

# LIFE 3.0

## General

Patterns are set up using the keys to move the cursor and turn it on and off. The game is then run. Generation and population counts are displayed. The game can be stopped and the pattern changed. The fate of a cell is defined by the number of cells neighboring it.

## Keypad

STOP AT END OF GENERATION	CURSOR ON	CURSOR ERASE	CURSOR OFF	CLEAR
PAUSE	↑	→	↙	
HALT	↘	←	↘	
RUN GAME	↘	←	↘	
CURSOR TRACE (A.Z)				

## Number of Neighbors

- 0 or 1 - Death Cell (Isolation)
- 2 - Survival Cell
- 3 - Survival Cell/Birth Cell
- 4 or more - Death Cell (Overpopulation)

## Variables

- A - Keypad Input
- B - Intermediate Variable and Loop Counter
- C - Cursor Control and Loop Counter
- D - Cursor Control and Loop Counter
- E - Box Write: On, Erase, Off
- Q - Population Counter
- S - Stop at End of Generation Switch
- X & Y - Box Positions and Loop Counters
- Z - Generation Counter
- @(1) - @ (529) - Neighbor Counters

Note! Some good articles on the Game of Life can be found in the Dec. 1978 issue of Byte.

# PROGRAM NAME LIFE 3.0

## Line # Statement(s)

```

1 LIFE 3.0
2 MSK 1,980
3 CLEAR,FC=7,BC=0
4 B=0
5 A=KP
6 C=0,D=0
7 IF A=13 GOTO 30
8 IF A=98 E=1
9 IF A=45 E=2
10 IF A=43 E=4
11 IF A=61 CLEAR
12 IF A=55 C=1,D=1
13 IF A=56 D=1
14 IF A=57 C=1,D=1
15 IF A=54 C=1
16 IF A=52 C=-1
17 IF A=51 C=1,D=-1
18 IF A=50 D=-1
19 IF A=49 C=-1,D=-1
20 X=X+C*3,Y=Y+D*3
21 IF (X>30)+(Y<30) X=X-C*3
22 IF (Y>30)+(Y<30) Y=Y-D*3
23 BOX X,Y,3,3,E
24 GOTO 20
25 IF S=1 S=0;BC=0;E=4;E
26 QTP 20
27 GOSUB 600
28 FOR X=-30 TO 30 STEP 3
29 IF E(20)=1 BC=105;S=1
30 FOR Y=-30 TO 30 STEP 3
31 IF P(X,Y) GOSUB 500
32 NEXT Y;NEXT X
33 Z=Z+1;CV=40;SX=-50;PY
34 INT Z
35 Q=0
36 FOR X=-30 TO 30 STEP 3
37 FOR Y=-30 TO 30 STEP 3
38 D=0((X+33)÷3×23)+(Y+36)÷3
39 E=2

```

USE OF SHADED AREA IS FOR 2ND OR MORE LINES OF MULTI-LINE STATEMENTS

DO NOT ENTER A SPACE BETWEEN LINE # AND STATEMENT THIS IS DONE BY THE UNIT

PROGRAMMING WITH BASIC

## Comments

Initialize Screen  
 Init Gen Cntr  
 Input keystroke  
 Run Game?  
 Cursor On?  
 " Erase?  
 " Off?  
 Clear?  
 →  
 ↖  
 ↗  
 ←  
 ↘  
 ↙  
 ↘  
 Move Cursor  
 Test-Correct  
 Out of Bounds  
 Cursor Box  
 Get Another Cmd.  
 Stop at end of gen set?  
 Init Neighbor Cntrs  
 Test for cells on  
 Test for stop SW  
 Cell Occupied?  
 Display Gen Number  
 Init Population Cntr  
 Test for  
 see if a cell  
 will be

```

Line #      Statements
380  IF ((P=2)X(PX(X,Y))) +
    (P=3) E=1; Q=Q+1
390  BOX X,Y,2,3,E
400  NEXT Y; NEXT X
405  PRINT Q
410  GOTO 390
500  A=(X+33)÷3×23; B=(Y+36)÷3
510  FOR C=A-23 TO A+23 STEP 23
520  FOR D=B-1 TO B+1
530  @ (C+D) @ (C+D)+1
540  NEXT D; NEXT C
550  @ (A+B) @ (A+B)-1
560  RETURN
600  FOR A=0 TO 23
610  FOR B=1 TO 23
620  @ (A×23+B) @
630  NEXT B; NEXT A
640  RETURN
    
```

```

1  .TEXT EDITOR 5.0
2  Z=20050; INPUT "LINE #
    " L; LIST L,1; FOR Q=L NEXT Q
3  R=@(Q-1)÷256×Q+RM; IF R#131
    F R#-243 NEXT Q
4  FOR R=Q+2 TO -2277; TV
    =Z(R); L=KP; IF L=31 TV=31; T
    V=32; TV=31; L=KP; TV=L; Z(R)=
    Z(R)+256×256+L; NEXT R
5  IF L=45 TV=31; FOR P=R
    TO -22778; Z(P)=Z(P+1); NEXT
    P; Z(R)=Z(R)-1; R=R-1; NEXT R
6  IF L=43 INPUT N; FOR P=
    -22777-N TO R+1 STEP -1; Z(P+
    N)=Z(P+N)÷256×256+Z(P)÷256
    ×Q+RM; NEXT P; MU=81; GO SUB 9
7  NEXT R; STOP
9  FOR P=R+1 TO R+N; L=KP; TV=L;
    Z(P)=Z(P)÷256×256+L; NEXT P
    ; R=R+N; Z(R)=Z(R)+N; RETURN
    
```

Same GOTO n for RUN  
 Input Line #  
 and look  
 for it  
 Found #, was it  
 a line #?  
 Found Line - Display  
 Bytes - Change?  
 Delete a  
 Byte  
 Insert N  
 Bytes  
 End End Loop/Stop  
 Continuation  
 of  
 Line 6

DO NOT ENTER A SPACE BETWEEN LINE # AND STATEMENT. THIS IS DONE BY THE UNIT  
 USE OF SHADED AREA IS FOR 2ND Q  
 MORE LINES OF MULTI-LINE STATEMENTS