that has been previously saved in NCSA UIFlow.

A startup dialog box (Figure 1.2) appears to introduce the program. The box will close when the application completes the initialization process.

Figure 1.2   Startup Dialog Box

UI Flow
Developed By

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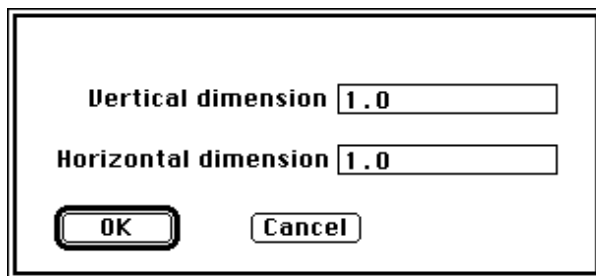**Department of Mechanical Engineering
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Wright-Patterson AFB, Ohio
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UIFlow Version 1.0

To begin a session, select New from the File menu. This creates a new geometry document. The program prompts you for vertical and horizontal dimensions in the Dimension Window (Figure 1.3). Enter the appropriate numbers and select OK or hit the **RETURN** key to continue. For this tutorial, leave the values at the default of 1.0 for both the Vertical and Horizontal dimensions. Clicking Cancel exits the application.
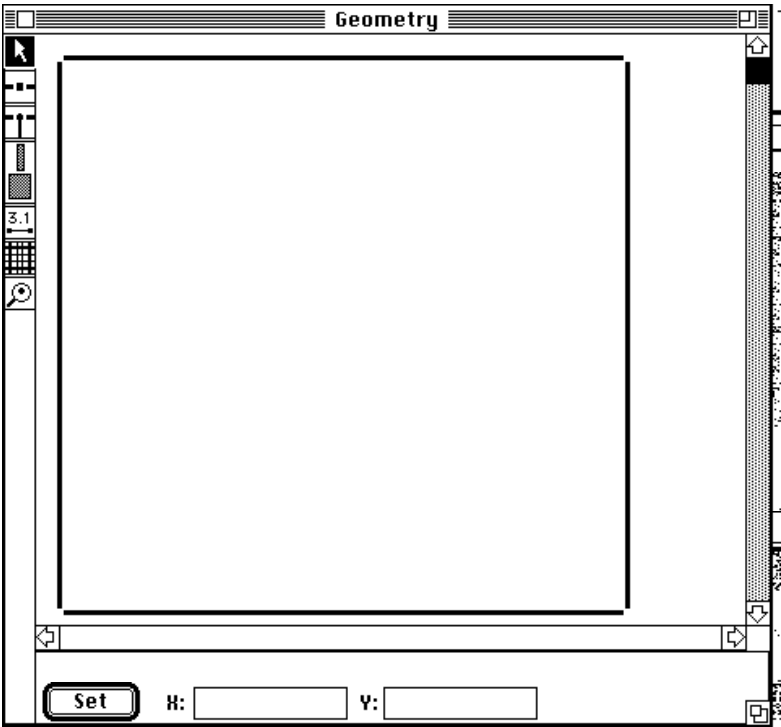
Figure 1.3   **Dimension Window**

After you choose your dimensions, NCSA UIFlow automatically starts a new file and the Geometry window appears (Figure 1.4.) It is here that you will create your dataset.

Figure 1.4   Geometry Window

To close the dataset, either click the close box or choose Close from the File menu (⌘**W.**)

Loading a Dataset

To open a previously entered dataset:

1. Select Open from the File menu (Figure 1.5) or press ⌘**O** on the keyboard.

Figure 1.5   File Menu

A directory dialog box appears. For the purposes of this tutorial, several sample datasets have been saved on the NCSA UIFlow disk within a folder named test_files.

2. Select and open the test_files folder.

3. Select and open the dataset labeled Demo 1.

NCSA UIFlow loads the dataset from this file and displays it in the Geometry window. Use the scrollbar to view the entire dataset.

Geometry Window Overview

You may use each of the tools found on the left side of the Geometry Window to manipulate the dataset. To select a tool, click its icon. The selected icon will be shown in reverse video.

For the purposes of this tutorial, you will practice using the Selection, Segment, Baffle and Fine Grid tools, as well as the Undo command. See Chapter 2, "The Geometry Window," for detailed information on all of the tools.

Using the Selection Tool

To move segment and grid points:

Figure 1.6   Selection Tool

1. Click the Selection tool icon (Figure 1.6.)

2. Position the mouse cursor on the point you want to move. The mouse icon changes from an arrow to a plus symbol whenever you are on a point.

3. Click and drag the point to the desired location. When you drag a boundary point, NCSA UIFlow proportionally moves all the grid points lying on the associated grid line.

Using the Segment Tool

To create segments:

Figure 1.7   Segment Tool

1. Select the Segment tool (Figure 1.7) from the Tool Bar.

2. Click on the boundary at the location a segment division is desired. A segment point will appear as a small square at this location. NCSA UIFlow automatically creates a corresponding grid division on the opposite boundary along with any grid points at intersecting grid lines.

To delete a segment:

1. Select the Segment tool from the Tool Bar.

2. In order to delete a segment one of the bounding segment points must be deleted. Click and hold the mouse on the desired point.

A trash can will appear near each bounding segment point on opposite sides of the selected point.

NOTE: If baffles or obstacles have been created which intersect the associated grid line, NCSA UIFlow will not allow the segment to be deleted. A dialog box appears and informs the user to first delete the baffles and obstacles before deleting the segment.

3. To delete the segment, drag the point to the trash can near the other bounding segment point for the segment to be deleted and drop it in.

4. Release the mouse button. The segment, its associated grid line and the grid point on the opposing boundry are all deleted. The resulting segment will retain the attributes of the undeleted segment.

Example: If the segment to the left of the point is specified as an Inflow segment and the segment to the right is specified as a Wall segment, dragging the point to the trash can on the right will cause the new segment to be defined as an Inflow segment.

Using the Baffle Tool

To create a baffle:

Figure 1.8   **Baffle Tool**

1. Click the Baffle tool icon (Figure 1.8.)

2. Position and click the cursor on the line segment where the baffle belongs.

To delete a baffle:

1. Select the Baffle tool.

2. Select the baffle. A dialog box appears, asking if you are sure you want to delete the baffle. Click OK or hit **RETURN** to perform the deletion.

Viewing Fine Grids

With the Fine Grids tool (Figure 1.9), you can display a selected number of fine grids, from one to five.
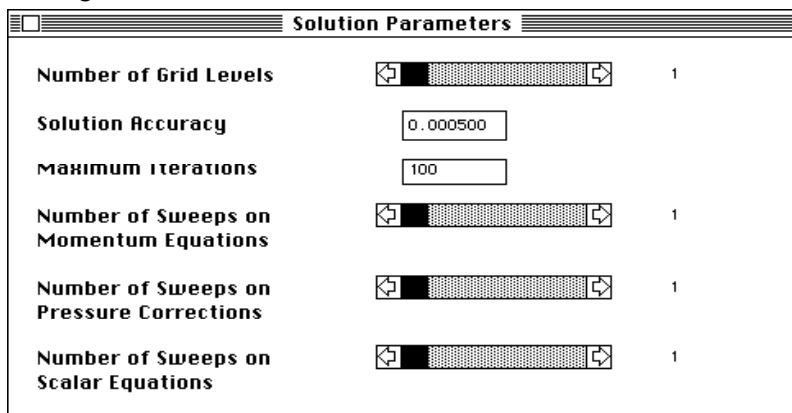
Figure 1.9   **Fine Grids Tool**

To specify the number of fine grids:

1. Select the Solution Parameters command in the Options menu to bring up the Solution Parameters dialog box (Figure 1.10.)

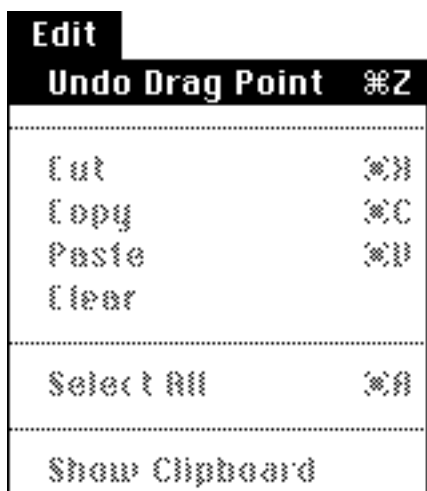**Figure 1.10 Solution Parameters Dialog Box**

2. Drag the "Number of Grid Levels" scrollbar to the right to increase the grid divisions multiplier from one (the default) up to five (the maximum.)

3. Close the Solution Parameters dialog box.

4. Click the Fine Grid tool icon. Notice that the number of grid divisions increases to reflect the number of grid levels chosen.

Using the Undo Command

To Undo an action, select the Undo command from the Edit menu, shown in Figure 1.11 or press ⌘**Z**.
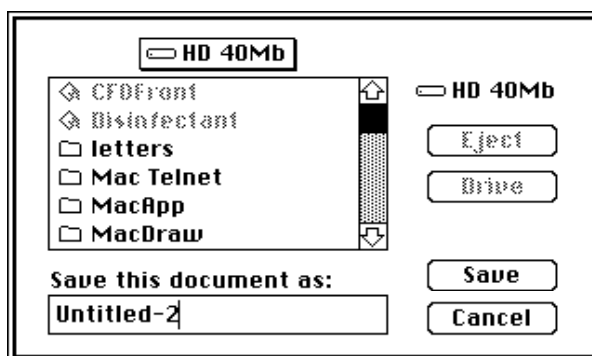
Figure 1.11 Edit Menu

Saving a New Dataset

To save the contents of a newly created geometry:

1. Choose Save (⌘**S**) or Save As from the File menu. The Save dialog box appears (Figure 1.12.)

Figure 1.12   Save Dialog Box

2. Enter a name for the file.

3. Click Save or press **RETURN**.

Exiting NCSA UIFlow

To exit NCSA UIFlow, choose Quit from the File menu or press ⌘**Q**.

If you have generated a new dataset and have not yet saved it, a dialog box appears. To save the dataset click Yes or press **RETURN**.