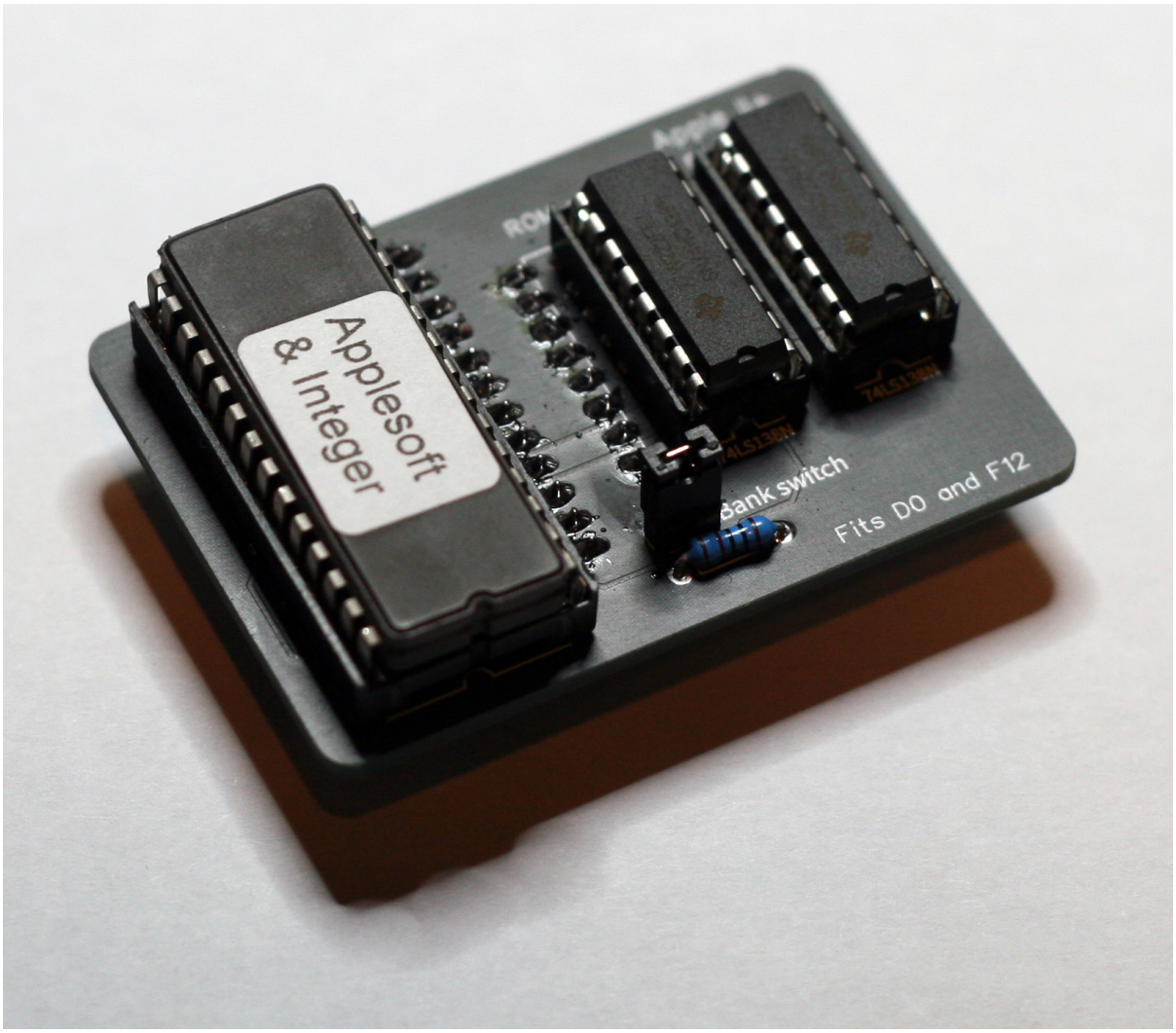
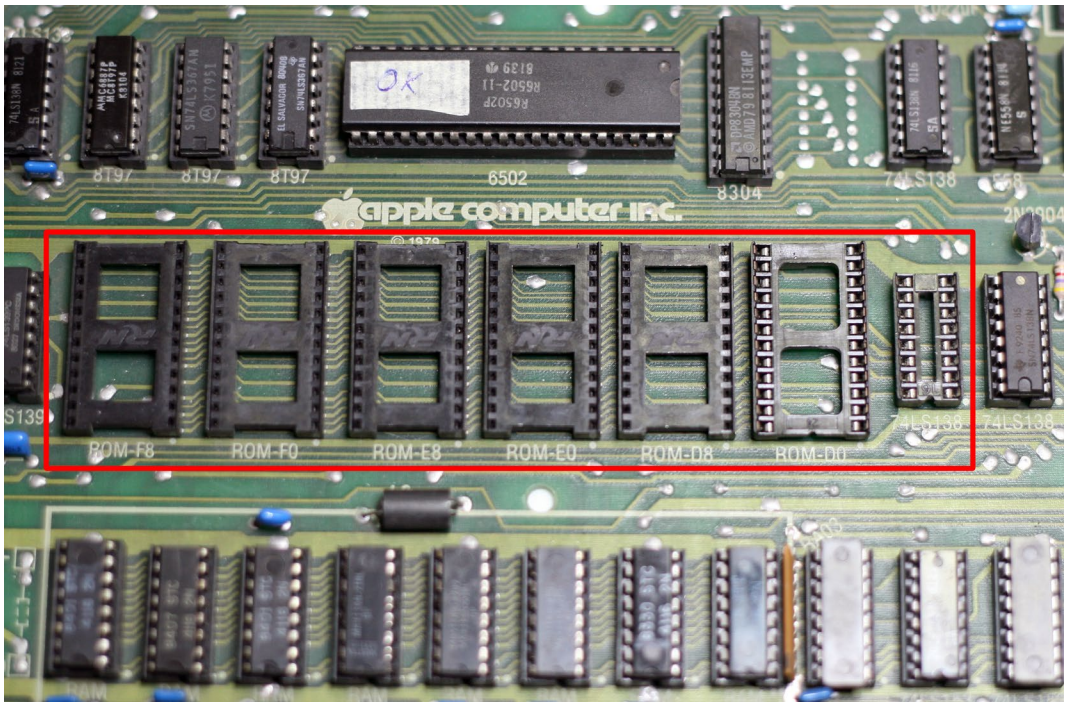
Apple][/][+ ROM Replacement Board

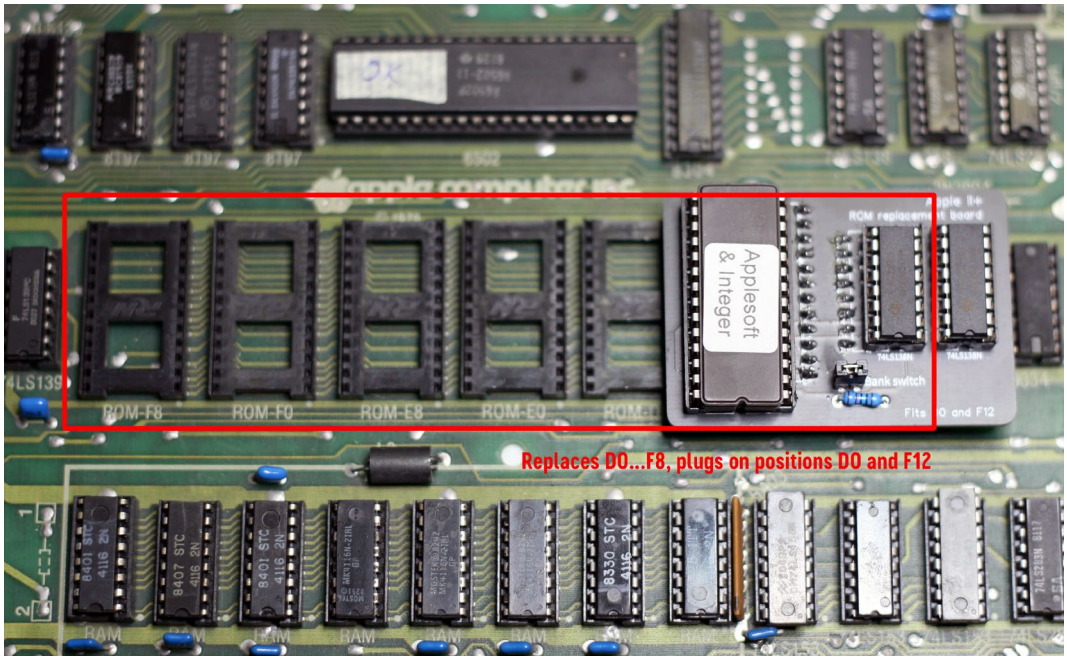


How to fit

First remove the 6 original ROMs from your Apple II motherboard, they can be found at positions D0, D8, E0, E8, F0 and F8. Then also remove the first 74LS138 logic chip to the right of the ROM sockets (position F12).



Fit the ROM replacement board on the two rightmost sockets (D0 and F12).
Make sure the pins of the ROM replacement are not bent and fitted correctly in the sockets.



How to use

Just power on your Apple][computer and it should boot to Applesoft BASIC (if the jumper is fitted).

The EPROM (the board needs a 27C256 or compatible EPROM) contains 2 banks of software, more specifically Applesoft BASIC and INTEGER BASIC. You can switch between them by fitting (Applesoft) or removing (Integer) the jumper.

Note on INTEGER BASIC:
When booting the INTEGER BASIC bank (jumper removed) you first boot into the monitor program. To actually start the BASIC, you need to press CTRL + B and then RETURN.

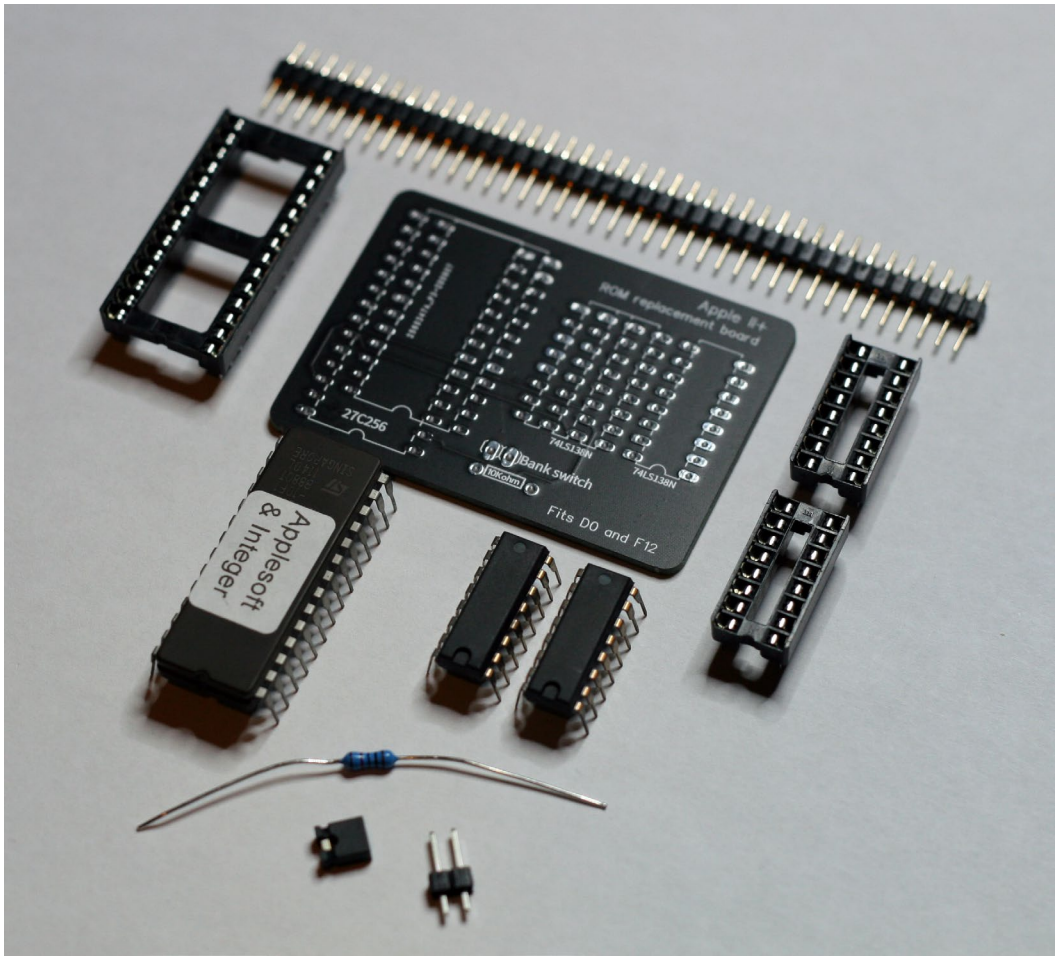
EPROM contents

As mentioned before, the EPROM contains 2 banks of software.

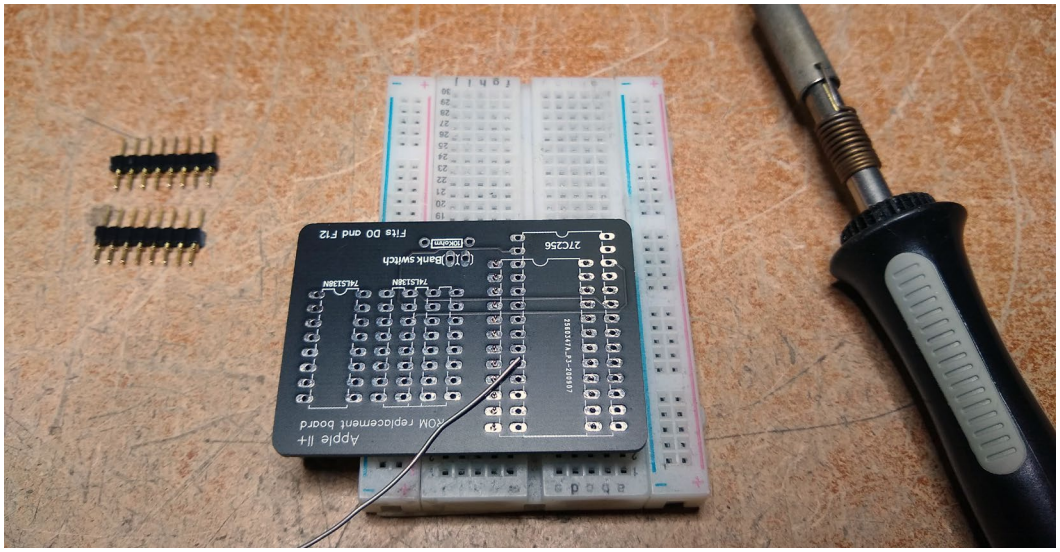
The 27C256 EPROM can contain 32K of data. Applesoft BASIC consists of 6x 2K ROMs and INTEGER BASIC consists of 4x 2K ROMs. The Inspector and Watson software is also included with the INTEGER BASIC bank and consists of 2x 2K ROMs. So in total we need 24K of space for our software.

The EPROM is structured as follows:
first it contains 4K empty data, followed by the 4x INTEGER ROMs, 1x Inspector ROM and 1x Watson ROM. Then 4K empty space again, followed by the 6x Applesoft ROMs in order D0, D8, E0, E8, F0 and F8.

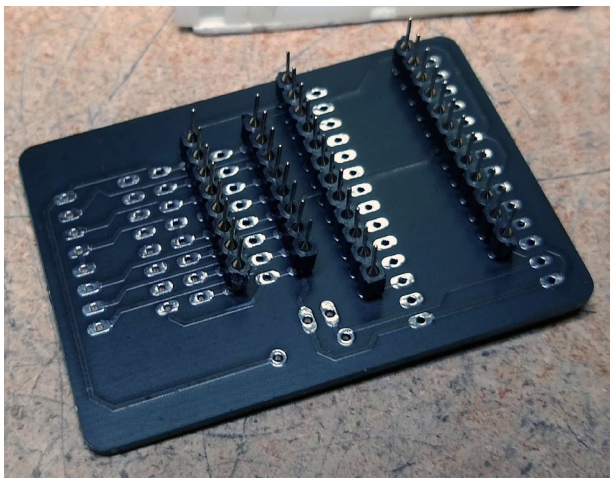
Building the DIY (do it yourself) kit

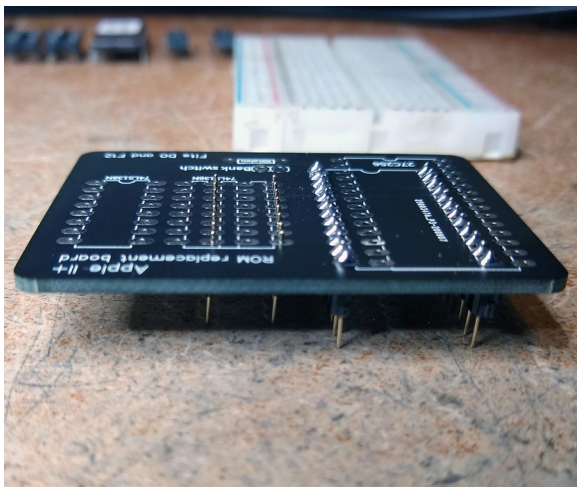


Split up the 40-pin precision pin header into 2x 12 pin and 2x 8 pin parts.
It is advised you start with soldering the pins on the bottom of the PCB. I use an old breadboard to solder the 2x 12 pin rows first.



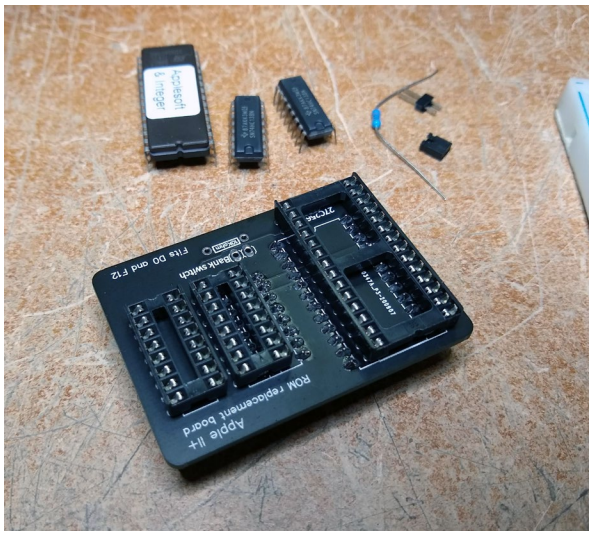
The fit the 2x 8 pin rows and solder them on. Since you can't use the breadboard any more for this (it won't fit) you need to pay attention that you solder them on straight!
See below pictures for the positions of the 2x 8 pin rows.





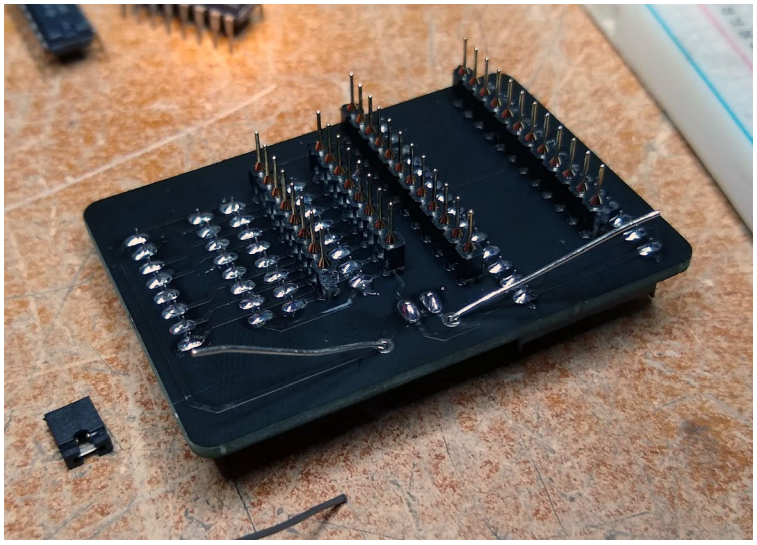
Next it is time for the components on the top of the board.
First solder on the sockets. Please follow the indications on the PCB for the correct orientation of the sockets and IC's.

The DIP-16 IC socket pins on the second picture below are a bit of a nuisance to solder since you need to place your soldering tip in between the 2x 8 row pin rows. But with a bit of practice you will fast get the hang of it.



Tip: first solder the corner pins of every socket, then do the rest of the pins.

That only leaves the jumper pins and the 10K resistor.



After everything is soldered, you can fit the 3x IC's and start using your board.
Check that you soldered every pin, and that there are no solder blobs that could cause a short.