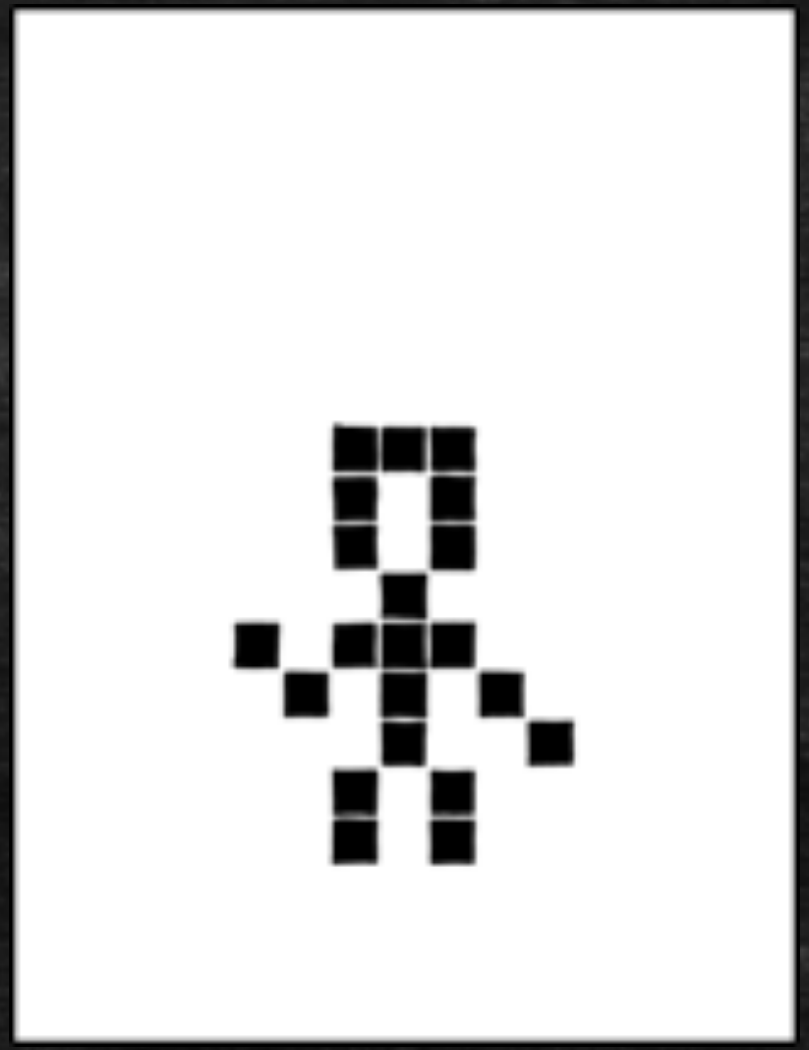
Conway's Game of Life

Houston Xamarin User's Group (Virtually!)
April 22, 2020



https://xkcd.com/2293/

Cellular Automata

- A n-dimensional grid of CELLS used to model a process
- Originated at Los Alamos in 1940s by Stanislaw Ulam and John von Neumann
- Alvy Ray Smith (founder of Pixar) wrote his 1969 Phd thesis on them
- John Conway created the "Game of Life" in 1970 and it popularized the concept after an article in Scientific American
- Stephen Wolfram (Mathematica, Wolfram Alpha) did significant research in the 90s

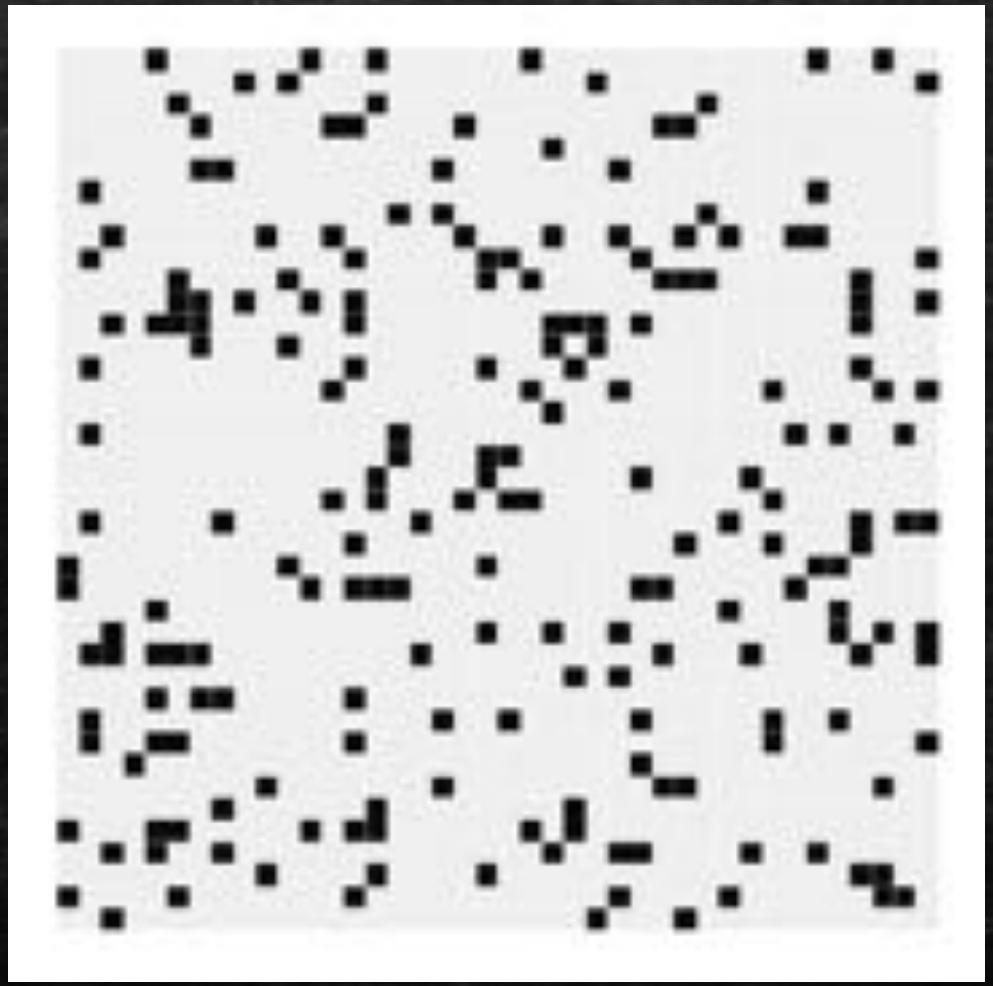
John Conway (1937 – 2020)

- BA, MA, PhD at Cambridge
- Professor at Cambridge and Princeton
- Best known for his "Game of Life"
- Also did significant work in areas of of finite groups, knot theory, number theory, combinatorial game theory and coding theory.

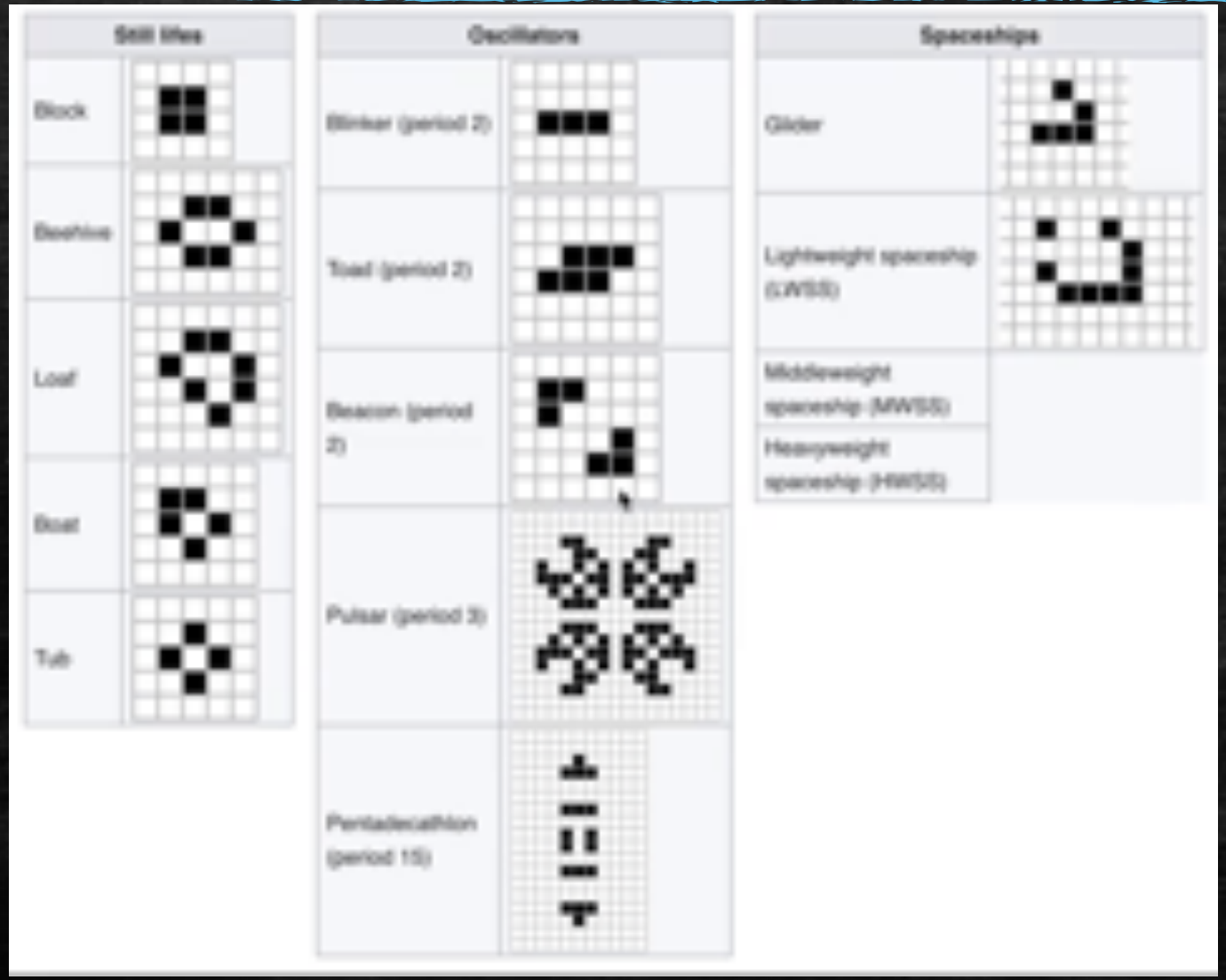
Game of Life (1970)

- Start with a 2d grid of cells of any dimension
- Each cell can be ALIVE or DEAD
- Each cell can have up to 8 neighbors (1 in each compass direction)
- In each generation
  - A LIVE cell with 2-3 neighbors survives to the next generation
  - A LIVE cell with 0-1 neighbors DIES of LONELINESS
  - A LIVE cell with more than 3 neighbors DIES of STARVATION
  - A DEAD cell with exactly 3 neighbors will become ALIVE

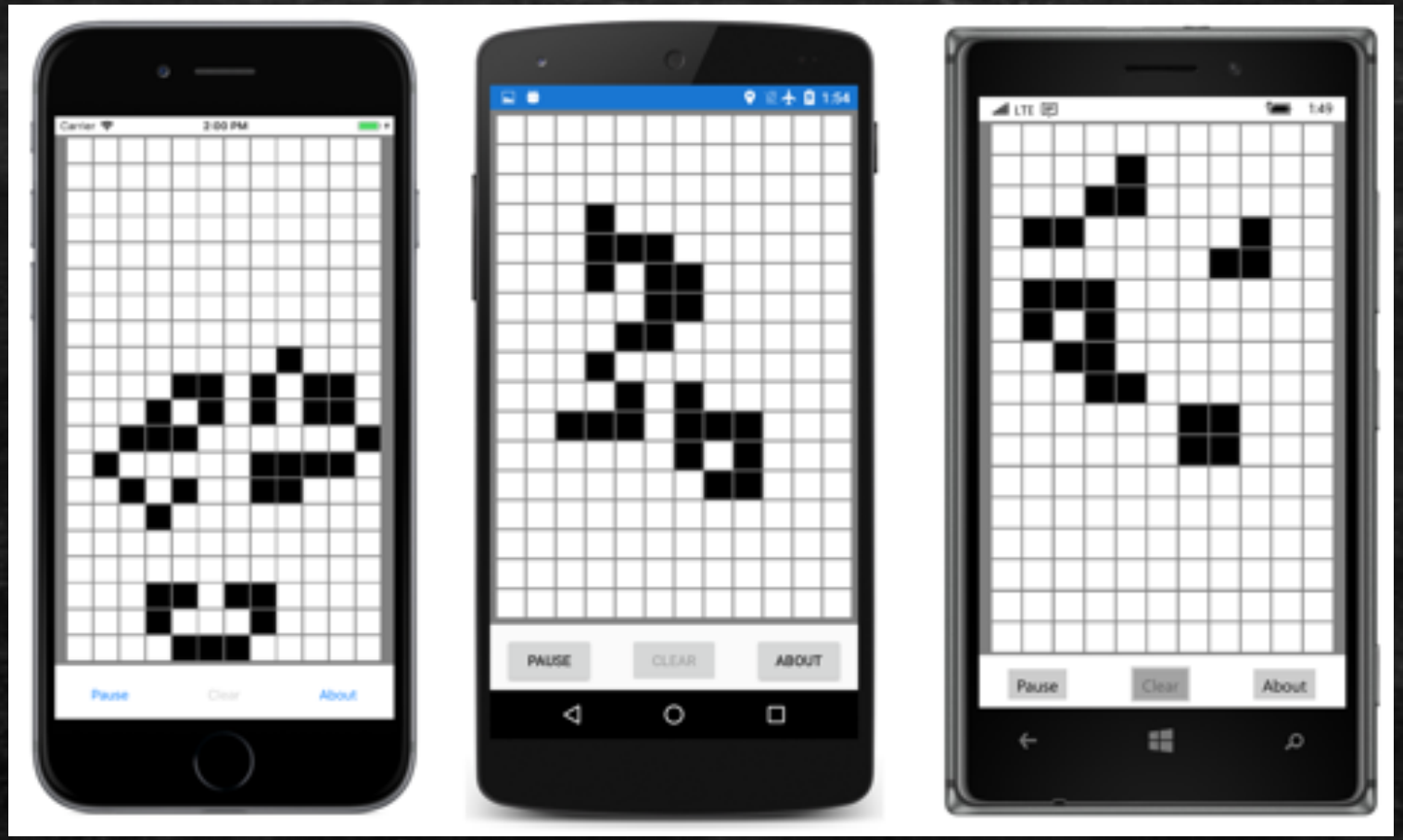
Game of Life (1970)



Patterns in Game of Life

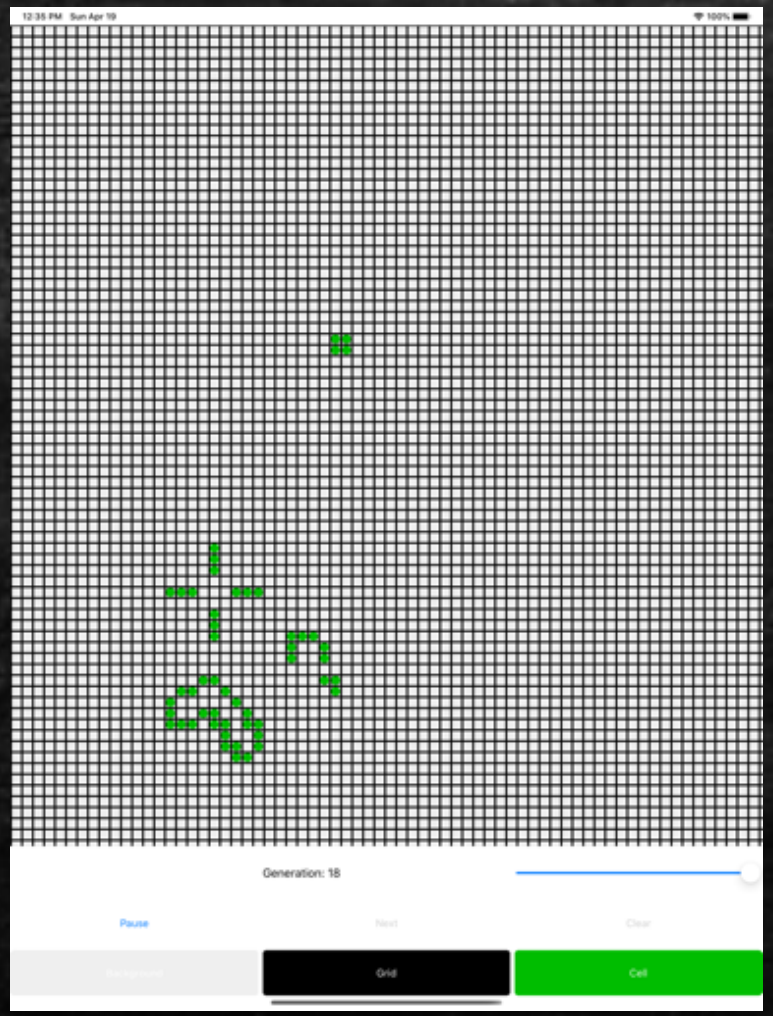


Xamarin Forms Game of Life



https://github.com/xamarin/xamarin-forms-samples/tree/master/BoxView/GameOfLife

SkiaSharp Game of Life



https://github.com/jawbrey/SkiaLife