

Conway's Game of Life, for RISC OS

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Rules

Imagine an infinite grid of squares. A filled square is to be considered as a living cell. The Game of Life is about evolution and generations. Whether cells either die, stay alive, or get born, depends on three simple rules with regard to their 8 adjacent squares:

1. If a cell has *less than 2* adjacent cells, it will die.
1. If a cell has *more than 3* adjacent cells, it will die too.
3. If an empty square has *exactly 3* adjacent cells, it becomes a living cell.

Although these rules are very simple, the way generations grow, extinct, move, oscillate or maybe stabilise after a number of iterations is often completely unpredictable, and certainly fascinating to watch.

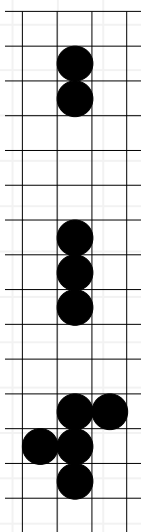
Some shapes will extinct within a few iterations, others will evolve for hundreds, or even thousands of generations. The *f-pentomino* for example, part of this distribution, consists of 5 cells only, but won't stabilise before the 1,103rd generation!

*These 2 cells each have 1 neighbour only,
and will therefore die.*

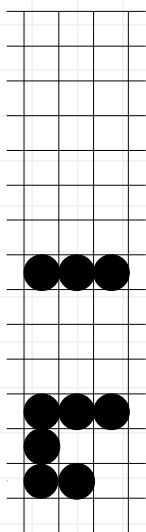
*The top and bottom cell will die.
The middle cell will live,
while its 2 empty neighbours
will come to life.*

(Things get hard to predict very soon)

Generation 1



Generation 2



Grid

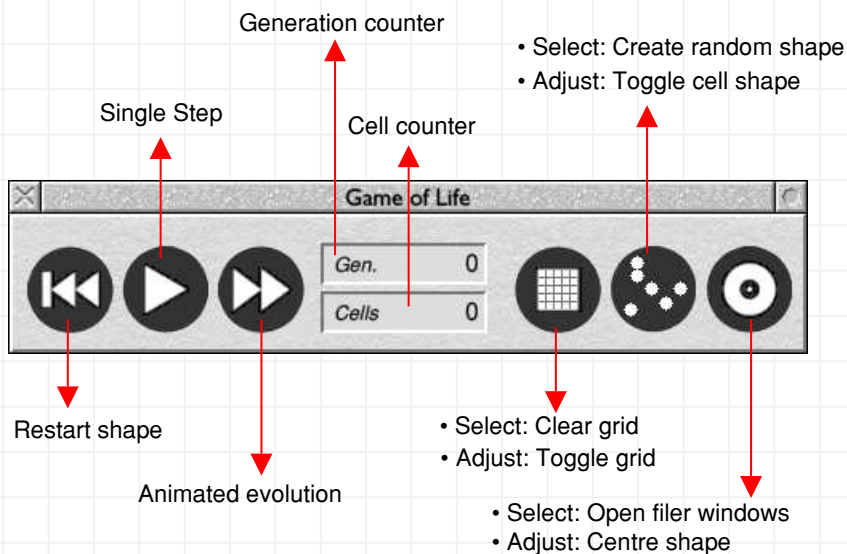
The grid in this version isn't infinite, for obvious reasons, but currently limited to a maximum of 600×600 squares, which is still large enough to let your populations wildly grow. At first run, the program will create a 160×84 grid with cell size 20, which will probably fit into most screen modes. However, the dimensions of the grid, as well as the cell size, may be changed in the Options window, and – if desired – saved as default.

If you want to remove the grid temporarily from your screen, just click on the iconbar icon.

Creating shapes & Using the pane

Use the mouse to create shapes. Living cells are either black squares or black circles. You can choose this in the Options window, or by clicking Adjust on the 'Random' button in the pane. You may precisely centre a shape on screen by clicking Adjust on the right most button on the pane.

Once a shape is finished, you may want to see how it evolves. Press the ► button to single step through the evolution, or the ►► button to animate the process. If animation is too fast, you may keep the space bar pressed instead. This will auto repeat the single step at the speed of the keyboard repeat. The illustration below shows all the possibilities of the pane.



Loading and saving shapes

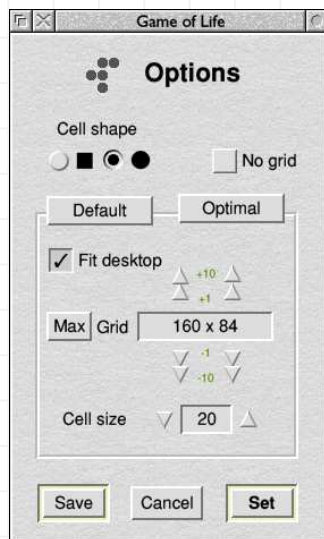
If you wish to save a pattern (don't forget to reset it to its initial shape first!), click on the right most button on the pane. A filer window will open, as well as a save box. Enter a suitable name, and save the shape in the usual RISC OS way. Alternately, if you want to load a previously stored shape, drag the corresponding file from the filer window into the grid.

Many of the shapes that come with this program need a fairly large grid. If your grid is too small, the program will warn you, at which point you can cancel the import. Continuing however won't do any harm, other than that the shape may evolve differently, or that you even may not see anything happen if your visible grid is really much smaller. Enlarging the grid may be done in the Options window, or – much faster – by using the keyboard (see next page).

Options

The Options window is accessible through the iconbar menu, or by clicking Adjust on the iconbar icon. Its main purpose is to adjust the parameters of the grid.

- Grid sizes may vary from 20×20 to a current maximum of 600×600, cell sizes may vary from 2 to 60. Clicking the ultimate bumpers of the grid size will add or subtract 10 squares at once.
- If FIT DESKTOP is ticked, alterations to the cell size will automatically alter the grid dimensions and vice versa, to keep the grid within the desktop without the need of scrolling.
- The OPTIMAL button will create the largest possible grid, filling the entire desktop minus the iconbar, depending on the screen mode in use.
- The DEFAULT button will revert to the grid that you have saved as the default one. The program comes with a default of 160×84, but that may be changed any time.
- The MAX button will create a grid with the maximum dimensions (currently 600×600), either with the chosen cell size, or (if FIT DESKTOP is



ticked) by calculating the corresponding cell size, depending on the screen mode in use. Right-clicking MAX will create a 20×20 grid.

- The Options window offers the choice between two cell shapes, duplicated by a right-click on the ‘Random’ button on the pane. If the cell size is smaller than 12, the cell *shape* will always be a square rather than a circle, for better visibility.
- The NO GRID button is duplicated by a right-click on the ‘Clear grid’ button on the pane. If the cell size is smaller than 8, the grid lines will be automatically switched off.
- Clicking SAVE will save your choices as the new defaults, while clicking SET will process the changes just temporarily.

Keyboard control

Most of the operations can be done by special hot keys, which is sometimes faster than the usual mouse control. Moving the shape around the grid can only be done by keys. Here’s the complete list:

- ← → Move the shape left / right, one square at a time, (10 squares at a time when Shift is hold down).
- ↑↓ Move the shape up / down, one square at a time, (10 squares at a time when Shift is hold down).

Space See next generation.

Tab Animated generations.

c Centre shape.

s Toggle cell shape.

g Toggle grid.

r Create 1000 random cells.

Backspace Reset shape.

Return Clear grid.

+ Increment the cell size by 1.

- Decrement the cell size by 1.

z Enlarges the grid with 10 rows. The columns will automatically be calculated to preserve the same rate.

x Decreases the grid with 10 rows. The columns will automatically be calculated to preserve the same rate.

d Toggles the ‘Fit desktop’ option.

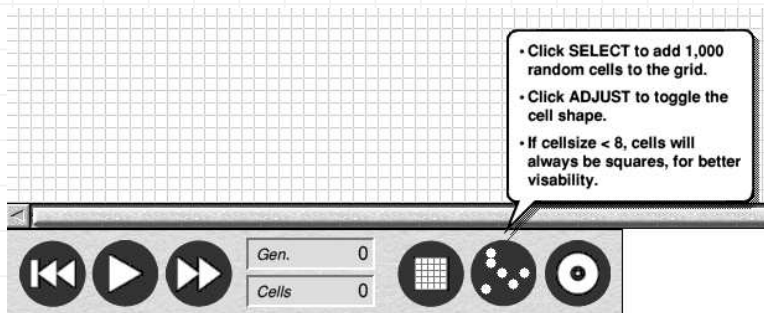
Archives

Apart from some saved shapes in the native file format, the program presents four more archives: the shapes that come with Chris Taylor's superior !Macrolife, as well as the archives from Jason's Life, Radicaleye, and the comprehensive Lexicon, with a total number of 960 shapes, some of which are really stunning. You may open these archives by clicking on the right most button of the pane.

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*** Version 2.0 supports the interactive help. ***