Hexadecapus multi-SD reader hardware setup

About:

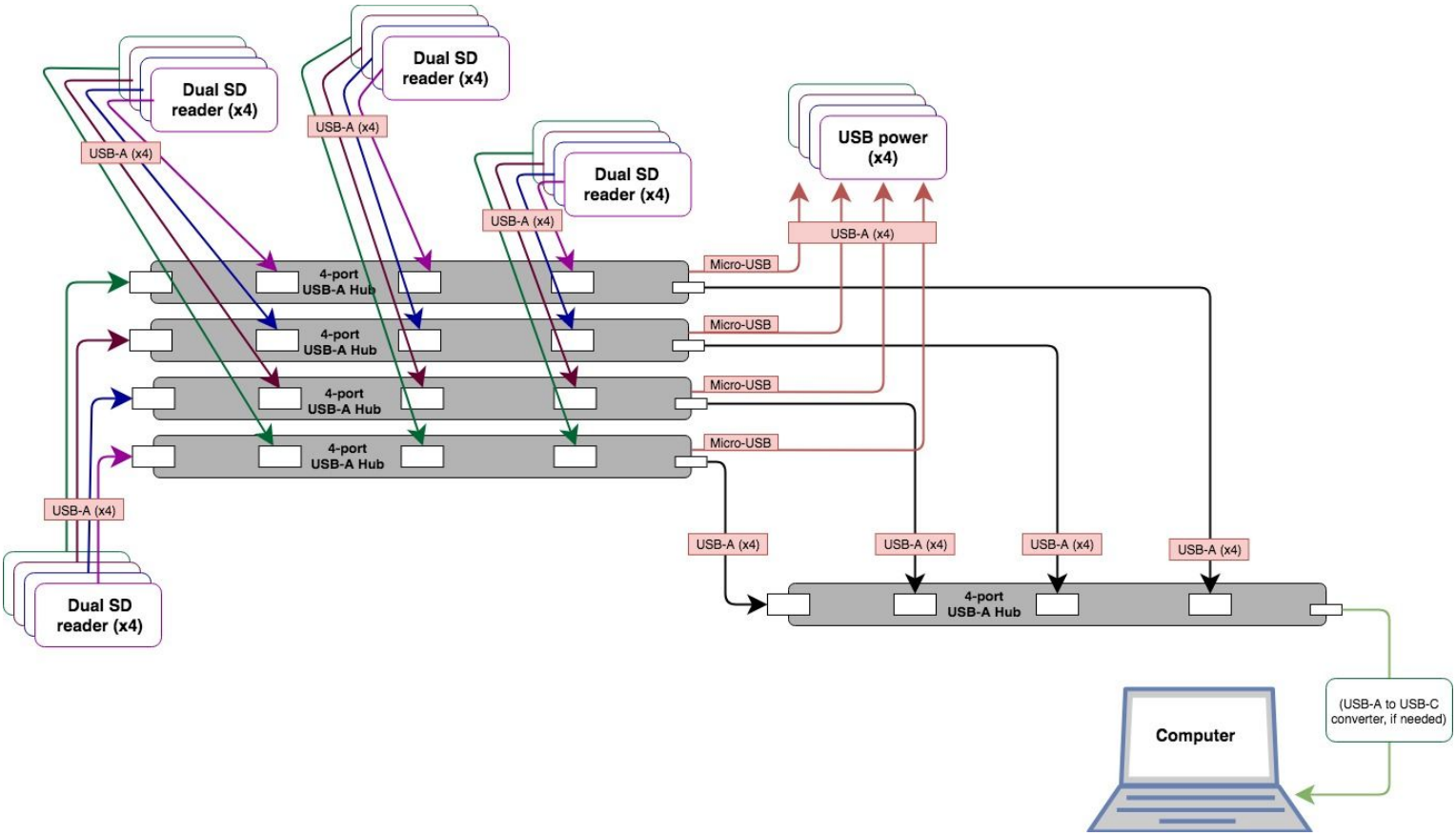
This device (dubbed *Hexadecapus*, for its sixteen 'arms'), was created to enable users to read and transfer data from up to 32 micro-SD cards at once. There are 16 Micro-SD card slots and 16 Standard-SD card slots as designed; the Kitzes lab uses Standard-to-Micro SD converters to read 32 Micros at once. The 'sd-transfer' tool was written to automatically read any number of SD cards mounted to a Mac, transfer data from them to your computer's local storage, and clear/reformat the cards if desired; follow the link for the code and instructions for use. The Hexadecapus could easily be expanded by adding more hubs and readers, or multiple could be used at once to expand the number of cards readable at a time.

Hardware specs:

Part	**Link**	**Count**
USB-A double SD-card reader	Amazon - double SD reader	16
USB-A 4-Port hub with external power input	Tripp Lite - 4-Port USB-3.0 Hub	5
Micro-USB power cord & wall plug	Amazon - Micro-USB cable Amazon - USB wall charger	4
Standard-to-Micro SD converter *(optional)*	Amazon - MicroSD-SD adapter	16
USB-A to USB-C converter *(optional)*	Amazon - USB-A to USB-C converter	1

All parts are interchangeable with others that fit the same input/output types - I have included the exact parts that we are using in the Kitzes lab (dictated by what we can order through Pitt's purchasing setup), but there are definitely cheaper options that can be found on Amazon. Note that the USB hubs must have an external power input! Your computer is not able to power all of the devices from a USB port, so adding external power is necessary to be able to read from more than ~8 cards at once). If you try to read from many inputs without externally powering the hubs, you might get a message like "Too much power is being drawn from a USB port", or might just get SD cards randomly ejected. If this happens, unmount everything, restart your computer, add sufficient external power, and try again.

See Fig. 1 and Fig. 2 below for assembly schematics and a reference photo of a completed Hexadecapus. We used tape to keep the SD readers and USB hubs organized neatly.



Figs. 1 and 2: Hexadecapus hardware schematic (above) and reference photo (below)