How to Make Minerva from Source

These instructions will not tell you how to produce a Minerva EPROM, only the software to go on such an EPROM. The result should, however, run on Qemulator, uQLx and possibly other emulators without any further steps.

No assembler, linker, Make or cct programs are included with these sources. If you dont already have these programs installed, you need to acquire and install them first.

A free suite of programs may be found included with the SMSQ/E sources, from www.wlenerz.com/smsqe/. The instructions given below are for those programs. By convention the SMSQ/E sources (and hence Make & al) are installed under dev8_

1. Unzip the file m198src.zip to win1_. Unzip will create the directory win1_M_, if it doesnt already exist, and all the source files will appear in sub-directories under that.

2. Load the extensions required by Make, eg
   ```
   LRESPR 'dev8_extras_source_outptr_bin'
   LRESPR 'win1_rxt_QLib_ext'
   ```

3. Point your program directory towards the Linker etc executables, eg
   ```
   PROG_USE 'dev8_extras_exe'
   ```

4. Fire up Make:
   ```
   EX 'dev8_extras_exe_Make'; 'win1_M_ROM_link -l'
   ```

This should only take a minute or two, depending on your system, and produces a binary of 48,822 bytes, called win1_M_ROM_exe.

5. Run the following program to pad the binary file to 48k (Needed for some emulators, like Qemulator.):
   ```
   100 adr = ALCHP(48 * 1024)
   110 LBYTES 'win1_M_ROM_exe', adr
   120 SBYTES 'win1_M_Minerva198_rom', adr, 48 * 1024
   130 RECHP adr
   ```

The above should work fine on a SMSQ/E system. However, to do the same under Minerva itself, some changes need to be made to get it to work:

The DEV_rext 2.02 toolkit I have does not work under Qemulator, but may work with another emulator or a hardware QL (works fine in uQLx). Other (older or later) versions of DEV may also work. DEV is only required to make SMSQ/E, so the work-around is to use a real device instead, eg win3_, or to copy the files

```
dev8_extras_exe_qmac
dev8_extras_exe_linker
dev8_extras_exe_cctf
```

and either (see * below)

```
        dev8_extras_exe_Make
```

or

```
        dev8_extras_source_make_bas
```

to a more convenient location and point prog dir in its direction.

* I was not able (within a few minutes) to get the compiled version of Make to work despite adding toolkits such as

```
        LRESPR 'win2_ptr_gen'
        LRESPR 'win2_wman'
        LRESPR 'win2_hot_rext'
        LRESPR 'win2_QPtr'
```

The work-around is to load the toolkits etc, as described earlier, then load and the SuperBASIC program make_bas, and modify line 230 to read:

```
        230    cmd$='win1_M_ROM_link -l':INK #msgch,7
```

RUN the program. Do the padding afterwards, if required.

And that should be it! Happy QL-ing!

pjw, 2015

Tests:

1) Make on QPC2 with SMSQ/E ok.

2) Fired up Qemulator with the ROM file produced in (1) to Make itself from scratch:

3) Make on Qemulator with the output of (2) as ROM, ok. But modifications as described above required.

4) Used the output of (3) to run under uQLx. Both padded and unpadded versions worked fine. Even DEV works, so could probably Make from within uQLx as per instructions for QPC2/SMSQ, above.