

GAME OF LIFE USER MANUAL

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COMPILATION AND ERRORS

Compilations to java binary executable in windows (".exe" file in folder "bin") is done with "Launch4j".

You can use the compile scripts to compile the ".jar" executable.

All error codes and notes are printed and notified to you with dialog as soon as it happens. Please follow the directions given by the program.

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1 OPERATIONS

1.1 Start, Stop or Reload the Simulation

To start a simulation you will need to have a seed file selected.

Click on start once you have selected a seed file. The display will update with the simulation. The iteration number is given in the top left hand side label.

The simulation will stop when it reaches the selected iteration count.

To reload the simulation, click on the yellow button in the left hand side interface. If you have changed the seed file since the start of last simulation, the changes will take effect.

The three buttons are colored in green, red, and yellow respectively [1 on page 5](#).

1.2 Review History Simulations

To see the Simulation histories that are one or more ticks ago, you can scroll through recorded boards using the left "<" and right ">" buttons in the left hand side interface [1 on page 5](#).

Important note: History records will be lost when iteration count is changed! Re-run the simulation or reload the simulation to see the history again.

1.3 Change Iteration number

The simulation will run as many times as the "Set Total Iteration" spinner sets to in the left hand side interface [1 on page 5](#).

The default iteration number is 10 times.

Important note: History records will be lost when iteration count is changed! Re-run the simulation or reload the simulation to see the history again.

2 FILE

2.1 Open

To open the file go to the "File/Open" menu item. A file chooser dialog will open. Refer to figure [3 on page 6](#). This action should be performed after every time the program is opened. Default position is the base directory of the project [2 on page 6](#).

2.2 Output Directory

This command will open a directory chooser dialog, shown on the second row of File menu [3 on page 6](#).

Before any files can be output to the disk this command should be used to select the desired output file directory. Dialog will only be able to choose directories instead of files [4 on page 6](#).

Default position is the base directory of the project [4 on page 6](#).

- You can go to the File menu.

- You can click on the left hand-side button "File Output: off" to toggle between on/off.

If you use the menu item to choose the directory, you will get a dialog warning if you didn't choose a output directory first.

For the interface button option, you will be asked to open a directory if you haven't. The File Output button will indicate whether the program will output files to a chosen directory,

To review the directory chosen for output, use the output directory menu item again to see the path in a file dialog.

2.3 Choose Output File File Pattern

The default output pattern is 1.txt, 2.txt, ... and so on.

To change the output file pattern, go to the File menu, click on Output File Pattern menu item. The file pattern dialogs will open up [5 on page 6](#).

First dialog will ask you to input the prefix of the output files, which is the string before the simulation iteration count of each output file.

Second dialog will ask you to input the suffix of the output files. Be sure you include a text file extension (".txt", ".c") to be safely opened on some systems.

3 DISPLAY

3.1 Change Colors of the display

To change colors of the rasterized displaying elements, go to the Display menu and select the Cell Color or the View Color menu items [6 on page 7](#) [7 on page 7](#).

The default color of the display elements are blue for the cells and orange for the view elements.

You may change the colors during program's run-time or when the simulation is stopped. Both actions will make the program to immediately update the color of their respective areas. However this will cause the graphics class to immediately produce a image, which is one of the reasons why the fps speed is not accurate as you selected.

3.2 Anti-Aliasing and Rasterization

This programs graphic displays are displayed using rasterization techniques. Rasterization is mostly used in real-time graphics applications, such as physics simulations and video games. This technique allows the computer to update the display on a per-pixel basis, allowing for more graphic freedom and realistic photo simulations. For this program, this technique is chosen because it allows for opening multiple view ports (two in this case) without having to open a separate dialog or panel, and the user can see the color changes immediately while having it be resized at the same time.

One problem with rasterization is when the multiple pixels are calculated at a certain resolution, it will produce sub-pixel variations in a given plane, which looks like saw-blades [8 on page 7](#). To remedy this affect, you can enable anti-aliasing to see a smooth graphic representation. This is achieve by sampling the pictures multiple times at different sub-pixel offsets, which combined together will produce

a more pleasing picture.

The default setting is anti-aliasing on.

3.3 Display Size

You can increase or decrease the view size of the display by clicking the plus "+" button or the minus "-" button on the left hand side of the program [6 on page 7](#), which are the bottom most two buttons.

The default size is set according to your machine's resolution. The display size is set back to default when the total iteration count is changed.

This operation is also updated as soon as the buttons are clicked.

3.4 Change fps of the simulation

The fps (frame per second/ tick per second) is how fast the program updates its ticks. You can change the fps while the program is running or the when it stopped.

Accepted values are any real number above 0.

This command is given with the drop down menu in the left hand side interface shown in left hand side [6 on page 7](#).

3.5 Toggle on/off History Views

The history view and the history iteration counter can be turned off by clicking the "Toggle History Button" in the left hand side interface [9 on page 8](#).

This operation doesn't stop the history pages from updating. You can set the history pages while the history view is off.

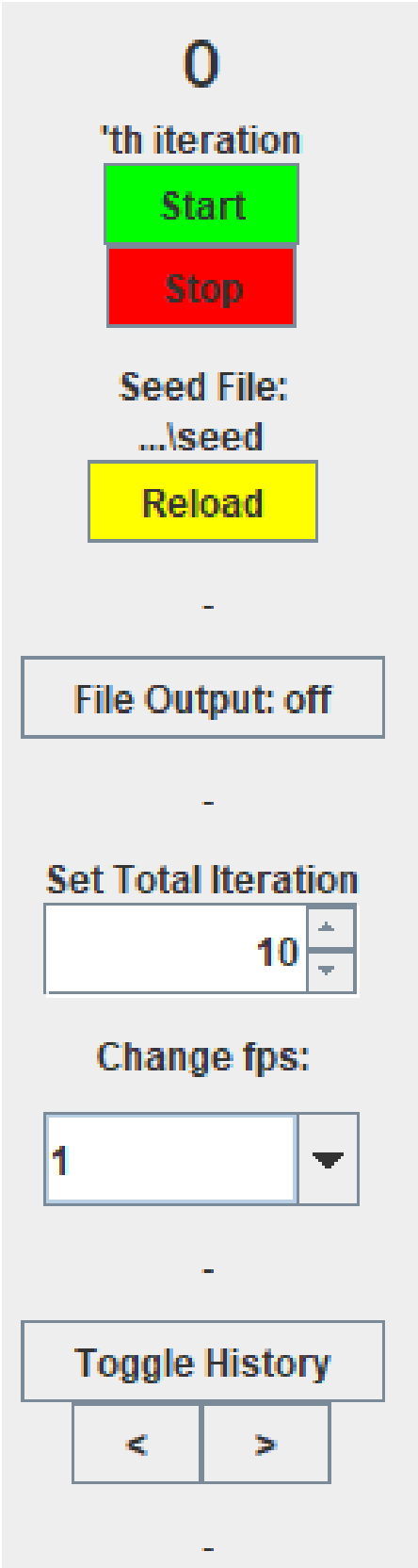
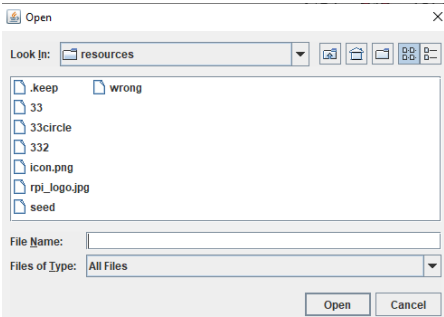
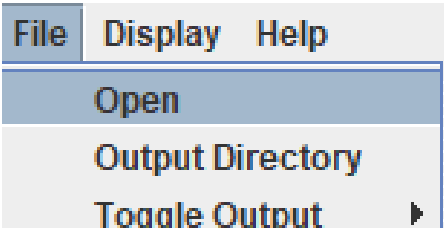


Figure 1: The Cell color menu item controls the colors of the Cells, and the interface buttons are on the left hand side. Green in this picture.



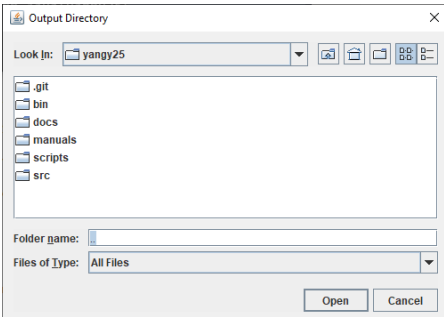
(a) The output directory dialog

Figure 2: In the menu "File", the Open menu item opens a seed file for simulation, and Output directory sets the



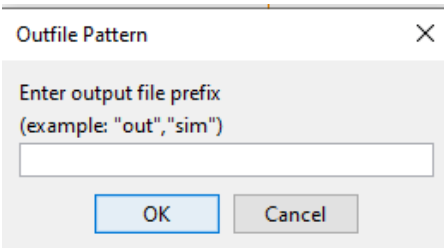
(a) Open, Output Directory, and Toggle output

Figure 3: In the menu "File", the Open menu item opens a seed file for simulation, and Output directory sets the directory where the output files should be located after each simulation iteration/tick. The Toggle Output menu option will have choices between enable and disable output to disk.



(a) The output directory dialog

Figure 4: In the menu "File", the Open menu item opens a seed file for simulation, and Output directory sets the



(a) The Output File Pattern dialog

Figure 5: In the menu "File", the Open menu item opens a seed file for simulation, and Output directory sets the

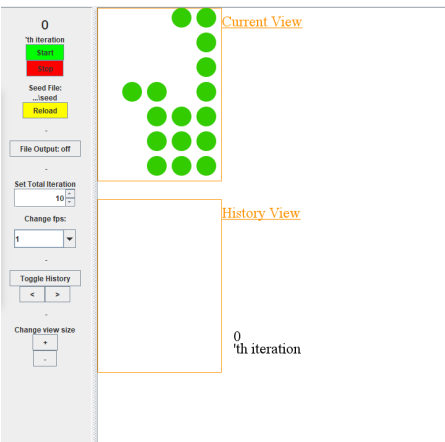


Figure 6: The Cell color menu item controls the colors of the Cells, and the interface buttons are on the left hand side. Green in this picture.

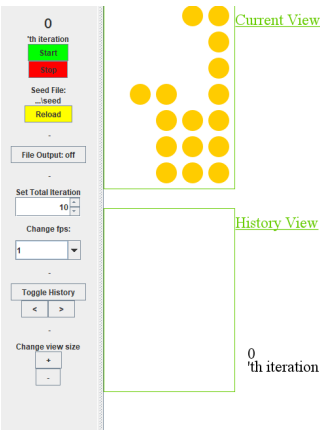


Figure 7: The view color menu item controls the view title, and board borders' color. Green this picture.

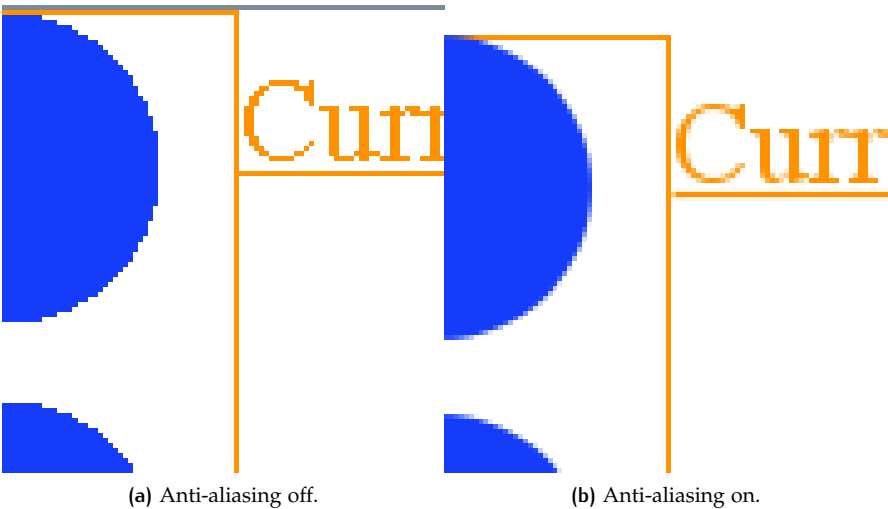
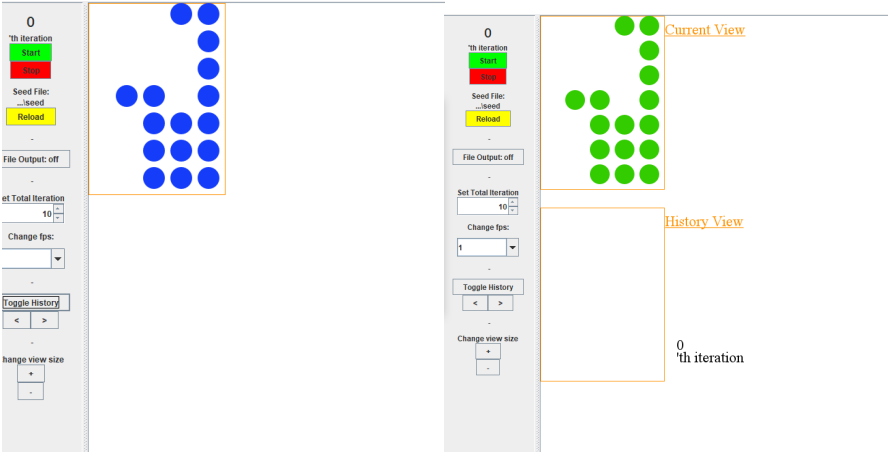


Figure 8: The difference between Anti-aliasing on/off.



(a) History View off.

(b) History View on.

Figure 9: View Toggle