

```

41010 POKE11,34:POKE12,2
41020 FORX=0TO139
41030 Y=PEEK(45383+X):POKE546+X,Y
41040 NEXTX
41050 FORX=0TO46
41060 Y=PEEK(45596+X):POKE696+X,Y
41070 NEXTX
41080 POKE613,4:POKE699,2:POKE700,24
41090 POKE629,177:POKE630,2
41100 POKE686,76:POKE687,211:POKE688,177
41110 POKE689,166:POKE690,157
41120 POKE691,208:POKE692,3
41130 POKE693,76:POKE694,19:POKE695,178
41140 POKE743,38:POKE744,2

```

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Voracious Butterfly

John Wright
 Ottawa, Canada

The name came after seeing the program run. Voracious Butterfly was originally just a first exercise in using peeks, pokes and graphics, and as a visual check on how random is RND.

Display

A 24 x 24 section of the screen is filled with G187, the mini chequerboard, and G43, +, moves around one square at a time in a random direction. Each time it lands on a new square it 'eats' the G187 and replaces it with a G32 (Blank), G42 (*) or a character. When all the characters are displayed, the end routine pokes in another word and strips out the remaining G187s. A counter at the bottom of the screen increments by 100 every 100 steps.

Program

The program has 6 modules and a main line. The subroutines at 300, 500 and 1100 are called once each and could have been written in the main line. Conversely L70 to L150 could have been another module.

SUB 250 converts from X, Y coordinates to a POKE address.

SUB 300 to 480 reads in the word which is used in the end routine, puts 32 in all locations of the MA matrix to POKE blanks, replaces some of those 32s by 42s to sprinkle stars in the top and bottom thirds of the screen, and zeros counters.

SUB 500 to 560 reads character data into MA and puts a 1 in MB corresponding to each character in MA.

L70 to 155 picks the start point for the Butterfly and POKEs two zeros for the counter.

SUB 800 to 960 takes 100 steps. On each step the contents of MA are poked to the screen location, the contents of MB are added to TT (MB is 0 unless there is a display character in which case MB (X,Y) is 1. It is then reset to 0).

L840 checks conditions for a normal exit.

L860, 870 give the next step in the walk, with equal probability of staying still or moving to any of the eight adjacent squares.

L900, 910 stop the Butterfly from going off screen. Using SGN allows it to be done with one statement instead of separate IFs for 0 and 25. If the Butterfly goes off left, it reappears right as though there is a wrap-around. Similarly for top and bottom.

SUB 1000 to 1090 adjusts the base of the random number by incrementing the original input. This

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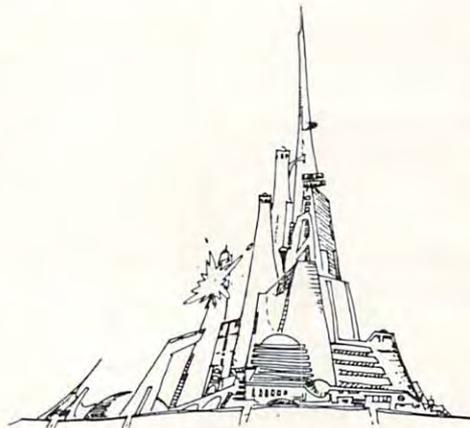
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was done to disturb any patterns. It also sets up an exit if the program runs too long and the Butterfly tires, and increments the display counter.

SUB 1100 to 1180 is the end routine. It **POKES** the top word and clears out the remaining **G187s**.

L170, 470, 530 and 840 could be changed to the handwritten version to make the display part easier to change.

Changing the Randomness

The original version did not have the routine at **L1000**, the **Q** loop at **L800** and instead of wrap-around at **L900** and **910** it had fold-back. This can be simulated by:

```
1030 REM DUMMY LINE
900 IF X=0 OR X=25 THEN X=X-SX
910 IF Y=0 OR Y=25 THEN Y=Y-SY
```

This version did not always work. On one occasion it ran for about 35 minutes and left two sizeable areas of the screen untouched.

Presumably the random number generator settled into a pattern, so to disturb this the **1000** routine was introduced, changing the base after **100** steps.

Variations

The listing includes many **REM** statements which can be omitted, and most statements are **1** to a line so compaction is possible.

Apart from 'wrap-around **X** and fold-back **Y**' (which I have left in my archive version) or vice-versa, the variations are in the display capability.

If you are on familiar terms with him,

```
300 IB = 5
3000 82,79,78,78,89
```

may be acceptable.

If you change the main display data, you should use the handwritten version of **L170, 470, 530 and 840** or recalculate. Remember that the display goes in bottom first, top last.

There is no reason why the display should not be a picture or a pattern. In this case the 'top' word may be better placed at the bottom by:

```
1100 Y = 1
```

It would be easier to have the display data as characters and blanks. They would then be read in by string variables and converted.

```
45 BL$ = " 24 spaces"
300 READ A$
305 FOR I=1 TO LEN(A$):TW(I)=ASC(MID$(A$,I,1)):NEXT I
505 READ A$:A$=LEFT$(A$+BL$,24)
520 MA(X,Y)=ASC(MID$(A$,X,1))
3010 DATA " ABC etc.
```

Use the " in the data statement if there are leading blanks.

Side Benefits

The program is a good conditioner for a flabby waist. Judicious use of body English may guide the Butterfly to uneaten squares.

```
1 REM VORACIOUS BUTTERFLY
10 REM JOHN WRIGHT
15 DIM MA(24,24),MB(24,24)
20 REM 'RANDOM WALK' DEMONSTRATION
30 INPUT"RANDOM NUMBER":NR:RN=NR
40 Q0=54116:REM THIS IS FOR 600 BOARD
50 GOSUB300
60 GOSUB500
70 REM PICK START POINT
80 J=INT(570*RND(RN))+1
90 X=INT(J/24)+1
100 Y=J-24*(X-1)
110 GOSUB250
120 POKEZ,43
140 REM PAUSE THEN REMOVE +
150 FOR J=1TO100:I=J:NEXTJ
155 POKE00+6,48:POKE00+7,48
160 GOSUB800
170 IF TT=61 THEN 200 IF TT=CH...
180 GOSUB1000
190 IF CT<-1 THEN 160
200 GOSUB1100
210 IF CT=-1 THEN PRINT"EXHAUSTED BUTTERFLY"
220 END
247 REM
248 REM
249 REM SCREEN POSITION FOR X,Y
250 Z=Q0-32*Y+X
260 RETURN
296 REM
297 REM
298 REM INPUT DISPLAY MATRIX
299 REM TOP WORD
300 IB=6
305 FOR I=1TOIB:READ TW(I):NEXT I
310 REM BLANK SCREEN, INPUT DISPLAY, SET UP
COUNTER MATRIX
315 FOR X=1TO30:PRINT:NEXT X
317 POKE00+1,32:REM ERASE CURSOR
320 FOR X=1TO24
330 FOR Z1=1TO3
340 FOR Z2=1TO8
350 Y=8*(Z1-1)+Z2
360 GOSUB250
370 POKEZ,187
380 MA(X,Y)=32
390 REM STARS AT TOP AND BOTTOM
400 IF Z1=2 THEN 420
410 IF RND(RN)<.15 THEN MA(X,Y)=42
420 MB(X,Y)=0
430 NEXT Z2,Z1,X
460 REM ZERO COUNTERS
470 TT=0:CT=0:CH=0
```

```

480 RETURN
497 REM
498 REM
499 REM READ IN DATA
500 FOR Y=11T015
510 FORX=1T023
520 READNA(X,Y)
530 IFMA(X,Y)<>32 THEN MB(X,Y)=1  I:CH=CH+1
540 NEXTX,Y
560 RETURN
797 REM
798 REM
799 REM 100 STEPS IN RANDOM WALK
800 FOR Q=1T0100
810 TT=TT+MB(X,Y)
820 MB(X,Y)=0
830 POKEZ,MA(X,Y)
840 IFTT=61THEN960  IF TT=CH...
850 REM NEW PLACE FOR +
860 SX=INT(3*RND(RN))-1:REM GIVES+1,0,-1
870 SY=INT(3*RND(RN))-1:REM DITTO
880 X=X+SX
890 Y=Y+SY
900 IFX=0ORX=25THENX=X-24*SGN(SX):REM TRY
...THENX=X-SX
910 IFY=0ORY=25THENY=Y-24*SGN(SY):REM TRY
...THENY=Y-SY
920 GOSUB250
930 POKEZ,43
950 NEXTQ
960 RETURN
997 REM
998 REM
999 REM ADJUST BASE OF RANDOM NUMBER
1000 CT=CT+1
1010 IFCT=100THENCT=-1:GOTO1070
1020 NR=NR+1
1030 RN=NR
1040 AC=INT(CT/10)+48
1050 IF AC=48THEN1070
1060 POKE00+4,AC
1070 AC=CT-10*AC+528
1080 POKE00+5,AC
1090 RETURN
1097 REM
1098 REM
1099 REM END ROUTINE
1100 Y=17
1110 FORX=1T01B
1120 GOSUB 250
1130 POKEZ,TW(X)
1140 NEXTX
1150 FORZ=00-776T000

```

```

1160 IFPEEK(Z)=187THENPOKEZ,32
1170 NEXTZ
1180 RETURN
3000 DATA 82,79,78,65,76,68
3010 DATA 82,32,82,32,69,69,69,32,65,32,65,32
3020 DATA 32,71,71,32,65,32,65,32,78,32,78
3030 DATA 82,32,82,32,69,32,32,32,65,65,65,32
3040 DATA 71,32,71,32,65,65,65,32,78,78,78
3050 DATA 82,82,32,32,69,69,32,32,65,32,65,32
3060 DATA 71,32,32,32,65,32,65,32,78,78,78
3070 DATA 82,32,82,32,69,32,32,32,65,32,65,32
3080 DATA 71,32,71,32,65,32,65,32,78,78,78
3090 DATA 82,82,32,32,69,69,69,32,32,65,32,32
3100 DATA 32,71,32,32,32,65,32,32,78,32,78
OK

```

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