

Swirlique Application Help

© 2004-2008 ... Mystic Fractal

Table of Contents

Foreword	0
1 Main Index	6
1 Title Bar	6
2 Scroll bars	7
3 Size	7
4 Move	7
5 Minimize Command	7
6 Maximize Command	8
7 Next Window	8
8 Previous Window	8
9 Close	8
10 Restore	9
11 Switch to	9
2 Swirlique Remote	10
1 New	10
2 Undo	10
3 Size	10
4 Color	10
5 Batch	10
6 FVR	10
7 Draw button	11
8 Abort button	11
9 View	11
10 Help	11
11 Channel Guide	11
12 G1	12
13 G2	12
14 G3	12
15 G4	12
16 J1	12
17 J2	12
18 J3	13
19 J4	13
20 Maskit	13
21 Riley	13

22	Save	13
23	Load	13
24	Bmp	13
25	Png	14
26	Jpg	14
27	14
28	>	14
29	[]	15
30	V	15
3	File menu	15
1	File New command	16
2	File Open command	16
	File Open dialog box	16
3	File Close command	17
4	File Save command	17
5	File Save As command	17
	File Save as dialog box	17
6	File Load Parameters command	18
7	Load Par File	18
8	File Load Palettes command	18
9	File Open [JPG] command	18
10	File Open [PNG] command	19
11	File Load Text [SWT) command	19
12	File Save Parameters command	19
13	Save Par File	19
14	File Save Palettes command	20
15	File Save As [JPG] command	20
16	File Save As [PNG] command	20
17	File Save Text [SWT) command	20
18	Export options	20
	Save [OBJ] command	20
	Save [POV] command	21
	Mesh Setup command	21
19	File 1, 2, 3, 4, 5, 6 command	21
20	File Exit command	21
4	Edit menu	22
1	Edit Undo command	22
2	Edit Copy command	22
3	Edit Paste command	23

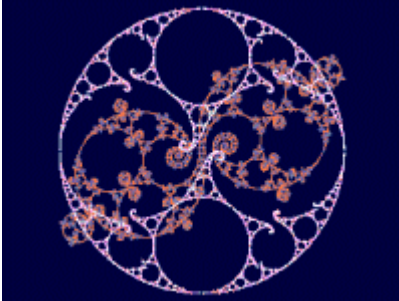
4	Edit Copy Data command	23
5	Edit Paste Data command	23
6	Fractal Variables	24
	FVR Window	25
7	Size	26
8	Edit Palette	26
	Reverse button	27
	Neg Button	27
	H/R Button	28
	Spread Button	28
	Copy Button	28
	SRG Button	28
	SRB Button	28
	Okay Button	28
	Reset Button	28
	Cancel Button	28
	Apply Button	28
	Red Slider	29
	Red edit box	29
	Green Slider	29
	Green edit box.....	29
	Blue Slider	29
	Blue edit box	29
	Smooth Button	29
	Scramble Button	29
9	Preferences	29
5	Image menu	29
1	Image Draw command	30
2	Image Draw Composite command	30
3	Image Redraw command	30
4	Image Auto Clear command	31
5	Image Auto Alert command	31
6	Image Auto Remote command	31
7	Image Auto Time command	31
8	Image Merge Sum command	31
9	Image Merge And command	32
10	Image Merge Or command	32
11	Image Merge High command	32
12	Image Merge Low command	32
13	Image Merge Back command	32
14	Image Merge Diff command	33
15	Image Abort command	33
16	Image Clone	33
17	Full Screen	33

18 Figure #1	33
19 Figure #2	33
20 Figure #3	34
21 Figure #4	34
22 Image Composite command	34
6 Color menu	34
1 Color Cycle command	34
2 Palette menu	34
Palette 1-21 command	35
3 Background Filter...	35
4 Flood Fill	36
7 View menu	37
1 View Toolbar command	37
toolbar	37
2 View Status Bar Command	38
status bar	38
8 Window menu	38
1 Cascade	39
2 Tile	39
3 Arrange Icons	39
4 Size DeskTop	39
5 1, 2,	39
9 A/V menu	39
1 Open Avi Stream	40
2 Write Frames	40
3 Close Avi Stream	41
4 View Avi	41
5 Avi Composite	41
10 Demo menu	41
1 Random Grandma #1	42
2 Random Grandma #2	42
3 Random Grandma #3	42
4 Random Grandma #4	42
5 Random Jorgensen #1	42
6 Random Jorgensen #2	43
7 Random Jorgensen #3	43
8 Random Jorgensen #4	43

9	Random Maskit	43
10	Random Riley	43
11	Random/Batch options	44
11	Help menu	44
1	Getting Started	45
2	Index	46
3	Bibliography	46
4	About Swirlique	47
	Chronology	48
	Index	51

1 Main Index

Swirlique Help Index



[Getting Started](#)

[Swirlique Remote](#)

[Channel Guide](#)

Commands

[File menu](#)

[Edit menu](#)

[Image menu](#)

[Color menu](#)

[View menu](#)

[Window menu](#)

[A/V menu](#)

[Demo menu](#)

[Help menu](#)

1.1 Title Bar

Title Bar

The title bar is located along the top of a window. It contains the name of the application and drawing.

To move the window, drag the title bar. Note: You can also move dialog boxes by dragging their title bars.

A title bar may contain the following elements:

- Application Control-menu button
- Drawing Control-menu button
- Maximize button
- Minimize button
- Name of the application
- Name of the drawing
- Restore button

1.2 Scroll bars

Scroll bars

Displayed at the right and bottom edges of the drawing window. The scroll boxes inside the scroll bars indicate your vertical and horizontal location in the drawing. You can use the mouse to scroll to other parts of the drawing.

1.3 Size

Size command (System menu)

Use this command to display a four-headed arrow so you can size the active window with the arrow keys.



After the pointer changes to the four-headed arrow:

1. Press one of the DIRECTION keys (left, right, up, or down arrow key) to move the pointer to the border you want to move.
2. Press a DIRECTION key to move the border.
3. Press ENTER when the window is the size you want.

Note: This command is unavailable if you maximize the window.

Shortcut

Mouse: Drag the size bars at the corners or edges of the window.

1.4 Move

Move command (Control menu)

Use this command to display a four-headed arrow so you can move the active window or dialog box with the arrow keys.



Note: This command is unavailable if you maximize the window.

Shortcut


Keys: CTRL+F7

1.5 Minimize Command

Minimize command (application Control menu)

Use this command to reduce the Swirlique window to an icon.

Shortcut


Mouse: Click the minimize icon  on the title bar.
Keys: ALT+F9

1.6 Maximize Command

Maximize command (System menu)

Use this command to enlarge the active window to fill the available space.

Shortcut

Mouse: Click the maximize icon  on the title bar; or double-click the title bar.
Keys: CTRL+F10 enlarges a drawing window.

1.7 Next Window

Next Window command (drawing Control menu)

Use this command to switch to the next open drawing window. Swirlique determines which window is next according to the order in which you opened the windows.

Shortcut

Keys: CTRL+F6

1.8 Previous Window

Previous Window command (drawing Control menu)

Use this command to switch to the previous open drawing window. Swirlique determines which window is previous according to the order in which you opened the windows.

Shortcut

Keys: SHIFT+CTRL+F6

1.9 Close

Close command (Control menus)

Use this command to close the active window or dialog box.

Double-clicking a Control-menu box is the same as choosing the Close command.

**Shortcuts**

Keys: CTRL+F4 closes a drawing window
ALT+F4 closes the application

1.10 Restore**Restore command (Control menu)**

Use this command to return the active window to its size and position before you chose the Maximize or Minimize command.

1.11 Switch to**Switch to command (application Control menu)**

Use this command to display a list of all open applications. Use this "Task List" to switch to or close an application on the list.

Shortcut

Keys: CTRL+ESC

Dialog Box Options

When you choose the Switch To command, you will be presented with a dialog box with the following options:

Task List

Select the application you want to switch to or close.

Switch To

Makes the selected application active.

End Task

Closes the selected application.

Cancel

Closes the Task List box.

Cascade

Arranges open applications so they overlap and you can see each title bar. This option does not affect applications reduced to icons.

Tile

Arranges open applications into windows that do not overlap. This option does not affect applications reduced to icons.

Arrange Icons

Arranges the icons of all minimized applications across the bottom of the screen.

2 Swirlique Remote

Swirlique Remote

The remote provides access to many of the most-used commands in Swirlique. Info about each button can be obtained by using the '?' located near the close box in the top right-hand corner.

2.1 New

New button

Use this button to create a new drawing window in Swirlique.

2.2 Undo

Undo button

Use this command to undo the last action. Color-cycling is disabled after using Undo.

2.3 Size

Size button

This allows you to set the drawing area for a picture, independent of the Windows screen size. It also shows which size is currently in use. The aspect for the drawing is based on the ratio of X (horizontal width) to Y (vertical height.) The custom setting allows for any size that system memory will permit. The minimum size for an image is 40X30. Note: the image aspect is fixed at 1/1, and images are scaled to fit the drawing window horizontally. Some images require that the drawing window be resized vertically to contain all of the curve.

2.4 Color

Color button

Use the palette editor to modify the palette(s) in use.

2.5 Batch

Batch button

Here you set parameters for randomizing, batching and saving random-generated images to disk.

2.6 FVR

FVR button

The window opened contains all the major variables that Swirlique now scales between key frames of an avi stream.

2.7 Draw button

Draw button

Use this button to draw or redraw the image for the current fractal variables. Clicking inside the draw window with the left-mouse button stops all plotting. Use the Cont button to restart plotting from the current column. When the lsystem option is selected, a custom dialog is opened to enter lsystem draw options.

2.8 Abort button

Abort button

Use this command to stop drawing. Clicking inside a window's drawing area or close box (or the program close box) will also stop the drawing. Note: once a plot has started Swirlique continues to draw the image for that window regardless of which drawing window has the input focus, until done or aborted. You can open and close other drawing windows without affecting the current drawing, but only one drawing is active at any time.

2.9 View

View button

Displays the entire plot, expanding or shrinking the image to fit in a maximized window without title bar, scroll bars or menu bar. At all other times, part of the picture is hidden by the inclusion of the title bar, toolbar, scroll bars and menu bar. To exit full-screen mode, press any key or click the left-mouse button.

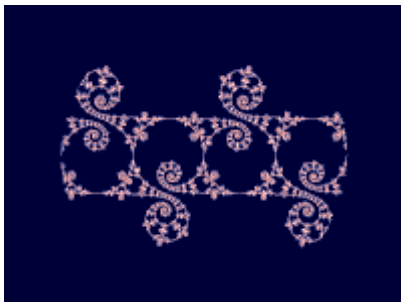
2.10 Help

Help button

Use this button to open the help index for Swirlique.

2.11 Channel Guide

Channel Guide



The ten channels accessed via the Swirlique remote:

G1 -- Generate random Grandma's parabolic commutator groups
G2 -- Generate random Grandma's four-alarm two-generator groups
G3 -- Generate random Grandma's parabolic commutator (variation of G1)
G4 -- Generate random Grandma's parabolic commutator (variation of G1)
J1 -- Generate random Jorgensen parabolic groups #1
J2 -- Generate random Jorgensen parabolic groups #2
J3 -- Generate random Jorgensen parabolic groups (variation of J2)
J4 -- Generate random Jorgensen parabolic groups (variation of J1)
Maskit -- Generate random Maskit parabolic groups
Riley -- Generate random Riley parabolic groups

2.12 G1

G1 Channel

Random Grandma's parabolic recipe

2.13 G2

G2 Channel

Random Grandma's four-alarm recipe

2.14 G3

G3 Channel

Random Grandma's parabolic recipe (variation)

2.15 G4

G4 Channel

Random Grandma's parabolic recipe (variation)

2.16 J1

J1 Channel

Random Jorgensen's recipe #1

2.17 J2

J2 Channel

Random Jorgensen's recipe #2

2.18 J3

J3 Channel

Random Jorgensen's recipe #3

2.19 J4

J4 Channel

Random Jorgensen's recipe #4

2.20 Maskit

Maskit Channel

Random Maskit's recipe

2.21 Riley

Riley Channel

Random Riley's recipe

2.22 Save

Save button

Use this button to save and name the active drawing. Swirlique displays the Save As dialog box so you can name your drawing.

To save a drawing with its existing name and directory, use the File/Save command.

2.23 Load

Load button

Use this button to open an existing data/image file in a new window. Use the Window menu to switch among the multiple open images.

2.24 Bmp

BMP button

Use this button to select the BMP format when loading and saving fractals. This is the default Windows bitmap format, readable by most Windows programs that use image files. This is also the fastest method of loading and saving fractals, but requires more disk space, since no compression is used. Windows keeps track of the last six BMP files saved or loaded (displayed in the Files menu.)

2.25 Png

PNG radio button

Use this button to select the PNG format when loading and saving fractals. This format uses medium compression without loss of image quality.

2.26 Jpg

JPG radio button

Use this button to select the JPEG format when loading and saving fractals. This format uses moderate compression but with some loss of image quality. Preferable for posting to the net, since most browsers can display jpeg files.

2.27 |||||

||||| button

Through a series of windows, this allows you to name and open an avi animation stream and choose a compression method. After choosing the frame rate (1-60) and using the file requester to name the file, you are given a choice of compression methods. You can also choose no compression for optimum view quality. (All compression methods degrade the original images, some more than others.) The first key frame in the stream is then drawn and written to the file.

Note: after the stream is opened, the size of the fractal that can be drawn is fixed at the size of the frame. No changes can be made to the size until the stream is closed.

2.28 >

> button

With this option, frames are written to a stream based on the difference between the current key frame and the previous key frame. The first key frame is written when you open a stream. The next key frame is created each time you use this option. In between you can zoom or change Fvr variables as much as necessary. The stream is only written to when this option is used. The last key frame is automatically saved after the 'tween' series is written. The number of frames may range from 1-1500 frames between keys. With a frame number of 1 only the key frames are written. This allows animation to be created that incorporate all scalable variables in Swirlique.

Use the Cancel button to exit this dialog without initializing a new series of frames.

Check the Log Scaling box if you want the frames to be written with logarithmic space between frames, else linear space is used. Useful when zooming, where frames would otherwise be packed together at the end of the frame series.

2.29 **[]****[] button**

Closes any open avi stream file. You need to do this before viewing the file or creating a new avi file. The stream is also closed when you exit Swirlique.

2.30 **V****V button**

Opens an avi file for viewing. You can preview any multimedia file by clicking on its file name. A multimedia box will appear to the right of the file list. Click on okay to open the main view window.

There are buttons to Play a file forwards or Backwards, or forward automatically with Auto rewind/repeat. Click on Slow to slow down a video. Each click on Slow halves the viewing speed. A click on Stop freezes viewing and restores the view speed to normal playback.

Use the Open button to view a different avi file. Use the Save button to save the file in a different compression format. You must use a different name to save the file than the name that was used to open it. Click on the left-mouse button or any key to abort a save operation.

Note: the view avi requester can be used to preview any multimedia file, including midi files.

3 **File menu****File menu commands**

The File menu offers the following commands:

New	Creates a new drawing.
Open	Opens an existing drawing.
Close	Closes an opened drawing.
Save	Saves an opened drawing using the same file name.
Save As	Saves an opened drawing to a specified file name.
Load Parameters	Load parameters from an existing drawing.
Load Par File	Load a parameters definition file.
Load Palettes [PL]	Load palettes file.
Open [JPEG]	Load jpeg.
Open [PNG]	Load png.
Load Text [SWT]	Load text (platform-independent) data file.
Save Parameters	Save parameters for an opened drawing to a specified file name.
Save Par File	Save a parameters definition file.
Save Palettes [PL]	Save palettes to file.
Save As [JPEG]	Save in jpeg format.
Save As [PNG]	Save in png format.
Save Text [SWT]	Save data in text (platform-independent) format.
Export options	Save in 3-D format, OBJ or POV.

[Exit](#)

Exits Swirlique.

3.1 File New command

New command (File menu)

Use this command to create a new drawing window in Swirlique. The image and data for the opening picture are used to create the new window.

You can open an existing data/image file with the [Open command](#).

Shortcuts

Keys: CTRL+N

3.2 File Open command

Open command (File menu)

Use this command to open an existing data/image file in a new window. Use the Window menu to switch among the multiple open images. See [Window 1, 2, ... command](#).

You can create new images with the [New command](#).

Shortcuts

Toolbar: 
Keys: CTRL+O

3.2.1 File Open dialog box

File Open dialog box

The following options allow you to specify which file to open:

File Name

Type or select the filename you want to open. This box lists files with the extension you select in the List Files of Type box.

List Files of Type

Select the type of file you want to open:
<< List your application's file types here. >>

Drives

Select the drive in which DFS stores the file that you want to open.

Directories

Select the directory in which Swirlique stores the file that you want to open.

Network...

Choose this button to connect to a network location, assigning it a new drive letter.

3.3 File Close command

Close command (File menu)

Use this command to close the window containing the active image. If you close a window without saving, you lose all changes made since the last time you saved it.

You can also close a drawing by using the Close icon on the drawing window, as shown below:



3.4 File Save command

Save command (File menu)

Use this command to save the active drawing to its current name and directory. When you save a drawing for the first time, Swirlique displays the [Save As dialog box](#) so you can name your drawing. If you want to change the name and directory of an existing drawing before you save it, choose the [Save As command](#).

Shortcuts

Toolbar: 
Keys: CTRL+S

3.5 File Save As command

Save As command (File menu)

Use this command to save and name the active drawing. Swirlique displays the [Save As dialog box](#) so you can name your drawing.

To save a drawing with its existing name and directory, use the [Save command](#).

3.5.1 File Save as dialog box

File Save As dialog box

The following options allow you to specify the name and location of the file you're about to save:

File Name

Type a new filename to save a drawing with a different name. A filename can contain up to eight characters and an extension of up to three characters. Swirlique adds the

extension you specify in the Save File As Type box.

Drives

Select the drive in which you want to store the drawing.

Directories

Select the directory in which you want to store the drawing.

Network...

Choose this button to connect to a network location, assigning it a new drive letter.

3.6 File Load Parameters command

Load Parameters command (File menu)

Use this command to load a data file [.dfs]. The data file contains all variables to recreate an image created previously with Swirlique.

3.7 Load Par File

Load Par File

Opens a window that allows the user to select and convert Swirlique parameter files to Swirlique format. A list of par titles is displayed for each .par file loaded. The user then selects a title and clicks on Convert to translate it to the current image data.

Select Load Palette to load a par palette *only* without changing the current function data.

Related Topics:

[Edit Palette](#) describes the Swirlique palette editor.

3.8 File Load Palettes command

Load Palettes command (File menu)

Use this command to load a palette file [.pl]. The palette file contains 21 palettes created previously with Swirlique (or another version of the program.)

3.9 File Open [JPG] command

Open [JPEG] command (File menu)

Use this command to load parameters and a bitmap file that were saved in jpeg format. There is an option in the file-type box to load only the bitmap too. This replaces the Open command for those who need a smaller sized bitmap file. Note: the last files list doesn't keep track of images loaded in JPEG format.

3.10 File Open [PNG] command

Open [PNG] command (File menu)

Use this command to load parameters and a bitmap file that was saved in png format. There is an option in the file-type box to load only the bitmap too. This replaces the Open command for those who need a smaller sized bitmap file. Note: the last files list doesn't keep track of images loaded in PNG format.

3.11 File Load Text [SWT) command

Load Text [SWT) command

Load text (platform-independent) data file. Useful for transferring data files between Swirlique and iSwirlique.

3.12 File Save Parameters command

Save Parameters command (File menu)

Use this command to save all data elements for the current image in a data file [.dfs].

3.13 Save Par File

Save Par File

This option allows you to save Swirlique parameters and color info in a text format similar to Fractint's .par format. You can build par libraries of your favorite fractals to share with other users of Swirlique. The par definitions can be easily posted on the net and reloaded in Swirlique through the Load Par command.

Specify the par file name with the Filename button. This can be a generic file name, such as "complex.par", for a library of par titles, or a specific file name based on the fractal's .dfs. The later file name is the default. Use the Par Title box to specify the fractal's name or description. Add a comment to the par definition with the Comment box. When you click on Okay, if a file with the Par Filename doesn't exist, it will be created and the par definition added to it. If the file exists, Swirlique will scan the file for a par title the same as the one being added. If it doesn't exist, the par definition will be added to the end of the par file. If it exists, you have the option to replace the old definition with the new one. If you choose not to replace the old definition, the existing par file remains unchanged and no further action is taken.

3.14 File Save Palettes command

Save Palettes command (File menu)

Use this command to save all palettes for the current session in a palette file [.pl].

3.15 File Save As [JPG] command

Save As [JPEG] command (File menu)

Use this command to save the parameters and active bitmap in jpeg format. There is an option in the file-type box to save only the bitmap too. This replaces the Save and Save As command for those who need a smaller sized bitmap file. Note: the last files list doesn't keep track of images saved in JPEG format.

3.16 File Save As [PNG] command

Save As [PNG] command (File menu)

Use this command to save the parameters and active bitmap in png format. There is an option in the file-type box to save only the bitmap too. This replaces the Save and Save As command for those who need a smaller sized bitmap file. Note: the last files list doesn't keep track of images saved in PNG format.

3.17 File Save Text [SWT) command

Save Text [SWT) command

Save data in text (platform-independent) format. Useful for transferring data files between Swirlique and iSwirlique. Some differences between rendering styles may be observed, but image shapes should be maintained.

3.18 Export options

Save Kleinian set as 3-D object(s) in POV or OBJ format.

3.18.1 Save [OBJ] command

Save Figure [OBJ] command (File menu)

When the active figure is a circle or cylinder plot, then this command is enabled and may be selected. After naming the object file through a file requester, the current figure is redrawn and the cylinder or circle plot will be written to a Wavefront obj file as triangle faces and vertices. No color information or surface normals are written. This is useful to export a fractal for use in Bryce or another program that supports the Wavefront format.

Caveats: this is capable of generating very large files. The way to reduce file size is to reduce cylinder or spherical forms by increasing epsilon or decreasing the circle size. Use the smoothing option in Bryce to round off cylinder shapes in the imported object, if possible. (Smaller object files take less time to smooth.)

3.18.2 Save [POV] command

Save [POV] command (File menu)

When the active figure is a circle or cylinder plot (See [FVR](#) window), then this command is enabled and may be selected. After naming the object file through a file requester, the current figure is redrawn and line segments are written as spherical or cylindrical objects in native POV format. Each object is given different color which is selected linearly from the current palette. A sample scene is provided with each file written, though the absolute placement of the Kleinian "ring" may need to be adjusted manually.

3.18.3 Mesh Setup command

Mesh Setup command (File menu)

Here you edit or view the parameters for simplifying meshes when outputting in Wavefront [obj]. Max input faces and max input vertices determine how much memory is set aside as buffers for processing the meshes. Increase or decrease from the default values as the size of the mesh warrants, or as system memory permits. The "min radius" variable controls how small individual spheres or cylindrical objects in a mesh may be. Objects smaller than the minimum radius are omitted from the exported mesh. Kleinian sets can contain a large amount of spheres when the sphere primitive is used and all of these increase the size of the mesh proportionately, even the ones that may not be visible. The weld factor controls how close adjacent triangle vertices of a mesh may be before they are merged into one vertex. This effectively flattens adjacent triangles or "collapses" them and reduces mesh size. Use a small enough weld factor that produces an evenly simplified mesh without destroying the integrity of the smallest elements of the mesh. The weld factor is not used with cylinder plots. Use the smoothing routine in Bryce to restore the mesh to optimum curvature.

3.19 File 1, 2, 3, 4, 5, 6 command

1, 2, 3, 4, 5, 6 command (File menu)

Use the numbers and filenames listed at the bottom of the File menu to open the last six drawings you closed. Choose the number that corresponds with the drawing you want to open.

3.20 File Exit command

Exit command (File menu)

Use this command to end your Swirlique session. You can also use the Close command on

the application Control menu.

Shortcuts

Mouse: Double-click the application's Control menu button.



Keys: ALT+F4

4 Edit menu

Edit menu commands

The Edit menu offers the following commands:

Undo	Undo last edit, action or zoom.
Copy	Copy the active view and put it on the Clipboard.
Paste	Insert Clipboard contents.
Copy Data	Copy fractal data to buffer.
Paste Data	Copy data from copy buffer.
Fractal Variables	Edit fractal variables.
Size	Sets the image size.
Palette Editor	Edit palette.
Preferences	Startup preferences and defaults.

4.1 Edit Undo command

Undo command (Edit menu)

Use this command to undo the last action. Color-cycling is disabled after using Undo, though.

Shortcut

Keys: CTRL+Z

4.2 Edit Copy command

Copy command (Edit menu)

Use this command to copy the active view to the clipboard. The entire view is copied to the clipboard.

Shortcut

Keys: CTRL+C

4.3 Edit Paste command

Paste command (Edit menu)

Use this command to paste from the clipboard. The clipboard must contain a bitmap. If the bitmap is larger than the view, it is clipped. The zoom cursor is used to set the left/top corner in the view where the bitmap will be pasted. Click outside the view frame or press escape to exit this option.

Shortcut

Keys: CTRL+V

4.4 Edit Copy Data command

Copy Data command (Edit menu)

Use this command to copy the fractal data for the active view to the file "(startup dir)/zcopy.dfs". The current palette for the view is also copied.

Shortcut

Keys: CTRL+F

4.5 Edit Paste Data command

Paste Data command (Edit menu)

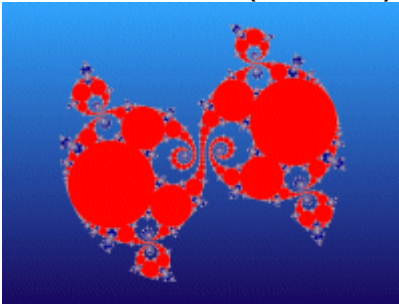
Use this command to paste the data in the file "(startup dir)/zcopy.dfs" to the active view. The palette stored in the file is copied to palette 10(F11).

Shortcut

Keys: CTRL+R

4.6 Fractal Variables

Fractal Variables (Edit Menu)



This is the main window for defining the type of Kleinian curve to be drawn and the traces and limit variables that define the curve itself.

Function is the drop-down edit control for selecting the two-letter code for each curve supported by Swirlique. This can be one of Grandma's curves, a Jorgensen curve, Maskit or Riley group. The first two "Grandma" curves are designed to be connected curves which require that Zoom X be a large value (100 is a good starting value) to display the entire curve. (These are the main curves illustrated in Indra's Pearls and since they are well connected you can use the fill tool in PSP or PhotoShop to highlight in and out areas.) With values less than 10 the curves begin to be magnified and less of the curve is displayed. This acts as a zoom on the center of the curve. The Jorgensen, Maskit and Riley recipes produce infinite repeating curves, so it is necessary to reduce Zoom X to display a good-sized image of the curves. A value of 5-10 is a good place to start with these curves.

The higher the Max Level the more detail is displayed in a curve, but the longer it takes to examine all of the branches that make up that curve, so plotting time is increased proportionately. When the curves are generated randomly through the Demo menu, some curves become chaotic with Max Level set to much above 20. Epsilon also defines resolution in a curve, smaller making for a finer curve, and longer plotting. Practical values range from .1 to .001. Some Grandma curves remain stable with large Max Level and smaller epsilon, but there is no guarantee of this when the curve traces are chosen randomly.

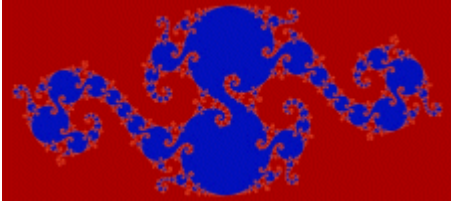
Trace A and Trace B are complex variables that are used to enter values for traces that duplicate curves drawn in Indra's Pearls, or you can experiment with your own values, or let the program generate random sets of traces through the Demo menu. Be sure to experiment with holding one or more of the trace values to a fixed value when doing a random search. The [Random/Batch window](#) has options to do this.

Line Gap is a rough gage that Swirlique uses to determine how far apart the points can be when connecting them by lines. Any successive points that are less than $\text{Epsilon} * \text{LineGap}$ are connected by a line. Some curves are more disjointed than others, so you don't want to connect every successive point. If some points in a curve are connected at sharp angles you may want to decrease the line gap to eliminate those lines. As Epsilon is decreased you may have to increase LineGap to keep all the points connected.

The circle and cylinder plot boxes are used with the 3-D export options, and as an alternate way of plotting Kleinian sets. (Only filled circles are displayed in Swirlique.) Use a different Ratio value from the default 1.0 to export line segments as ellipsoids and conic forms. Use 0.0 with the cylinder plot to export cones. The Size variable controls the relative size of individual spheres or conic sections.

4.6.1 FVR Window

Fractal Variables Window



This is the main window for defining the type of Kleinian curve to be drawn and the traces and limit variables that define the curve itself.

Function is the drop-down edit control for selecting the two-letter code for each curve supported by Swirlique. This can be one of Grandma's curves, a Jorgensen curve, Maskit or Riley group. The first two "Grandma" curves are designed to be connected curves which require that Zoom X be a large value (100 is a good starting value) to display the entire curve. (These are the main curves illustrated in Indra's Pearls and since they are well connected you can use the fill tool in PSP or PhotoShop to highlight in and out areas.) With values less than 10 the curves begin to be magnified and less of the curve is displayed. This acts as a zoom on the center of the curve. The Jorgensen, Maskit and Riley recipes produce infinite repeating curves, so it is necessary to reduce Zoom X to display a good-sized image of the curves. A value less of 5-10 is a good place to start with these curves.

The higher the Max Level the more detail is displayed in a curve, but the longer it takes to examine all of the branches that make up that curve, so plotting time is increased proportionately. When the curves are generated randomly through the Demo menu, some curves become chaotic with Max Level set to much above 20. Epsilon also defines resolution in a curve, smaller making for a finer curve, and longer plotting. Practical values range from .1 to .001. Some Grandma curves remain stable with large Max Level and smaller epsilon, but there is no guarantee of this when the curve traces are chosen randomly.

Trace A and Trace B are complex variables that are used to enter values for traces that duplicate curves drawn in Indra's Pearls, or you can experiment with your own values, or let the program generate random sets of traces through the Demo menu. Be sure to experiment with holding one or more of the trace values to a fixed value when doing a random search. The [Random/Batch window](#) has options to do this.

Line Gap is a rough gage that Swirlique uses to determine how far apart the points can be when connecting them by lines. Any successive points that are less than $\text{Epsilon} * \text{LineGap}$ are connected by a line. Some curves are more disjointed than others, so you don't want to connect every successive point. If some points in a curve are connected at sharp angles you

may want to decrease the line gap to eliminate those lines. As Epsilon is decreased you may have to increase LineGap to keep all the points connected.

The circle and cylinder plot boxes are used with the 3-D export options, and as an alternate way of plotting Kleinian sets. (Only filled circles are displayed in Swirlique.) Use a different Ratio value from the default 1.0 to export line segments as ellipsoids and conic forms. Use 0.0 with the cylinder plot to export cones. The Size variable controls the relative size of individual spheres or conic sections.

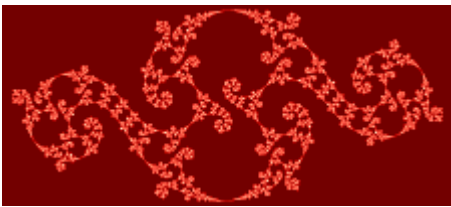
4.7 Size

Size (Edit menu)

This allows you to set the drawing area for a picture, independent of the Windows screen size. It also shows which size is currently in use. The custom setting allows for any size that system memory will permit. The minimum size for an image is 40X30. Note: the image aspect is fixed at 1/1, and images are scaled to fit the drawing window horizontally. Some images require that the drawing window be resized vertically to contain all of the curve.

4.8 Edit Palette

Edit Palettes



Use the palette editor to modify the palette(s) in use.

It is important to realize that palettes are software-simulated in Swirlique (since 24-bit color supports no hardware palettes), so color-cycling and palette switching are not fast operations as with a 256-color system that supports palettes.

There are copy and spread options to smooth or customize the existing palettes in Swirlique. You can then save all the palettes in a .pl file, or by saving the entire function and bitmap (v1.08+ saves all the palettes in the data file.)

With Swirlique, a palette is actually 65281 colors, with each succeeding color (except the last) followed by 255 colors that are evenly spread from one color to the next. The color for the limit set is defined either by index #1, when no background filter is used, or the zero index when the [background filter](#) is non-blank.

Use the RGB-slider controls to edit any color in the palette. Select Copy to copy any color to another spot in the palette. Select Spread to define a smooth spread of colors from the current spot to another spot in the palette. Copy and Spread take effect immediately when you select

another spot with the mouse button. You can cancel the operation with the Cancel button. In Swirlique, colors do not cycle smoothly when you adjust the RGB/HSV sliders. This would be too slow with true color. The Apply button is used to apply color changes to an image after you are done adjusting the sliders. In the HSV mode, color spreads are based on HSV values instead of RGB values, which in some cases results in brighter color spreads.

Right-click on any point on the main window and the palette color for that pixel will be displayed in the palette editor. You can use any of the color-cycling keys (after clicking on the main window) to see the effects of the cycling in the palette editor window. Note: color cycling and color-selection-from-pixel only works when the image has been drawn in the current session. If you load a pre-existing image file, you must redraw it to cycle or change colors with the Apply button, etc. Undoing an action also disables color cycling.

Use Reset to reset the colors of the palette in use, to where it was before it was cycled or modified. Note: if you change palettes with one of the function keys, any modifications to a previous palette are unaffected by the Reset button.

Use Reverse to reverse the order of the colors in the palette. This affects only those colors in the start-color to end-color range. Useful for reversing divide-by-eight palettes, etc., for orbit-trap pictures that require a reversed palette.

Use Neg to create a palette that is the complement of the current palette.

Use SRG to switch the red and green components of all palette colors.

Use SRB to switch the red and blue components of all palette colors. SRB and SRG are disabled in HSV mode. You can use these buttons to form eight different palettes by repeatedly switching red, green and blue components.

Use Smooth to create a random palette with smooth color spreads. Use Scramble to create a palette with random color indexes. The Randomize variables, rmin, rmax, bmin, bmax, gmin, and gmax act as limits that are applied after the palette after initial randomizing, to make the palette conform to the desired spectrum of colors.

Note: unless you click on Reset before exiting the editor, changes are permanent to the palette edited, no matter which way you close the editor (Okay button or close box.)

4.8.1 Reverse button

Reverse button

Use Reverse to reverse the order of the colors in the palette. This affects only those colors in the start-color to end-color range. Useful for reversing divide-by-eight palettes, etc., for orbit-trap pictures that require a reversed palette.

4.8.2 Neg Button

Neg button

Use Neg to create a palette that is the complement of the current palette.

4.8.3 H/R Button

H/R button

Change from HSV to RGB mode or back. In the HSV mode, color spreads are based on HSV values instead of RGB values, which in some cases results in brighter color spreads.

4.8.4 Spread Button

Spread button

Select Spread to define a smooth spread of colors from the current spot to another spot in the palette.

4.8.5 Copy Button

Copy button

Select Copy to copy any color to another spot in the palette.

4.8.6 SRG Button

SRG button

Use SRG to switch the red and green components of all palette colors. RGB mode only.

4.8.7 SRB Button

SRB button

Use SRG to switch the red and blue components of all palette colors. RGB mode only.

4.8.8 Okay Button

Okay button

Click on Okay to exit the palette editor, applying unmapped color changes to picture (if color-cycling is enabled.)

4.8.9 Reset Button

Reset button

Use Reset to reset the colors of the palette in use, to where it was before it was cycled or modified. Note: if you change palettes with one of the function keys, any modifications to a previous palette are unaffected by the Reset button.

4.8.10 Cancel Button

Cancel button

You can cancel a copy or spread operation with the Cancel button.

4.8.11 Apply Button

Apply button

In Swirlique, colors do not cycle smoothly when you adjust the RGB/HSV sliders. This would be too slow with true color. The Apply button is used to apply color changes to an image after you are done adjusting the sliders.

4.8.12 Red Slider

Red slider

Use the RGB/HSV-slider controls to edit any color in the palette.

4.8.12.1 Red edit box

Red edit box

Shows red/hue value of selected color index.

4.8.13 Green Slider

Green slider

Use the RGB/HSV-slider controls to edit any color in the palette.

4.8.13.1 Green edit box

Green edit box

Shows green/saturation value of selected color index.

4.8.14 Blue Slider

Blue slider

Use the RGB/HSV-slider controls to edit any color in the palette.

4.8.14.1 Blue edit box

Blue edit box

Shows blue/value magnitude of selected color index.

4.8.15 Smooth Button

Smooth button

Use to create a random palette with smooth color spreads.

4.8.16 Scramble Button

Scramble button

Use to create a palette with random color indexes.

4.9 Preferences

Preferences (Edit menu)

5 Image menu

Image menu commands

The Image menu offers the following commands:

Draw	Draw the picture.
Draw Composite	Draw composite from figures 1-4.
Auto Redraw	Redraw image on command.
Auto Clear	Clear drawing area before new plot.
Auto Sound Alert	Enable or turn off sound alerts.
Auto Remote	Open remote automatically at startup.
Auto Time	Show time used to plot image.
Merge Sum	Merge current pixel color with previous color summing colors.
Merge And	Merge current pixel color with previous color anding colors.
Merge Or	Merge current pixel color with previous color oring colors.
Merge High	Merge current pixel color with previous color by choosing highest
Merge Low	Merge current pixel color with previous color by choosing lowest
Merge Back	Merge current pixel color with previous color by excluding background
Merge Diff	Merge current pixel color with previous color by using difference of
Abort	Abort drawing.
Clone	Clone current view.
Full Screen	View image full-screen.
Figure 1	Switch to figure one.
Figure 2	Switch to figure two.
Figure 3	Switch to figure three.
Figure 4	Switch to figure four.
Composite	Select figures to merge.

5.1 Image Draw command

Draw command (Image menu)

Use this command to draw or redraw the image for the current fractal variables. Clicking inside the draw window with the left-mouse button stops all plotting.

5.2 Image Draw Composite command

Draw Composite command (Image menu)

Use this command to draw or redraw an image defined in the Composite command as a merging of figures 1-4. Clicking inside the draw window with the left-mouse button stops all plotting.

5.3 Image Redraw command

Auto Redraw command (Image menu)

With this command disabled (on by default), redraw does not occur except when the Draw command is executed, or a random command from the Demo menu is executed. Most of the

time you want to see the results of changing a parameter or mapping option, so redraw occurs automatically with parameter or mapping changes. Sometimes you want to change more than one parameter or figure before redrawing the (composite) image. So you need to turn this option off then.

5.4 Image Auto Clear command

Auto Clear command (Image menu)

With this command enabled (on by default), the drawing area is cleared before starting a new plot. You can turn off this option when you want to see the effect of minor changes to parameters, as they affect the plot pixel by pixel, or when setting up a multiple-layered fractal, as in a composite image. You can use the shift-c command to clear the drawing area at any time.

5.5 Image Auto Alert command

Auto Sound Alert command (Image menu)

With this command enabled (on by default), the user is notified by a sound clip when a drawing is completed or user-canceled. By disabling this command the completion exclamation is suppressed and also any alert that contains a message box. Note: some sound clips are automatically generated by Windows, or there is no text alert for a given error condition. In these cases the sound alert is unaffected by the Auto Alert command.

5.6 Image Auto Remote command

Auto Remote command (Image menu)

With this command enabled (on by default), the remote is opened immediately at program startup. Handy if you find the remote useful and don't want to click on the toolbar button each time the program starts up.

5.7 Image Auto Time command

Auto Time command (Image menu)

With this command enabled (on by default), the time that an image takes to plot is displayed when the plot is complete. Swirlique saves the condition of this option at session's end, so if you disable it and close the program, the option will be disabled when you restart Swirlique.

5.8 Image Merge Sum command

Merge Sum command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using a summing algorithm. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.9 Image Merge And command

Merge And command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using an anding algorithm. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.10 Image Merge Or command

Merge Or command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using an oring algorithm. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.11 Image Merge High command

Merge High command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using the highest rgb values of both images. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.12 Image Merge Low command

Merge Low command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using the lowest rgb values of both images. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.13 Image Merge Back command

Merge Back command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using the rgb components of the new image if the new color index is not zero; else the old rgb values are retained. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.14 Image Merge Diff command

Merge Diff command (Image menu)

With this command enabled (off by default), current pixel color is not overwritten when a new image is drawn. Instead the colors are merged using the difference of the rgb values of both images. The auto-clear option must be disabled and solid-guessing off to choose this option. Useful to merge two or more separate fractal images/types with the initial image(s) "bleeding" through.

5.15 Image Abort command

Abort command (Image menu)

Use this command to stop drawing. Clicking inside a window's drawing area or close box (or the program close box) will also stop the drawing. Note: once a plot has started Swirlique continues to draw the image for that window regardless of which drawing window has the input focus, until done or aborted. You can open and close other drawing windows without affecting the current drawing, but only one drawing is active at any time.

5.16 Image Clone

Clone (Image menu)

A new draw window is opened that contains the same fractal data as the window it was opened from. This is useful for comparing minor changes in texturing options, etc. Similar to using the copy/paste data commands except that all figures are copied to the new view.

5.17 Full Screen

Full Screen (Image menu)

Displays the entire plot, expanding or shrinking the image to fit in a maximized window without title bar, scroll bars or menu bar. At all other times, part of the picture is hidden by the inclusion of the title bar, toolbar, scroll bars and menu bar. To exit full-screen mode, press any key or click the left-mouse button.

5.18 Figure #1

Figure #1

Switch to Function #1. Current settings are saved under the previous image.

5.19 Figure #2

Figure #2

Switch to Function #2. Current settings are saved under the previous image.

5.20 Figure #3

Figure #3

Switch to Function #3. Current settings are saved under the previous image.

5.21 Figure #4

Figure #4

Switch to Function #4. Current settings are saved under the previous image.

5.22 Image Composite command

Composite command (Image menu)

Opens the Composite Figure window, where you can define a set of figures to merge into one image. All the merging options in the Merge Color menu are supported, plus "ALL" which is usually used for the first figure to be drawn. The "ALL" option transfers all rgb information for a figure to the drawing area, without checking the rgb state of the pixel. You can define up to four figures (layers), as part of the composite, but each figure should contain an image (if used in the composite.)

6 Color menu

Color menu commands

The Color menu offers the following commands:

Cycle	Cycle colors.
Palette menu	Select from palettes 1-21.
Background Filter	Define coloring filter for background.
Flood Fill	Fill area with color index #255

6.1 Color Cycle command

Cycle command (Color menu)

Use this command to cycle colors when not plotting. Undoing an action disables the cycle command until the image is redrawn.

6.2 Palette menu

Palette menu commands

The Palette menu (in Color menu) offers the following commands:

Palette #1-21	Use one of 21 palettes.
-------------------------------	-------------------------

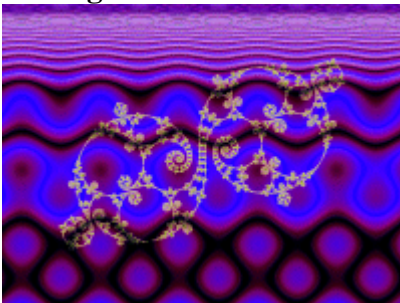
6.2.1 Palette 1-21 command

Palette command (Palette menu)

Switch to palette #. Used with palette-coloring mode.

6.3 Background Filter...

Background Filter



Here you define a background filter based on a complex function. The function is used to fill the background with a texture instead of a solid background. The function can be any formula, up to 80 characters, that uses the variables x , y and z . X and y are the horizontal and vertical components of each pixel. Z is the complex form $x+yi$. The Magnify slider is used to control the intensity of the filter. Use the Preview button to see what the filter looks like with x and y ranges of -2π to 2π . When the coloring filter formula is defined, up to 235 colors can be used (the full palette) to create mixed textures.

Parser Information

Functions (capital letters are optional, and parenthesis are necessary around complex expressions)

The following information takes the form "standard function" ---"form used by Swirlique to represent standard function".

sine z --- $\sin(z)$ or $SIN(Z)$; where Z can be any complex expression

hyperbolic sine z --- $\sinh(z)$ or $SINH(Z)$

arcsine z --- $\text{asin}(z)$ or $ASIN(Z)$

cosine z --- $\cos(z)$ or $COS(Z)$

hyperbolic cosine z --- $\cosh(z)$ or $COSH(Z)$

arccosine z --- $\text{acos}(z)$ or $ACOS(Z)$

tangent z --- $\tan(z)$ or $TAN(Z)$

hyperbolic tangent z --- $\tanh(z)$ or $TANH(Z)$

arctangent z --- $\text{atan}(z_)$ or $ATAN(Z)$

cotangent z --- $\text{cotan}(z)$ or $COTAN(Z)$

arccotangent z --- $\text{acotan}(z)$ or $ACOTAN(Z)$

e^z --- $\exp(z)$ or $EXP(z)$ -- the exponential function

natural log of z --- $\log(z)$ or $LOG(Z)$

absolute value of z --- $\text{abs}(z)$ or $ABS(Z)$

square root of z --- sqrt(z) or SQRT(Z)
 z squared --- sqr(z) or SQR(Z)
 real part of z --- real(z) or REAL(Z)
 imaginary part of z --- imag(z) or IMAG(Z)
 modulus of z --- mod(z) or MOD(Z) or |z| -- (x*x + y*y)
 conjugate of z -- conj(z) or CONJ(z) -- (x-yi)
 polar angle of z -- theta(z)

Math operators

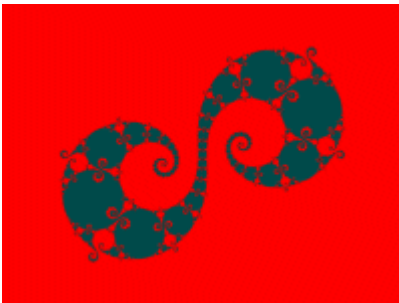
+ --- addition
 - --- subtraction
 * --- multiplication
 / --- division
 ^ --- power function

Constants

e --- e or E -- 1e^1 -- 2.71828, read/write.
 i --- i or I -- square root of -1, read/write.

6.4 Flood Fill

Flood Fill



Here you have the option of filling either the inside or outside of the limit set, or portions thereof. When this command is selected the cursor changes to a small black & white arrow and you position the white spot over the area you want to fill. Click on the left mouse button to fill the area with color index #255 (the last palette color.) Press <Esc> or click outside the current drawing area to exit this mode. The flood fill command uses a border fill algorithm, limiting itself to color index #1 or the zero index (if the background filter is non-blank) so it also works when a background filter is used.

Hint: you can change color index #255 to fill other areas of the same image with a different color.

Notes: There seems to be a limit on how large a bitmap the flood fill command works on, so the program limits this option to bitmaps 8000X7200 or smaller. On the more

intricate limit sets it is necessary to use fairly large bitmaps to ensure that the smallest details get filled. Even then, you may need to adjust Epsilon upward if the gaps in the set are too close to fill through. **This command should be used last after all other details of an image are worked out, as each time you redraw the image the filled areas are erased. If you change the palette after a fill operation you need to redraw the image to use the new palette with the fill command.**

7 View menu

View menu commands

The View menu offers the following commands:

[Toolbar](#) Shows or hides the toolbar.
[Status Bar](#) Shows or hides the status bar.

7.1 View Toolbar command

Toolbar command (View menu)

Use this command to display and hide the Toolbar, which includes buttons for some of the most common commands in Swirlique, such as File Open. A check mark appears next to the menu item when the Toolbar is displayed.

See [Toolbar](#) for help on using the toolbar.

7.1.1 toolbar

Toolbar



The toolbar is displayed across the top of the application window, below the menu bar. The toolbar provides quick mouse access to many tools used in Swirlique,

To hide or display the Toolbar, choose Toolbar from the View menu (ALT, V, T).

Click



To

Open the remote which contains shortcut buttons for many common tasks and options in Swirlique









Open an existing drawing. Swirlique displays the Open dialog box, in which you can locate and open the desired file.



Save the active drawing or template with a new name. Swirlique displays the Save As dialog box.



Set image size.

-  Edit palette.
-  Edit fractal parameters.
-  Draw image from current parameters.
-  Show picture full-screen.
-  Display info about Swirlique.
-  Display Swirlique's help index.

7.2 View Status Bar Command

Status Bar command (View menu)

Use this command to display and hide the Status Bar, which describes the action to be executed by the selected menu item or depressed toolbar button, and keyboard latch state. A check mark appears next to the menu item when the Status Bar is displayed.

See [Status Bar](#) for help on using the status bar.

7.2.1 status bar

Status Bar



The status bar is displayed at the bottom of the Swirlique window. To display or hide the status bar, use the Status Bar command in the View menu.

The left area of the status bar describes actions of menu items as you use the arrow keys to navigate through menus. This area similarly shows messages that describe the actions of toolbar buttons as you depress them, before releasing them. If after viewing the description of the toolbar button command you wish not to execute the command, then release the mouse button while the pointer is off the toolbar button.

The right areas of the status bar indicate which of the following keys are latched down:

Indicator	Description
CAP	The Caps Lock key is latched down.
NUM	The Num Lock key is latched down.
SCRL	The Scroll Lock key is latched down.

8 Window menu

Window menu commands

The Window menu offers the following commands, which enable you to arrange multiple images in the application window:

[Cascade](#) Arranges windows in an overlapped fashion.

Tile	Arranges windows in non-overlapped tiles.
Arrange Icons	Arranges icons of closed windows.
Size Desktop	Size drawing area to window frame.
Window 1, 2, ...	Goes to specified window.

8.1 Cascade

Cascade command (Window menu)

Use this command to arrange multiple opened windows in an overlapped fashion.

8.2 Tile

Tile command (Window menu)

Use this command to arrange multiple opened windows in a non-overlapped fashion.

8.3 Arrange Icons

Window Arrange Icons Command

Use this command to arrange the icons for minimized windows at the bottom of the main window. If there is an open drawing window at the bottom of the main window, then some or all of the icons may not be visible because they will be underneath this drawing window.

8.4 Size DeskTop

Window Size DeskTop Command

Use this command to size the active drawing window to its frame size. Use after Tile command to reduce white space around a drawing that is smaller than screen size.

8.5 1, 2, ...

1, 2, ... command (Window menu)

Swirlique displays a list of currently open drawing windows at the bottom of the Window menu. A check mark appears in front of the drawing name of the active window. Choose a drawing from this list to make its window active.

9 A/V menu

A/V menu commands

The A/V menu offers the following commands:

Open AVI Stream	Open AVI file for writing and draw initial frame.
Write Frames	Write frames to AVI file.
Close AVI Stream	Close an existing AVI stream.
View AVI	View an AVI animation file.
AVI Composite	Generate composite video.

9.1 Open Avi Stream

Open Avi Stream...

Through a series of windows, this allows you to name and open an avi animation stream and choose a compression method. After using the file requester to name the file, you are given a choice of compression methods. The compression methods include Intel Indeo Video®, Microsoft Video 1 and Cinepak Codec by Radius. (All compression methods degrade the original images, some more than others.) The first key frame in the stream is then drawn and written to the file.

Notes: after the stream is opened, the size of the fractal that can be drawn is fixed at the size of the frame. No changes can be made to the size until the stream is closed. New: If you open a video stream after setting up a batch mode (Demo menu), then the frames will be written as a series of bmp, obj or wrl files, depending on whether AVI Object or AVI WRL is also checked.

9.2 Write Frames

Write Frames...

With this option, frames are written to a stream based on the difference between the current key frame and the previous key frame. The first key frame is written when you open a stream. The next key frame is created each time you use this option. In between you can zoom or change Avi variables as much as necessary. The stream is only written to when this option is used. The last key frame is automatically saved after the 'tween' series is written. The number of frames may range from 1-1500 frames between keys. With a frame number of 1 only the key frames are written. This allows animation to be created that incorporates all scalable variables in Swirlique.

Use the Cancel button to exit this dialog without initializing a new series of frames.

Check the Log Scaling box if you want the frames to be written with logarithmic space between frames, else linear space is used. Useful when zooming, where frames would otherwise be packed together at the end of the frame series.

Notes: key frames are saved in parameter files (.dfs), with filenames of "bvf_image#_title.dfs", where '#' is the number of the keyframe and 'title' is the name of the working fractal file.

9.3 Close Avi Stream

Close Avi Stream

Closes any open avi stream file. You need to do this before viewing the file or creating a new avi file. The stream is also closed when you exit Swirlique.

9.4 View Avi

View Avi...

Opens an avi file for viewing. You can preview any multimedia file by clicking on its file name. A multimedia box will appear to the right of the file list. Click on okay to open the main view window.

There are buttons to Play a file forwards or Backwards, or forward automatically with Auto rewind/repeat. Click on Slow to slow down a video. Each click on Slow halves the viewing speed. A click on Stop freezes viewing and restores the view speed to normal playback.

Use the Open button to view a different avi file. Use the Save button to save the file in a different compression format. You must use a different name to save the file than the name that was used to open it. Click on the left-mouse button or any key to abort a save operation.

Note: the view avi requester can be used to preview any multimedia file, including midi files.

9.5 Avi Composite

AVI Composite

When this flag is set, Swirlique generates composite frames for a video according to the settings in the Image/Composite window. Each frame may then consist of a merging of up to 4 figures (1-4). You must set this flag and the composite options before beginning a video. After an avi stream has been opened, you can then use variations of any figure in the composite to produce tweens while using the Write Frames option. As usual, you vary data in the figure(s) before writing frames.

10 Demo menu

Demo menu commands

The Demo menu offers the following commands, which illustrate various features of Swirlique:

[Random Grandma #1](#) Generate random Grandma's parabolic commutator groups

[Random Grandma #2](#) Generate random Grandma's four-alarm two-generator groups

[Random Grandma #3](#) Generate random Grandma's parabolic commutator (variation of G1)

[Random Grandma #4](#) Generate random Grandma's parabolic commutator (variation of G1)

[Random Jorgensen #1](#) Generate random Jorgensen parabolic groups #1

[Random Jorgensen #2](#) Generate random Jorgensen parabolic groups #2

[Random Jorgensen #3](#) Generate random Jorgensen parabolic groups (variation of J2)

Random Jorgensen #4	Generate random Jorgensen parabolic groups (variation of J1)
Random Maskit	Generate random Maskit parabolic groups
Random Riley	Generate random Riley parabolic groups
Batch Mode	Repeat random fractal and save to file.

10.1 Random Grandma #1

Random Grandma #1

This command generates a random Kleinian curve based on Grandma's parabolic commutator groups recipe. Parameters are randomized according to the settings in the Random/Batch window. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.2 Random Grandma #2

Random Grandma #2

This command generates a random Kleinian curve based on Grandma's four-alarm two-generator groups recipe. Parameters are randomized according to the settings in the Random/Batch window. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.3 Random Grandma #3

Random Grandma #3

This command generates a random Kleinian curve based on a variation of Grandma's parabolic commutator groups recipe. Parameters are randomized according to the settings in the Random/Batch window. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.4 Random Grandma #4

Random Grandma #4

This command generates a random Kleinian curve based on a variation of Grandma's parabolic commutator groups recipe. Parameters are randomized according to the settings in the Random/Batch window. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.5 Random Jorgensen #1

Random Jorgensen #1

This command generates a random Kleinian curve based on Danish mathematician Tropels Jorgensen's recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.6 Random Jorgensen #2

Random Jorgensen #2

This command generates a random Kleinian curve based on the alternate form of Danish mathematician Tropels Jorgensen's recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.7 Random Jorgensen #3

Random Jorgensen #3

This command generates a random Kleinian curve based on a variation of Danish mathematician Tropels Jorgensen's alternate recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.8 Random Jorgensen #4

Random Jorgensen #4

This command generates a random Kleinian curve based on a variation of Danish mathematician Tropels Jorgensen's recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.9 Random Maskit

Random Maskit

This command generates a random Kleinian curve based on Bernard Maskit's recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

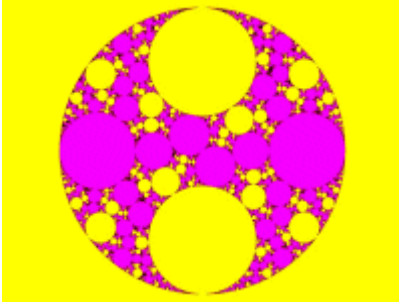
10.10 Random Riley

Random Riley

This command generates a random Kleinian curve based on Robert Riley's recipe. Parameters are randomized according to the settings in the Random/Batch window. As this is an infinitely repeating horizontal curve, adjust ZoomX to a small value, less than 10, to see more of the curve. The random search looks for the first non-chaotic grouping and plots it. Any curve that appears chaotic in the first 1000 points is skipped.

10.11 Random/Batch options

Random/Batch window (Demo menu)



Here you set parameters for batching and saving random-generated images to disk. When the Repetitions value is non-zero, up to 1000 random images can be generated and saved to disk. Use a unique Filename to prevent batch files from overwriting existing image files.

There are radio boxes that allow you to customize how random variables are processed to create new Kleinian fractals:

- Trace A.re -- (default on) check to randomize the real part of Trace A
- Trace A.im -- (default on) check to randomize the imaginary part of Trace A
- Trace B.re -- (default on) check to randomize the real part of Trace B
- Trace B.im -- (default on) check to randomize the imaginary part of Trace B
- Max Level -- (default on) check to set Max Level to a default value
- Epsilon -- (default on) check to set Epsilon to a default value
- Zoom X -- (default on) check to set Zoom X to a default value

Any box that is unchecked means that value is unchanged during the random search for new fractals.

11 Help menu

Help menu commands

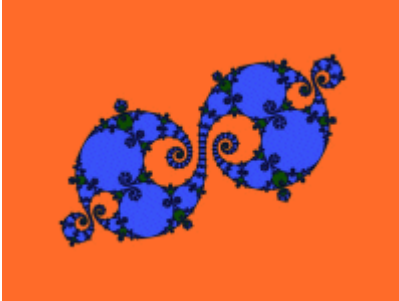
The Help menu offers the following commands, which provide you assistance with this application:

- | | |
|---------------------------------|---|
| Getting Started | Tutorial for new users of Swirlique. |
| Index | Offers you an index to topics on which you can get help. |
| Bibliography | Sources for fractal information and complex numbers. |
| About Swirlique | Displays the version number and author info for this application. |

11.1 Getting Started

Getting Started

Welcome to Swirlique!



This is a short tutorial that will cover basic commands and background material necessary for a new user to create an initial picture with Swirlique. For help on any menu command, press F1 while the command is highlighted. For help on the Edit Fractal Variables window, click on the Help button inside that window.

To generate a Kleinian curve manually open the [Fractal Variables window](#) via the FVR button and enter the trace values as desired, plus any other adjustments to the fractal variables. Click on Apply to start the plotting process. The curve is computed once for scaling purposes, then a second time to actually plot the curve. If you have entered trace variables that result in a chaotic curve, which results in an abnormally long calculation time, you may have to stop the calculating process by clicking in the draw window. You may also want to stop the calculating process to enter a smaller Max Level value or larger Epsilon to speed up the preliminary drawing. Generally a larger Max Level value and smaller Epsilon value result in a more detailed curve, but increase plotting/calculation time proportionately. Some curves become chaotic with Max Level values much above 20.

To generate a Kleinian curve randomly, click on one of the random buttons on the Remote. The program will adjust trace variables automatically or as the setup in the Random/Batch window allows. For some random searches you may want to set a trace to a standard value like $2+.05i$ and randomize the other. The program will hunt for a non-chaotic curve that follows a fairly sequential path. If the curve meanders excessively (non-sequential) in the first 1000 points the curve is considered chaotic and the program will pick another set of variables to plot. No plotting occurs until the extent of the curve is known, and then the points are scaled to fit horizontally in the draw window. Some curves may require that the vertical height of the draw window be increased to contain the entire curve. You can also reduce the Zoom X variable to plot only a horizontal slice of the curve. This can have the effect of lengthening the curve in the vertical direction which would also require an adjustment to the vertical height of the draw window.

Note: As you explore the many options included in Swirlique you'll find that a couple of the windows are non-modal, so they can stay open while the fractal is being plotted. This allows you to change some coloring or mapping variables without redrawing the fractal, or repeatedly experiment with other aspects of the fractal-design process. The non-modal

windows have an Apply button for applying changes directly without closing the window, or an Okay button for applying changes and closing the window. To close the window without making any further changes, click on the window's close button. The Cancel button, if present, allows you to revert to when the window was last opened. Some commands external to the window may cause it to close and reopen if variables were changed externally. In this case Cancel "goes back" to after the window was reopened.

Swirlique allows you to Undo the last command in most cases. However this is mostly a failsafe command, as it disables color-cycling and requires you to redraw the fractal to change colors.

This completes the Getting Started tutorial. The [Bibliography](#) lists additional reference material for a better understanding of the fractal types and functions contained in Swirlique.

11.2 Index

Index command (Help menu)

Use this command to display the opening screen of Help. From the opening screen, you can jump to step-by-step instructions for using Swirlique and various types of reference information.

Once you open Help, you can click the Contents button whenever you want to return to the opening screen.

11.3 Bibliography

Bibliography

Complex Mathematics

Churchill, Ruel.V. and Brown, James Ward: "Complex Variables and Applications", Fifth Edition, McGraw-Hill Publishing Company, New York, 1990.

Korn, Granino A. and Korn, Theresa M.: "Manual of Mathematics, McGraw-Hill Publishing Company, New York, 1967.

Fractal Theory

Barnsley, Michael: "Fractals Everywhere", Academic Press, Inc., 1988.

Devaney, Robert L.: "Chaos, Fractals, and Dynamics", Addison-Westley Publishing Company, Menlo Park, California, 1990.

Mandelbrot, Benoit B.: "The Fractal Geometry of Nature", W.H.Freeman and Company, New York, 1983.

Mumford, David and Series, Caroline and Wright, David: "Indra's Pearls", Cambridge University Press, 2002

Peitgen, H.-O. and Richter, P.H.: "The Beauty of Fractals", Springer-Verlag, Berlin Heidelberg, 1986.

Formulas and Algorithms

Burington, Richard Stevens: "Handbook of Mathematical Tables and Formulas", McGraw-Hill Publishing Company, New York, 1973.

Kellison, Stephen G.: "Fundamentals of Numerical Analysis", Richard D. Irwin, Inc. Homewood, Illinois, 1975.

Peitgen, Heinz-Otto and Saupe, Deitmar: "The Science of Fractal Images", Springer-Verlag, New York, 1988.

Pickover, Clifford A.: "Computers, Pattern, Chaos and Beauty", St. Martin's Press, New York, 1990.

Stevens, Roger T.: "Fractal Programming in C", M&T Publishing, Inc., Redwood City, California, 1989.

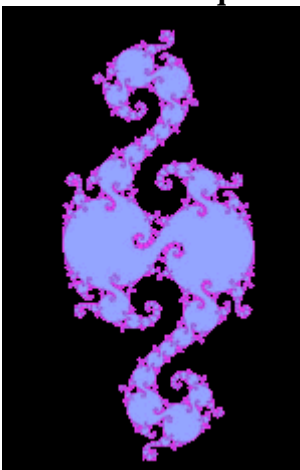
Wegner, Tim, Tyler, Bert, Peterson, Mark and Branderhorst, Pieter: "Fractals for Windows", Waite Group Press, Corte Madera, CA, 1992.

Wegner, Tim and Tyler, Bert: "Fractal Creations", Second Edition, Waite Group Press, Corte Madera, CA, 1993.

Whipkey, Kenneth L. and Whipkey, Mary Nell: "The Power of Calculus", John Wiley & Sons, New York, 1986.

11.4 About Swirlique

About Swirlique



>>>>> Swirlique v3.060 © 2004-2008 by Terry W. Gintz

Swirlique plots Kleinian limit sets based on the "depth-first search" algorithm and the two-generator "recipes" in the book *Indra's Pearls*, (c) 2002 Cambridge University Press, by David Mumford, Caroline Series and David Wright.

Swirlique requires a true-color video adapter for best results.

Acknowledgements: Many special thanks to Jos Leys for steering me through the cliffs and canyons of Indra's pseudo-code and helping me along when I got stuck translating the essential details into "C++" ... Also I would like to thank Bob Margolis for first drawing my attention to the wonderful world of Indra's Pearl's and Jos Ley's extraordinary Kleinian galleries.

Wavefront is a trademark of Alias|Wavefront, a division of Silicon Graphics Limited.

For a short history of my other programs, see [Chronology](#).

11.4.1 Chronology

Chronology

History of the programs:

In September 1989, I first had the idea for a fractal program that allowed plotting all complex functions and formulas while attending a course on College Algebra at Lane College in Eugene, Oregon. In November 1989, ZPlot 1.0 was done. This Amiga program supported up to 32 colors, 640X400 resolution, and included about 30 built-in formulas and a simple formula parser.

May 1990 -- ZPlot 1.3d -- added 3D projections for all formulas in the form of height fields.

May 1991 -- ZPlot 2.0 -- first 236-color version of ZPlot for Windows 3.0.

May 1995 -- ZPlot 3.1 -- ZPlot for Windows 3.1 -- 60 built-in formulas. Added hypercomplex support for most built-in formulas.

May 1997 -- ZPlot 24.02 -- first true color version of ZPlot -- 91 built-in formulas. Included support for 3D quaternion plots, Fractint par/frm files, Steve Ferguson's filters, anti-aliasing and Paul Carlson's orbit-trap routines.

June 1997 -- ZPlot 24.03 -- added Earl Hinrichs Torus method.

July 1997 -- ZPlot 24.08 -- added HSV filtering.

December 1997 -- Fractal Elite 1.14 -- 100 built-in formulas; added avi and midi support.

March 1998 -- Split Fractal Elite into two programs, Dreamer and Medusa(multimedia.)

April 1998 -- Dofu 1.0 -- supports new Ferguson/Gintz plug-in spec.

June 1998 -- Dofu-Zon -- redesigned multi-window interface by Steve Ferguson, and includes Steve's 2D coloring methods.

August 1998 --Dofu-Zon Elite -- combination of Fractal Elite and Dofu-Zon

October 1998 -- Dofu-Zon Elite v1.07 -- added orbital fractals and IFS slide show.

November 1998 -- Dofu-Zon Elite v1.08 -- added lsystems.

April 1999 -- Split Dofu-Zon Elite into two programs: Fractal Zplot using built-in formulas and rendering methods, and Dofu-Zon to support only plug-in formulas and rendering methods.

May 1999 -- Fractal Zplot 1.18 -- added Phong highlights, color-formula mapping and random fractal methods.

June 1999 -- completed Fractal ViZion -- first version with automatic selection of variables/options for all fractal types.

July 1999 -- Fractal Zplot 1.19 -- added cubic Mandelbrot support to quaternion option; first pc fractal program to render true 3D Mandelbrots.

September 2000 -- Fractal Zplot 1.22 -- added support for full-screen AVI video, and extended quaternion design options.

October 2000 -- QuaSZ (Quaternion System Z) 1.00 -- stand alone quaternion/hyperion/cubic Mandelbrot generator

November 2000 -- Added octonion fractals to QuaSZ 1.01.

March 2001 -- Cubics 1.0 -- my first totally-3D fractal generator.

May 2001 -- QuaSZ 1.03 -- added Perlin noise and improved texture mapping so texture tracks with animations.

June 2001 -- Fractal Zplot 1.23 -- added Perlin noise and quat-trap method.

July 2001 -- QuaSZ 1.05 -- improved performance by converting many often-used dialogs to non-modal type.

October 2001 -- FraSZle 1.0, QuaSZ formula and algebra compatible version of Fractal Zplot

November 2001 -- DynaMaSZ 1.0, the world's first Dynamic Matrix Systems fractal generator

January 2002 -- MiSZle 1.1 -- generalized fractal generator with matrix algebra extensions

May 2002 -- DynaMaSZ SE 1.04 (unreleased version)-- scientific edition of DMZ, includes support for user-variable matrix dimensions (3X3 to 12X12)

January 2003 -- Pod ME 1.0 -- first stand-alone 3-D loxodromic generator, Hydra 1.0 -- first 3-D generator with user-defined quad types and Fractal Projector a Fractal ViZion-like version of DMZ SE limited to 3X3 matrices

May 2003 -- QuaSZ 3.052 -- added genetic-style function type and increased built-in formulas to 180. Other additions since July 2001: generalized coloring, support for external coloring and formula libraries, and Thomas Kroner's loxodromic functions.

May 2003 -- FraSZle and Fractal Zplot 3.052 -- added random 3D orbital fractals, new 3D export methods, upgraded most frequently-used dialogs to non-modal type and added genetic-style function type. FZ now based on FraSZle except for built-in formula list and Newton support.

Index

- B -

button: [] 15
 button: ||||| 14
 button: > 14
 button: abort 11
 button: batch 10
 button: bmp 13
 button: color 10
 button: draw 11
 button: fvr 10
 button: help 11
 button: jpg 14
 button: load 13
 button: new 10
 button: png 14
 button: save 13
 button: size 10
 button: undo 10
 button: V 15
 button: view 11

- C -

color: blue edit box 29
 color: blue slider 29
 color: cancel button 28
 color: copy button 28
 color: edit palette 26
 color: green edit box 29
 color: green slider 29
 color: h/r button 28
 color: map button 28
 color: neg button 27
 color: okay button 28
 color: pixel 34
 color: rand button 29
 color: red edit box 29
 color: red slider 29
 color: reset button 28
 color: reverse button 27
 color: spread button 28
 color: srb button 28

color: srg button 28

- D -

demo: batch mode 44

- E -

edit: copy 22
 edit: copydata 23
 edit: fractal variables 24
 edit: paste 23
 edit: pastedata 23
 edit: preferences 29
 edit: size 26
 edit: undo 22
 exit 21

- F -

file: mesh setup 21
 file: save figure pov 21
 file: save obj 20
 files: load jpeg 18
 files: load palettes 18
 files: load par 18
 files: load parameters 18
 files: load png 19
 files: managing 16, 17, 21
 files: save palettes 20
 files: save par 19
 files: save parameters 19
 files: write jpeg 20
 files: write png 20

- H -

help: about Swirlique 47
 help: bibliography 46
 help: channels 11
 help: chronology 48
 help: remote 10
 help: tutorial 45

- I -

image: abort 33
image: auto alert 31
image: auto remote 31
image: auto time 31
image: clear 31
image: clone 33
image: composite 34
image: draw 30
image: draw composite 30
image: figure 33, 34
image: merge and 32
image: merge back 32
image: merge diff 33
image: merge high 32
image: merge low 32
image: merge or 32
image: merge sum 31
image: redraw 30
image: show picture 33

- P -

palettes: selecting 35

- S -

status bar 38

- T -

toolbar 37

- V -

video: avi composite 41
video: close avi stream 41
video: open avi stream 40
video: view avi 41
video: write frames 40