Embedded Web Server with SD/MMC File Storage

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Project Abstract

The goal of this project was to convert the Z8 Encore platform into an embedded web server. For this proof of concept, simple HTML files were stored on an attached SD/MMC card and served over a network connection via the HyperText Transfer Protocol (HTTP). The network interface was provided by the addition of a NICholas network interface board from EDTP. The SD/MMC card interface was provided by the addition of an SD/MMC breakout board from SparkFun. Once assigned a static IP address, the embedded web server was able to continuously serve the HTML web pages provided on the SD card to any host on the network. For this project, not only was a web server program developed, but driver support for both the network interface card and the SD/MMC specifications were added to the Z8 platform.

Final Project

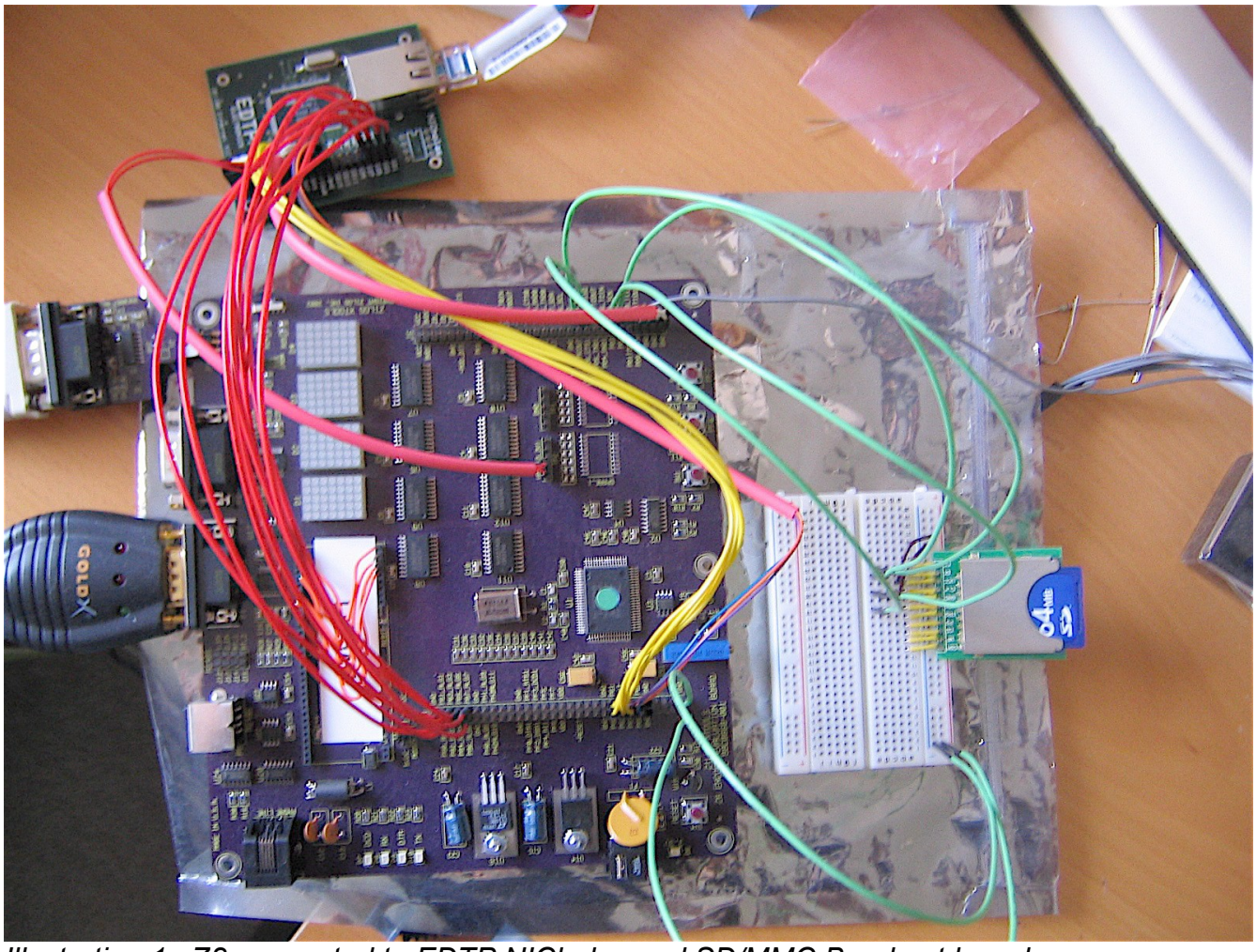

Illustration 1.: Z8 connected to EDTP NICholas and SD/MMC Breakout board.

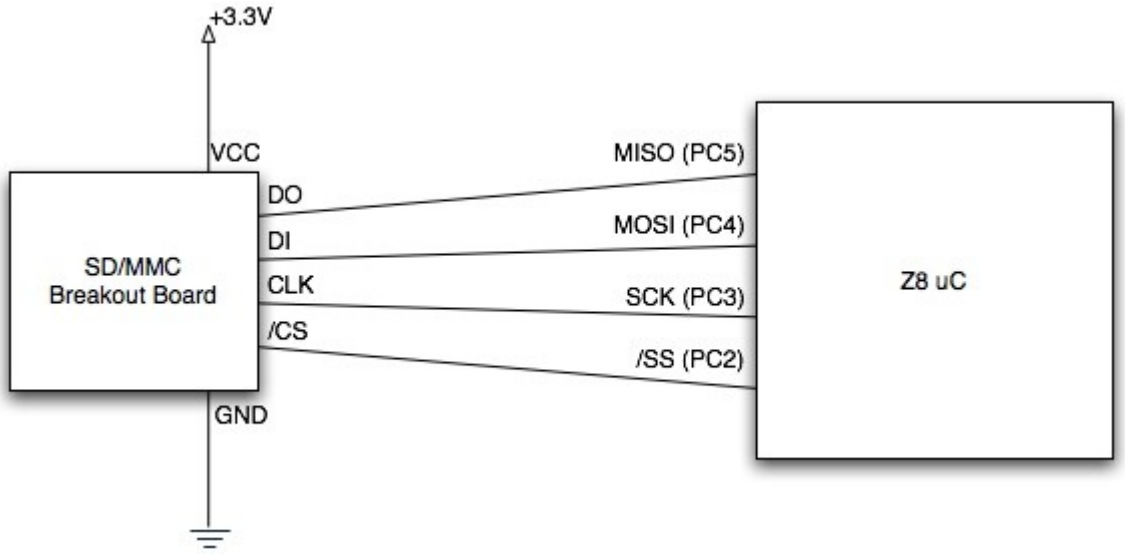

Illustration 2.: Wiring diagram for SD/MMC Breakout board

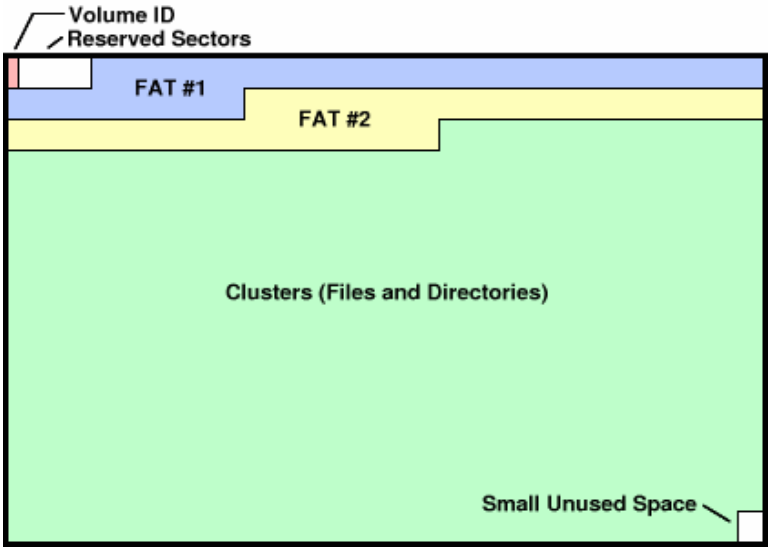

Illustration 3.: FAT32 Partition Layout

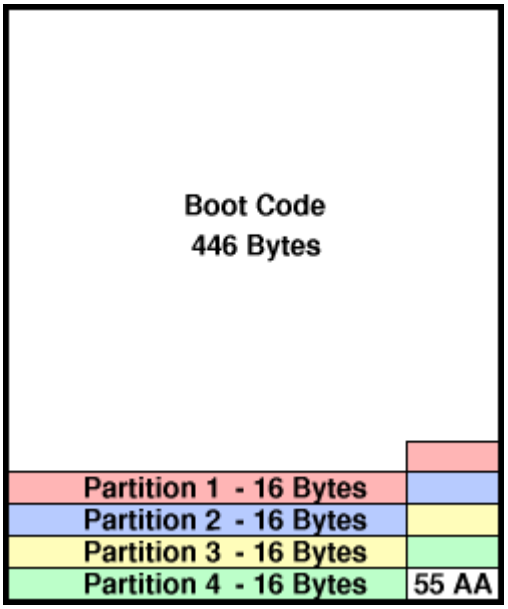

Illustration 4.: Master Boot Record

Lessons Learned

- Serial Peripheral Interface (SPI)
- FAT16/32 Filesystem Layout
- HyperText Transfer Protocol (HTTP)
- HTTP Session Handling
- Transport Communication Protocol (TCP)
- Embedded System Memory Management
- Embedded System Debugging