Aragon PDA Game of Life
User Guide

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1. About Game of Life

Conway's game of life is a deceptively simple mathematical model for simulating life in a two dimensional universe.The game of life was invented in 1970 by John Conway, a Cambridge mathematician, and was popularised by a series of articles in "Scientific American" **(Conway's Game Of Life : An overview)**.

The "life" universe is populated by "cells", each cell can exist in two states - Alive or Dead. The rules that determine whether a cell lives or dies, or whether a new cell is created are simple, and may at first seem rather arbitrary, but they were in no way arrived at by chance.

Brief Rules Of The Game Of Life:
1. Each black cell is alive. Each white cell is dead.
2. Each cell has eight neighbours (Moore Neighbourhood).
3. Each live cell will survive into the next generation if either two or three of its neighbours are alive.
4. If it has more than three or fewer than two live neighbours, a live cell will die.
5. Each dead cell will be reborn if three of its neighbours are alive.

From these simple rules complex patterns can emerge which exhibit lifelike properties. Thousands of simple and complex patterns have been discovered in the Game of Life and stored in virtual formaldehyde. Among these patterns are various structures of:
· Glider - self-contained motion
· Glider gun - a pattern that produces gliders
· Puffer - a pattern that moves across the screen while spouting gliders).

Figure 1: Five Generations of the Glider Pattern

Using these simple rules, the Life system will eventually stabilize, either by dying out completely, or by an equilibrium point being established.

As you may be beginning to understand, Conway's "The Game of Life" is much more than a simple thought exercise or academic curiosity. The theories demonstrated here can and moreover *are* used in real situations.

Conway's Life graphically demonstrates how simple rules can be applied to generate very complex behaviour, and so illustrates the premise behind the Agent Oriented development paradigm. Life illustrates how using emergent behaviour can generate complex results that were not explicitly programmed into a system. These methodologies of allowing the computer to solve its own problems (within a set of predefined rules) can dramatically simply the development of complex system modals. Using emergent behaviour it is possible to have these complex systems regulate themselves, and to adapt themselves when necessary to cope with new and unplanned for behaviour.

The fact that Life can perform complex calculations has lead some to theorise that Life may actually be capable of performing the function of self-replication required of an actual living creature. In *The Garden in the Machine*, Claus Emmeche tells us "…it can be shown explicitly that it is theoretically possible to implement von Neumann's complicated self-reproduction in this simple game." **(Conway's Game Of Life : An overview)**

Even if the life forms in Conway's Life aren't actually "alive" the simulation still raises some interesting philosophical and psychological questions about the nature of life and aids in our understanding of what intelligence actually is.

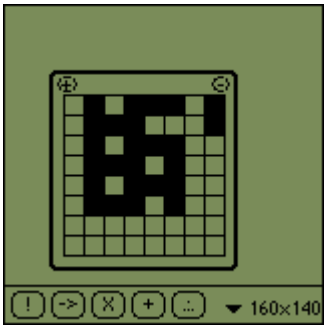
The adaptation of "Life" was used in computer game Aragon PDA Game of Life

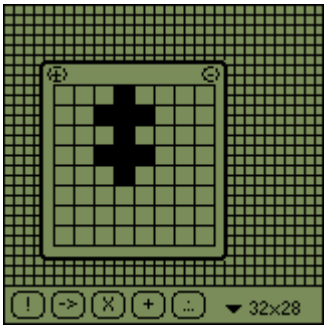
2. Features

- 5 playground modes (8x7 16x14 32x28 80x70 160x140)
- Casual filling of playground
- Magnification
- Screen clearing
- Continuous evolution flow
- Step-by-step evolution flow
- The possibility to save the states of playground

3. Getting started

In the beginning you should select a playground mode using popup trigger in the right bottom corner of the screen. Then in the field by means of cursor touch you should set the initial position.

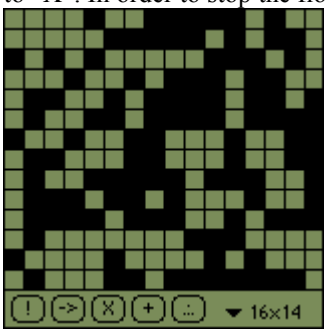


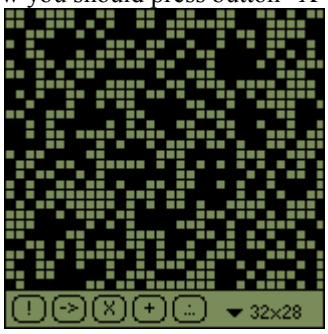


In the case for modes 16x14, 32x28, 80x70, 160x140 zoom is available. The zoom is switched on by pressing button "0".
After the press the button will be changed on "+". To switch the zoom off just press the button once again. The status will be changed on "0".

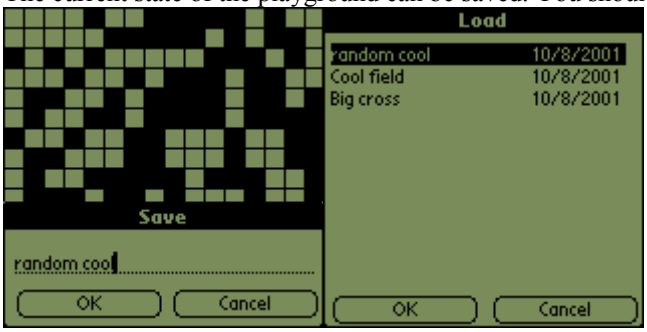
Note: when the zoom mode is on, the continuous evolution flow stops.
When the zoom mode is on, the touch of cursor initiates the appearance of dialog box, which indicates the magnified part of playground around the touch point with size 8x8 cells. Then you can insert or clear cells by pressing "+" or "-" and submit the changes of the playground.

The playground may be cleared by pressing "X" button.
The playground can be filled in by pressing ".:." button.
Then you can run either step-by-step, or continuous flow of evolution. For step-by-step evolution flow you should press "->" for each step. In order to run continuous flow of evolution you should press button "!". The button will be changed to "X". In order to stop the flow you should press button "X".





The current state of the playground can be saved. You should select menu "Options->Save...".



In the dialog box you should type the filename and press "Ok". The saved games can be loaded by selecting menu "Options->Save...". In the dialog box select the required filename and press "Ok"

4. About Aragon

Aragon Software, a team of highly experienced software engineers and IT managers, partners with clients to enable them to meet their business objectives and budgets by providing superior software development at lower rates.

Our mission is to enable new ventures, spinnoffs as well as established companies to leverage IT-expertise and skills of software engineers, based in Belarus.

Our approach enables us to deliver efficient yet cost-effective software solutions.

Our company is located in Minsk, the capital of Belarus, one of the largest technology centers in the former Soviet Union. Minsk Universities and colleges, specializing in computer science and Information Technology, graduate about 3000 IT specialists annually. As a result, there is a critical mass of "new economy people" in the city.

Additionally, Belarussian programmers are living in the economy where labor costs are vastly cheaper then those of their western counterparts.

Our team members gained significant experience working with the leading software outsourcing service providers in Belarus and Russia.

Aragon delivers a wide range of off-shore software outsourcing services, including custom software engineering, Internet/Intranet development, product co-development, web-design, to name but few. Under Custom Off-shore Development Center initiative we provide our clients with assistance in establishing their own off-shore production facilities in Belarus.