Olga has created the Teensy LC keyboard controller code “Commodore_C64.ino” and the key lists found in this folder.

Olga’s description follows:

I have been doing a small project, rebuilding a Commodore 64 for my daughter. The pictures are given below. Of course, the old C64 insides are junk for the kids nowadays, so I decided to build in a brand new motherboard with i9 chip and NVidia card. To make this all work, I needed some way to connect the old C64 keyboard.

My first try was to disassemble the old C64 keyboard and substitute the matrix of connections with new micro-switches, and connect those to the USB controller from the A4-tech keyboard I found. I could decode this A4-tech keyboard matrix just by looking and checking the connection. This approach was a disaster - very complicated, lots of work, so I abandoned it.

Then I found the Keyrah project - I bought a few of those devices, only to find out that their key definitions were hardcoded and lacked right alt, which I use to get the Polish characters (like ą, ę etc). I managed to get around it by writing a script for the AHK program that worked, but this also sucked and was not elegant. It required switching the script on and off if the external USB keyboard was attached.

Searching the Internet I found Frank Adams’s USB Keyboard Instructable, and bought two Teensy LC's. Once more I disassembled the C64 keyboard and to my joy, I found out that inside the keyboard casing, there is enough space to put the Teensy LC! So I re-soldered the C64 keyboard cables on the inside of the matrix board and soldered the Teensy directly to the keyboard. I am going to put it in the casing so there is no need for fancy connectors. I soldered them by numbers, i.e. 0 from C64 keyboard to pin 0 of Teensy, up to 9, then A,B,C...I.

Then I started the Matrix Decoder, and decoded all keys, and started thinking :)

I could not create a matrix for Frank’s code so I have rewritten the code to read a list of pins and sort it from the single-pin to the largest-group. I know, the sort algorithm sucks and is n2 complexity, but for 26 pins and roughly 540 loops done in setup, I can accept it.

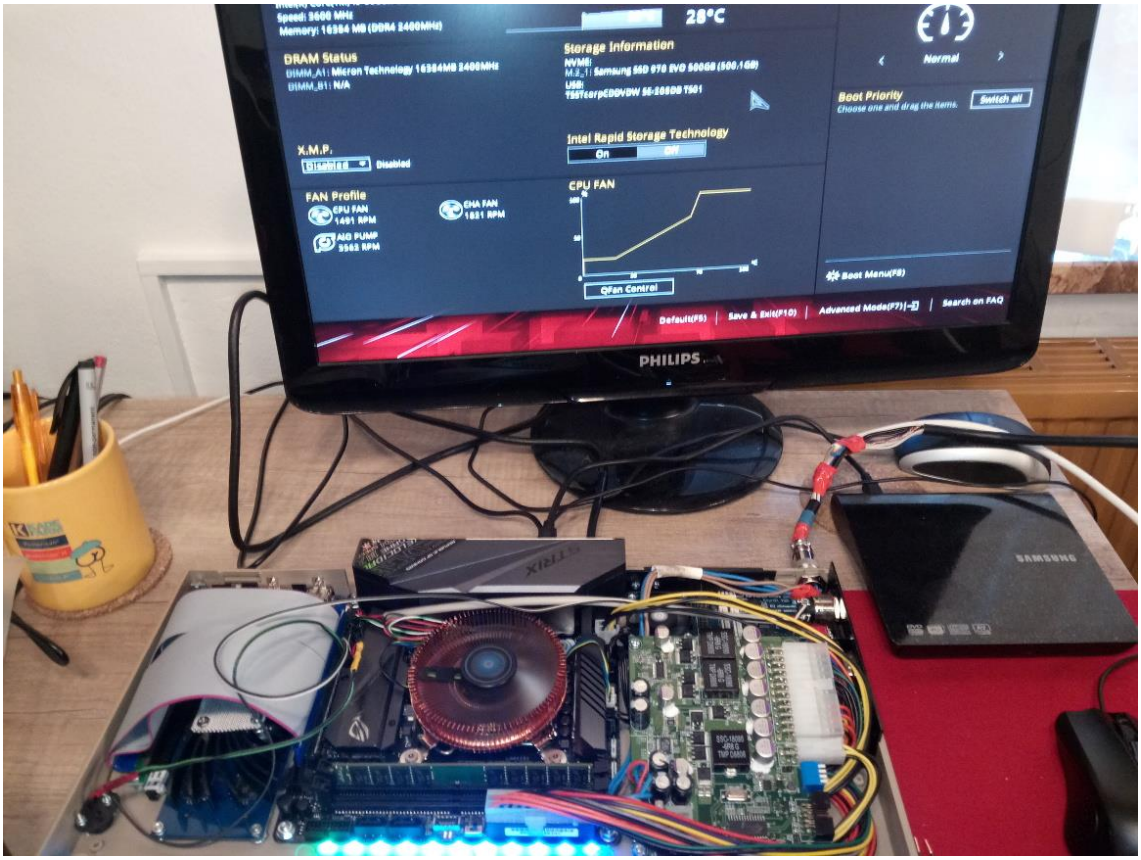
Then I got in a real mess. Keys N, J, I, O, 9 either did not respond, or produced every possible other key on keystroke. It took me half a day to discover that Pin 13 on the Teensy LC must NOT be used, so I re-soldered all pins from 13 up skipping pin 13 and it suddenly worked.

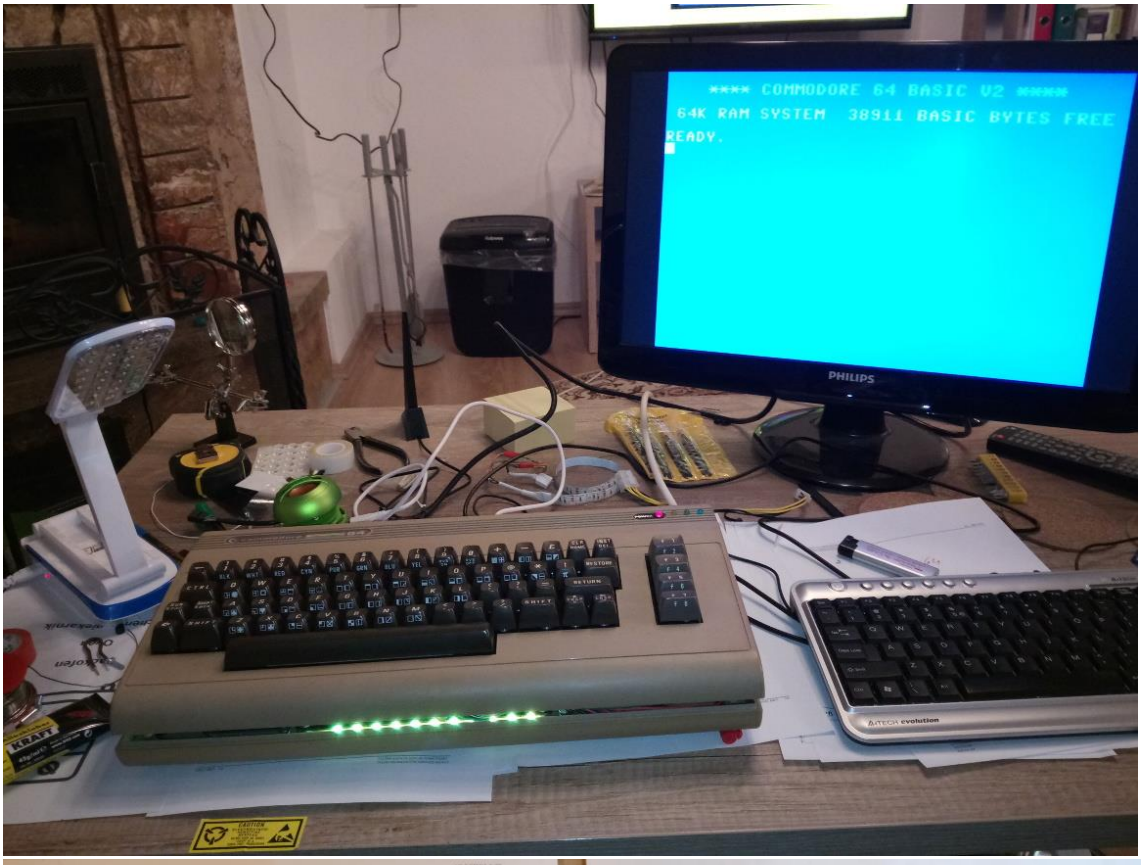
The advantage that my code has is that I make a Restore key with right-alt. That allows me to get my Polish characters, and additionally, as an extra bonus, I defined right-shift as sort of an "Fn" key.

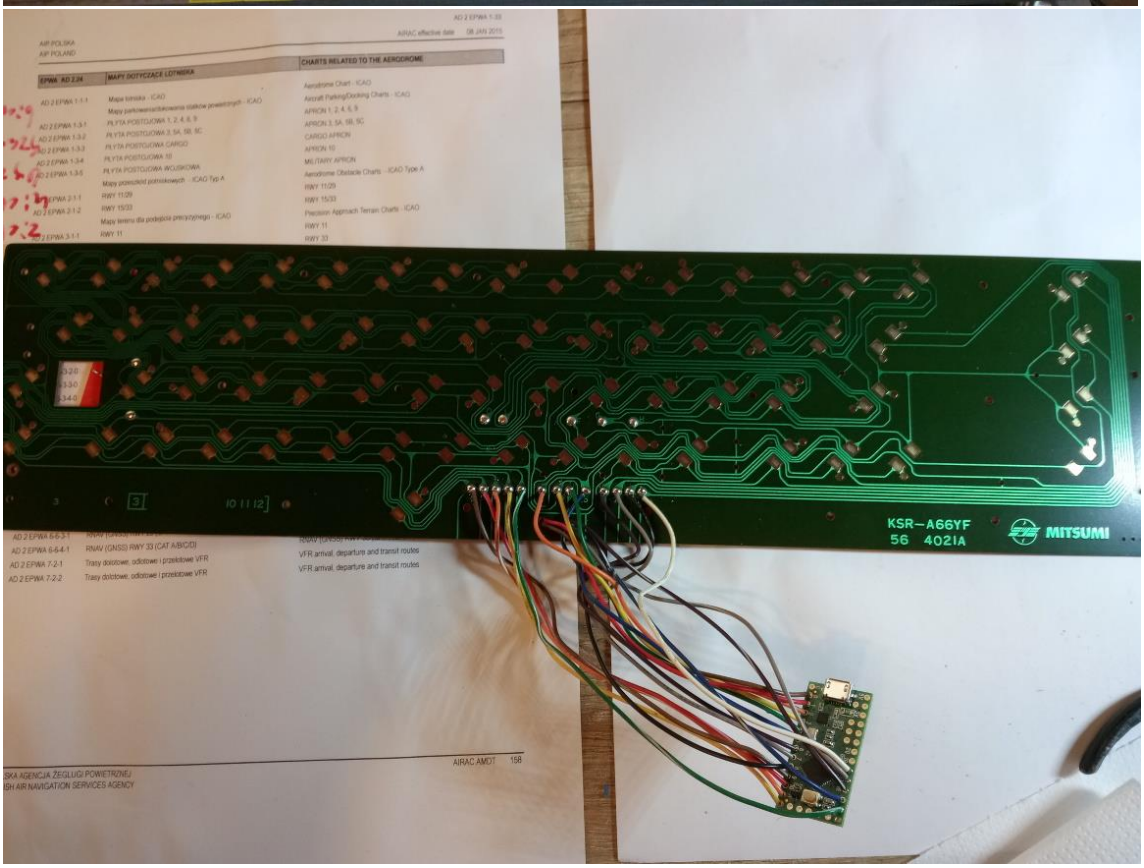
The C64 keyboard lacks many keys, e.g. F2, F4, F6, F8 and keys that cannot be reached on one stroke, e.g. insert, Del, etc.
So the "keycode2" that I added to the key definitions is an optional key code that will be sent when right shift and the key having the "keycode2"!=0 is pressed.

Also, I added some debug code. If you comment out #define NODEBUG, then on a serial monitor you will see some debug info. That was very useful when I fought with the pin13 issue.

If you have any questions about my C64 code, you can contact me at:
void@buntownik.pl




**** COMMODORE 64 BASIC V2 ****
64K RAM SYSTEM 38911 BASIC BYTES FREE
READY.
PHILIPS


AIP POLSKA
AIP POLAND
AIRAC effective date 08 JAN 2015
EPWA AD 2.24
MAPY DOTYCZĄCE LOTNISKA
CHARTS RELATED TO THE AERODROME
AD 2 EPWA 1-1-1 Mapa lotniska - ICAO
Aerodrome Chart - ICAO
AD 2 EPWA 1-3-1 PŁYTA POSTOJOWA 1, 2, 4, 6, 9
APRON 1, 2, 4, 6, 9
AD 2 EPWA 1-3-2 PŁYTA POSTOJOWA 3, 5A, 5B, 5C
APRON 3, 5A, 5B, 5C
AD 2 EPWA 1-3-3 PŁYTA POSTOJOWA CARGO
CARGO APRON
AD 2 EPWA 1-3-4 PŁYTA POSTOJOWA 10
APRON 10
AD 2 EPWA 1-3-5 PŁYTA POSTOJOWA WOJSKOWA
MILITARY APRON
Mapy przeszkód lotniskowych - ICAO Typ A
Aerodrome Obstacle Charts - ICAO Type A
AD 2 EPWA 2-1-1 RWY 11/29
RWY 11/29
AD 2 EPWA 2-1-2 RWY 15/33
RWY 15/33
Mapy terenu dla podejścia precyzyjnego - ICAO
Precision Approach Terrain Charts - ICAO
AD 2 EPWA 3-1-1 RWY 11
RWY 11
RWY 33
AD 2 EPWA 6-6-4-1 RNAV (GNSS) RWY 33 (CAT A/B/C/D)
AD 2 EPWA 7-2-1 Trasy dolotowe, odlotowe i przelotowe VFR
VFR arrival, departure and transit routes
AD 2 EPWA 7-2-2 Trasy dolotowe, odlotowe i przelotowe VFR
VFR arrival, departure and transit routes
AIRAC AMDT 158
KSR-A66YF
56 402IA
MITSUMI