How to Create an AstroBASIC Editable BASIC Listing
February 23, 2019
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This file was originally posted to the BallyAlley Yahoo group on February 23, 2019. It has been slightly edited here.

This document describes how to create an "AstroBASIC" BASC listing that can be edited in a plain text editor, and then made into a 300-baud file. This file can then be loaded into "AstroBASIC" using the 300-baud utility conversion program in the "AstroBASIC" manual.

Lance really got me thinking about how to make an "AstroBASIC" file that can be edited. This procedure requires Blue Ram hardware, Blue Ram BASIC, and the Blue Ram Utility, but it will probably work using other RAM expansions that allow the 300-baud tape interface to be plugged-- and if you can use Ken's modified version of the Blue Ram Utility (which is on the multicart).

Here's some hardcore Astro-nerd stuff for you!

I just created a BASIC program listing in ASCII text format of an AstroBASIC program using the 300-baud archiving tools. I'm not sure why this didn't occur to me before, but this method worked to get a listing of the AB version of "The Gate Escape." I JUST got it done-- so I'm rather happy. The BASIC listing is followed by a short explanation of how I did it. Here is the listing:

```
  3 goto 90
  4 %(U)=W+47;G=82;H=-39;gosub 7
  5 box Imul 39-116,38,7,9,3;return
  6 %(U)=134;gosub 7;%(U)=XY;return
  7 %(V)=(-H+40-F)mul 256+G+73+F;CALLR;return
  9 TA=Q;VA=9;O=A;Z=B;T=T+9-L;if A=Gif B=H CALLR;gosub 70
 11 CY=38;CX=-108+Imul 39;print #4,T,;VA=0;return
 20 box G,H,1,17,3;return
 21 box G,H,17,1,3;return
 25 if TC=0G=M;H=N
 26 gosub 6;if TC=9VF=2;gosub 28
 27 TC=9;VC=9;VR=2;return
 28 gosub 6;%(U)=XY;%(V)=Y;M=O;N=Z;return
 40 O=(A+93)div 18mul 18-82;Z=(B+90)div 18mul 18-84
 50 gosub 60;for MO=Bto 60;next MO;VB=0;VA=0
 51 box O,Z,1,17,3;box O,Z,17,1,3;box O,Z,3,3,1;return
 60 VB=6;VA=9;TA=53;TB=33;return
 70 %(U)=134;gosub 7;gosub 60;for VR=Ato 400;next VR
 71 Q=Q-1;T=T+10mul VC;down ;return
 90 W=5;clear ;CY=0;print "PLAYERS",
 92 P=&(28)div 76+1;CX=0;print #0,P,;if TR(1)=0goto 92
 94 clear ;for A=1to P;CY=38;CX=Amul 39-115;print #0,A
 95 @(A)=0;@(A+4)=8;next A;I=1;gosub 4
100 for A=9to 40;@(A)=11111;next A;box 0,0,160,88,3
102 F=6;box -1,-3,143,71,2;down ;%(U)=133
109 T=@(I);Q=@(I+4)div 100;L=RM;S=8;BC=Lmul 48-1
110 for G=-64to 70step 18;for H=-30to 30step 18
115 S=S+1;if @(S)div *(I+1)if RM>*(I)-1gosub 7
120 if rnd (L)#1gosub rnd (2)+19;box G,H,3,3,1
125 next H;next G;A=2;B=30;F=0;XY=Ldiv 2+128;M=2;N=-B
199 X=-9999;Y=X;G=X;for Q=Q;for S=Qto 31step 0
```

```
200 C=JX(1)mul 6;D=JY(1)mul 6;VR=VR+1
202 E=0;if PX(A+C-1,B+D-1)=0E=1mul (B+D<35)
205 if E%(U)=128;%(V)=X;CALLR;A=A+C;B=B+D
206 if E%(V)=(-B+40)mul 256+A+73;CALLR;X=%(V)
210 if PX(A,B)=0gosub 40
230 if Eif PX(A+1,B)%(U)=133;CALLR;gosub 9;next Q
235 if rnd (3)=1J=(M<A)mul 12-6;K=(N<B)mul 12-6
240 %(U)=XY;if PX(M+J,N)J=0
250 if PX(M,N+K)K=0
252 if VR>Lmul 4if N<31if PX(M,N-1)gosub 25
255 M=M+J;N=N+K;%(V)=Y;CALLR
260 %(V)=(-N+39)mul 256+73+M;CALLR
270 if A<M+7if A>M-7if B<N+7if B>N-7S=99
290 Y=%(V);next S;D=(Q>31)
300 if D L=L-(L>2);gosub 600;goto 102
310 gosub 600;gosub 4;I=I+1;if I>P I=1;W=W-1
315 if Wgosub 4;goto 102
500 CY=0;down ;CX=-17;print "THE END
510 if TR(1)run
520 goto 510
600 M=*(I);CALLR;%(U)=128;%(V)=X;CALLR
601 if PX(G,H+1)gosub 6
605 down ;gosub 60;S=9;@(I)=T;for A=-58to 68step 18
610 for B=-25to 36step 18;if @(S)div *(I+1);if D=0VR=B
625 if RM>M-1if PX(A,B)=0@(S)=@(S)-M
630 if D@(S)=@(S)+M;Q=0;TA=*(S-3)div 100;TB=RM;gosub 5
645 S=S+1;next B;next A;@(I+4)=Qmul 100+L;return
>
```

I was going to link to a YouTube video of the "AstroBASIC" version of "The Gate Escape," but it appears there isn't one online-- which is crazy, as this is one of the best astrocade games released on tape. Look at the above program listing; it's so short I can't believe it. Ah, the wonders of 1.8K of RAM.

How was this done? Not easily. The basic steps were:

1) Load the Blue Ram Utility 3.0 from tape (the cart on the multicart never works right for me). Yes, this means you have to have the Blue Ram hardware (at least to follow these directions).

2) Load the AB version of "The Gate Escape" into the utility. You'll need to use the Blue Ram Utility instructions to figure this one out because the utility isn't menu-driven.

3) Unpack the program into Blue Ram format using the utility. This removes the interweaving of program and data that "AstroBASIC" uses to store programs. This is a critical step.

4) Save the program to 2000-baud tape using the Blue Ram hardware audio-out jack.

5) Using the Blue Ram BASIC cart, load the unpacked version of Gate Escape into BRB. It won't work, but it does load correctly.

6) Save the program in 300-baud using the 300-baud tape interface and the BRB command:

```
:PRINT 300; LIST
```

7) Make sure to save the WAV file in the correct format (which took me a long time to figure out): 22,050 at 8-bit for use with KCS. I used Audacity, but it wasn't easy to get this right, as it's not obvious how to save in this rarely used format.

8) Use KCS utility with the following command:

```
KCSWIN -L3 -P50 GATE300.wav GATE300.prg
```

9) Convert the PRG to text with the following command:

```
prg2txt GATE300.prg GATE300.txt -e
```

10) Presuming everything went right, then this procedure gives you the above BASIC listing. It can be edited and made into a WAV file again. Pretty cool, huh?

"The Gate Escape" uses machine language calls, so those bits of code have to figured-out using "AstroBASIC." The program, like many "AstroBASIC" programs, also presets the variables. I'm not sure how to get a variable listing without manually listing all of the variables. Still, this is better than no BASIC listing at all.

It was fun to figure out this procedure to get a listing. Is this useful to anyone besides me?

Adam