Chapter 2 Laybat Tool

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Chapter Overview

This chapter describes the batch capabilities of the UNIX tool, Laybat to create animation sequences on the Cray or other UNIX system. To use Laybat, you need to do the following:

- create the batch mask for the animation sequence
- upload the animation sequence to a remote machine
- run the Laybat tool
- download the processed animation sequence to your Macintosh
- view the sequence by loading it into an appropriate software program, such as NCSA Image

The following chapter includes a short tutorial containing basic UNIX, NCSA Telnet commands, and NCSA Image commands for use with UNIX systems and NCSA software, respectively. However, other software may be used. If you are using NCSA software, knowledge of the Telnet program, the Image program, as well as UNIX is highly recommended. Knowledge of the Macintosh interface is assumed. If you are unfamiliar with any of the preceding applications or systems, refer to their respective user's manuals.

Creating a Batch Mask in NCSA Layout

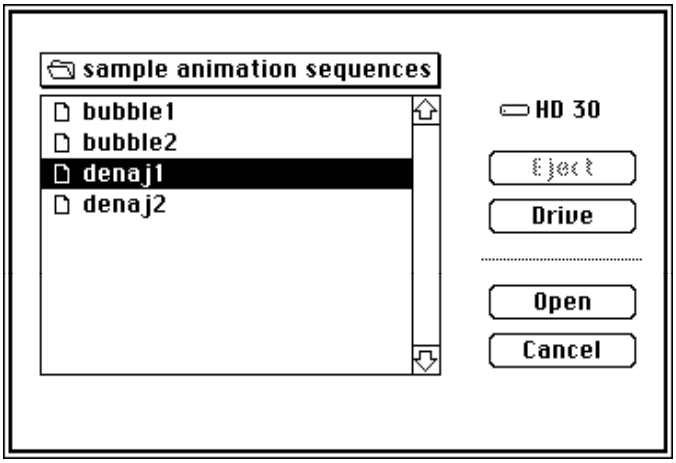
Defining an Animation Template

To create an animation template using the UNIX tool, Laybat, you must first create a batch mask in NCSA Layout. Under most circumstances it is assumed that the scientist has already created a set of images or several sets of images on the Cray or other machine and downloaded them to a folder on the Macintosh. For this tutorial, you will use a sequence provided on the distribution disk.

1. Select New from the File menu or press -N. An empty, untitled Layout window appears.

2. Select Load Image from the File menu or press -I. A directory dialog box shown in Figure 2.1 appears displaying the contents of the Layout distribution disk.

Figure 2.1 Load Image Directory Dialog Box



2. Open the folder labeled images by double-clicking on the filename.

3. Open the folder named “sample animation sequence.” A list of frames appear.

4. Select the frame `denaj1`. The image will appear in the empty layout.

5. Enable the image for Animation. To do so:

   • Open the Edit Options dialog box (Figure 2.2) by clicking twice within the image, chosing Edit Object from the Edit menu, or by pressing -E.

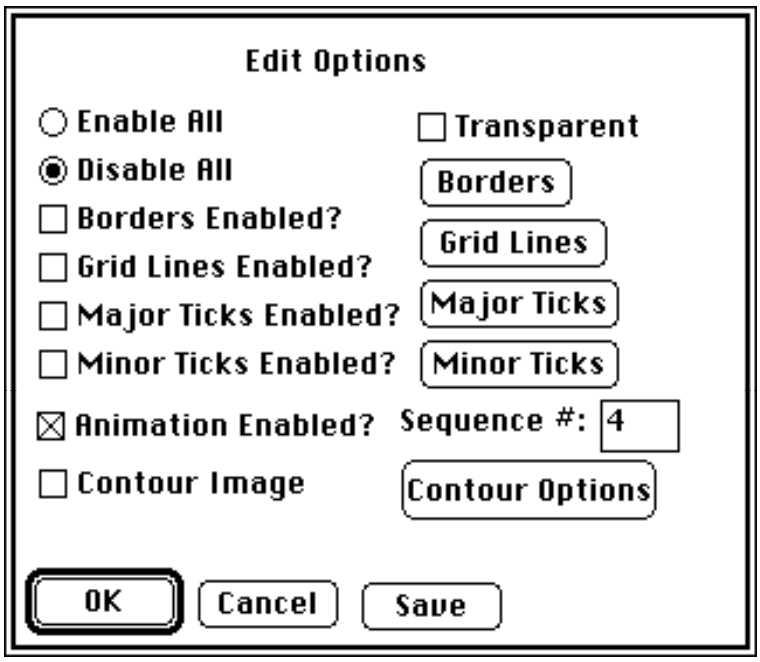
   • Select the Animation Enabled box.

   • Click OK.

NOTE: Any frame from a sequence that you want animated must have the Animation Enabled option activated.

See Chapter 4, “Creating a Display” for more information on the Edit Options dialog box.

Figure 2.2 Edit Options Dialog Box



6. Add any annotations, text, or graphics as outlined in Chapter 4, “Creating a Display.” To add counters, see the section below, “Adding Counter.”

NOTE: Any annotations, text, etc. added to one frame in an animation sequence will automatically be added to any other frame in that sequence when they are batch processed on a remote machine.

Please refer to the section, “Loading Images” in Chapter 4 for more detailed information on loading images.

Loading Multiple Images for Animation

A single layout may contain multiple animation sequences. For instance, a set of images representing velocity may be animated with a corresponding set of images representing pressure. Thus, by viewing related images side-by-side, or by overlaying a contour plot over another animation, you may gain a better understanding of their relationship. You may load as many frames for animation as memory allows.

NOTE: Remember that each image enabled for animation in a particular layout session must have a *corresponding sequence* of images. For consis-

tency, make sure different sequences contain the same number of frames. In other words, if the denaj and bubble sequences both contain five frames, they will begin and end together with no blank frames within their animation.

Included on the distribution disk are three frames from a bubble animation sequence, `bubble1` and `bubble2`. Although these frames are unrelated to the denaj sequence listed above, for the purposes of this tutorial, you will include the bubble and denaj frames in a single layout. To load multiple frames:

1. Activate the layout window containing the `denaj1` image.

2. Choose Load Image from the File menu or press -I. A directory dialog box appears on the screen.

3. Select the frame `bubble1` and click OK. An image of a bubble appears in the denaj1 layout.

4. Enable the image for Animation. To do so:

   - Select the image by clicking once within it .

   - Open the Edit Options dialog box (Figure 2.2) by clicking twice within the image, chosing Edit Object from the Edit menu, or by pressing -E.

   - Select the Animation Enabled box.

   - Click OK.

(For more information on the Edit Object dialog box, refer to Chapter 4, “Creating a Display.”)

5. Place the images and make annotations to them as desired. See Chapter 4, “Creating a Display,” for more information on moving images.

Adding Counters

NCSA Layout 1.2 allows you to add counters to your layout images in order to keep count of successive frames within the animation sequence. Add a counter to your layout now by doing the following:

1) Click any part of image or screen area where you wish the counter to appear.

2) Select New Text from the Text menu or press -T. A text box appears.

3) Enter the counter text. NCSA Layout recognizes digit values, but ignores letters or symbols entered as a counter. For this tutorial, enter the number 1.

4) Select the number.

5) Specify the counter text’s font, size, style, color, and background color by choosing each option from the Text menu. See Chapter 4 for more

information on these options.

6) Choose Counter from the Text menu while the number is still selected. Notice that once selected, a checkmark appears beside the Counter option.

Selecting an Area of a Layout

At times you may want to animate only a section of a layout rather than its entire contents. For instance, you may only want to emphasize the action occuring in a certain area of an image. Also, by choosing only a section of a layout window, you cut down the generation time of the Cray animation. In this tutorial, you will animate the entire layout, but to choose a section of a layout at any time:

1. Hold down the OPTION key. The cursor turns into a cross-hatch mark.

2. Drag the cross-hatch mark over the desired region while simultaneously pressing the OPTION key.

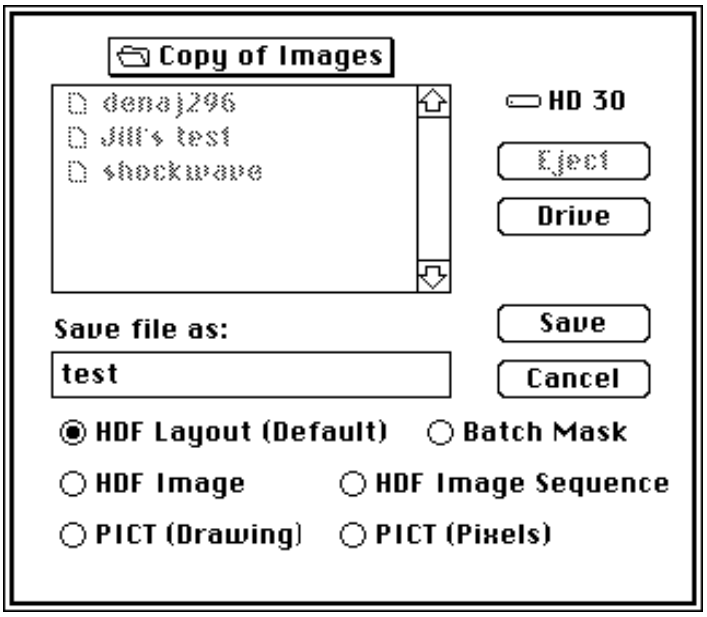
3. Release both the mouse button and the OPTION key at the same time. The selected region is outlined by a rotating dotted line. Now only that area will be animated.

Saving a Layout

Save the layout screen both as a batch mask, for generating the animation sequence on a remote machine, and as an HDF Layout (Default), in order to edit the frame later (Batch Mask does not allow later editing). For this tutorial:

1) Choose Save As from the File menu. A save dialog box, shown in Figure 2.3, appears on the screen.

Figure 2.3 Save Dialog Box



2. Save the layout by activating the radio button next to HDF Layout (Default).

3. Name the file **`test`**.

4. Click Save.

5. Select Save As from the File menu again; this time activate the radio button next to Batch Mask.

6. Rename your Layout with a similar name, **`test.bat`**.

7. Click Save. If you do not rename your file, a dialog box appears on the screen asking if you wish to replace the existing file, in this case, **`test`**. Click Cancel to remove the box, and rename the file.

For information on all the Save As options, see Chapter 4, “Creating a Display.”

Uploading an Animation Sequence

To successfully run Laybat on the remote machine, you must transfer the necessary batch file and animation sequence files (using FTP, Kermit, NCSA Telnet etc.) into your account on the remote machine. Contact your systems administrator for help in installing the batch processor and putting Laybat into an easily accessible directory.

It is beyond the scope of this manual to outline steps for uploading and downloading an animation sequence for different systems. Follow the normal procedures for your machines to complete the transfer of the

animation sequence(s).

Also you must know basic UNIX commands to function in this part of the Laybat process. It is impossible for this manual to list or anticipate the commands you will need. If you are unfamiliar with UNIX, locate someone who is!

When you have located Laybat, its command line and options appear on the screen. Your session should look something like the lines outlined below.

```
u2 27%    ~/laybatch/laybat
Usage:    laybat input  [-u] [-i inc] [-f first]
          [-s seq1 -s seq2...] [-o output]

       -u Uncompressed output files
       -i counter increment
       -f counter start
       -s imageSequence
       -o output File prefix
```

Using The Laybat Tool

The Laybat tool generates animation sequences. For help with Laybat and its commands, enter:

`laybat` RETURN

To begin animation of your image sequence(s), enter:

`laybat` *`input`* `[-u] [-i` *`inc`*`] [-f` *`first`*`]`
`[-s seq1 -s seq2...] [-o` *`output`*`]`

- where *input* is the name of the NCSA Layout batch sequence file you created on the Macintosh, in this case, `test.bat`.

- where *-u* is the option for generating uncompressed HDF output files.

NOTE: Laybat compresses output files by default. Use of option -u generates larger output files, but yields faster animations when animated off of disk in NCSA Image .

- where *-i inc* is the increment of the counter or counters. The default increment is 1. Increments and their resulting counters are based on a base 10 system.

Table 2.1 shows some sample increments and their resulting counter values.

Table 2.1 Increments and Counters

Increment Entered	Counter Displayed
-i 1	0, 1, 2,...10
-i 5	0, 5, 10,...45
-i 7	0, 7, 14,...63
-i 10	0, 10, 20,...90

- where *-f first* is the first number for the counter. The default is 0.

- where *-s* is the sequence of images to be animated. Use a -s for each sequence of images in the animation.

NOTE: One sequence must exist for every animated image in the batch mask. The order of the -s options must correspond to the order in which you loaded in the frames; therefore, you must make note of the sequence order while in NCSA Layout. If the parameters to the -s options are not in sequence and you try to run Laybat, an error message will appear on the screen and the animation will not run (unless the images are the same size).

- where *-o output* represents the name of the output sequence. The output name is concatinated with the counter. If you do not designate an output file, Laybat assigns a default file named, `layout`.

Below is the tutorial command line for the Laybat. Remember that you have two animated images in your layout, and each set of animations has 3 images. You have named the first set of files, {`denaj1`, `denaj2`}, and the second set, {`bubble1`, `bubble2`}. Your layout batch file is called test.bat. You will name the animation sequence {`out1`, `out2`}. To generate this sequence, enter the UNIX command:

```
laybat test.bat -s d* -s b* -o out
```

- where * is the UNIX wildcard matching all the files in the sequence.

Note that theLaybat tool completes all its parameter checking before it begins to run the animation. This system prevents the headache of waiting for a large animation sequence to be generated, only to be stopped at some point with an error message.

NOTE: Now that all the images have been generated and the animation is complete, you may view any output image on your screen if you are using NCSA Telnet and have the HDF option, `hdfrseq`, installed.

You can now transfer the animated sequences back to your Macintosh and into an application, such as NCSA Image, for presentation.

Downloading and Displaying an Animation Sequence

Download the animation sequences back to the Macintosh using FTP, Kermit, or NCSA Telnet, etc.

Once your images have been translated to your Macintosh, you may use the desired presentation software, such as NCSA Image, to display and animate them. For information on obtaining other NCSA software (NCSA Telnet, NCSA Image, etc.) refer to Chapter 3, “Formatting Your Data Files.”