

CSIRAC Crib Sheet

A quick look at how to load and run the CSIRAC Emulator

Assuming you have downloaded the file:

<http://www.billp.org/Jemu.zip>

and unzipped it to create a folder called Jemu.

Loading the emulator:

Linux, MAC:

in a command window:

```
cd ../Jemu
```

```
java -jar Jem.jar
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Windows:

Open folder Jemu, double-click on Jem.bat

The emulator should start up with four windows, tape reader, displays, control panel, and printer/punch.

1. In the tape reader window, select 12-hole tab, click 'Load Tape'. If not in the Jemu folder, navigate to it, select a program (.cvt file) which will load the tape, displaying it. There will be one or more blank rows (tape leader) before the first non-blank row. Press 'Step' to advance the tape until the non-blank row is under the read head (between the two horizontal lines.)
2. Now move to the Control Panel window. On the top row of switches, the third from left is labelled 12/5. Click on that to raise it to the 12 setting. On the third row down, labelled NA, set switch 6. Move down and set the NASK switch, and below that the START/STOP switch. Finally press the START button. The tape should then advance over the first few rows. This is the initial loader, called the PRIMARY. It will halt at the first blank row.
See notes below as to why this is one non-authentic behaviour. Reset the NASK switch, press the CLEAR S button, then the START button. The rest of the program will then be loaded into the store.
3. All the demonstration programs are written with a halt instruction at the start, and most jump back to there when they finish. If the program requires a data tape, then repeat the step 1 to load an appropriate tape.
4. At this point select the output device in the Printer/Punch window. Some programs write to the printer, others to the 5-hole punch.

Simply select the appropriate tab. Press the START button again to run the program.

Footnote: Authenticity. I've modelled the control panel on photos and diagrams of it, which varied a bit over the years. Some of the switches do nothing at present. One *improvement* I've made is to halt the tape reader when it reaches a blank row during the primary load, i.e. when NAS2K is set. The original you had to ensure a long string of blanks following the PRIMARY, so the operator could press STOP at this point. This seemed a bit hit and miss to me, and I think the W98 emulator did a cheat at this point too, so I feel it is justified.

Test programs included:

1. A2Test.cvt: Originally a test for the ASIN subroutine. Calculates Sin and Cos for a series of angles, then call ASin to get the angle back. Prints the start angle and the result angle for a series of values. Angles in degrees, minute and seconds. No data tape needed.
2. T712a.cvt: Crude printer test, cycles through the character set outputting the characters to the printer. Select the Printer tab.
3. sqrt.cvt: Calculate the square root of a series of values, read from the data tape: sqrt.dat. After loading in the program, change the tape and press START.
4. TestSound.cvt: Crude test of sound generation. Just a single tone for about 1 second. Load the program, put the Punch Power switch up and press start. A brief flicker and it will halt again. Put the Punch switch down and the output file will be closed. Sound output to sample000.wav initially, then increments the 3-digit number to create subsequent files.
5. player.cvt: Program to read a music file and generate a .wav file from it. Music input is a 12-hole tape. Each row is either a volume or a note. 12-hole tape format is two 2-digit numbers plus XY for volume, or two spaces for notes. The numbers must be 0-31 as they get encoded into 5-bit values. First number is pitch, second is duration. See Scale.mus for a simple example. Tune1.mus is extracted from the CSIRAC Archive as LucyLang1. Procedure is as for TestSound, switch Punch Power on to open a .wav file, switch off or terminate emulator to finalize the file, it will not be playable until finalized.

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