Adafruit SD Card Library Documentation

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CircuitPython driver for SD cards. This implements the basic reading and writing block functionality needed to mount an SD card using `storage.VfsFat`.

CHAPTER 1

Dependencies

This driver depends on:

- Adafruit CircuitPython 2.0.0+
- Bus Device

Please ensure all dependencies are available on the CircuitPython filesystem. This is easily achieved by downloading the Adafruit library and driver bundle.

CHAPTER 2

Usage Example

Mounting a filesystem on an SD card so that its available through the normal Python ways is easy.

Below is an example for the Feather M0 Adalogger. Most of this will stay the same across different boards with the exception of the pins for the SPI and chip select (cs) connections.

```
import adafruit_sdcard
import busio
import digitalio
import board
import storage

# Connect to the card and mount the filesystem.
spi = busio.SPI(board.SCK, board.MOSI, board.MISO)
cs = digitalio.DigitalInOut(board.SD_CS)
sdcard = adafruit_sdcard.SDCard(spi, cs)
vfs = storage.VfsFat(sdcard)
storage.mount(vfs, "/sd")

# Use the filesystem as normal.
with open("/sd/test.txt", "w") as f:
    f.write("Hello world\n")
```

CHAPTER 3

Contributing

Contributions are welcome! Please read our Code of Conduct before contributing to help this project stay welcoming.

CHAPTER 4

Building locally

To build this library locally you'll need to install the circuitpython-build-tools package.

```
python3 -m venv .env
source .env/bin/activate
pip install circuitpython-build-tools
```

Once installed, make sure you are in the virtual environment:

```
source .env/bin/activate
```

Then run the build:

```
circuitpython-build-bundles --filename_prefix adafruit-circuitpython-sd --library_
↪location .
```

4.1 Sphinx documentation

Sphinx is used to build the documentation based on rST files and comments in the code. First, install dependencies (feel free to reuse the virtual environment from above):

```
python3 -m venv .env
source .env/bin/activate
pip install Sphinx sphinx-rtd-theme
```

Now, once you have the virtual environment activated:

```
cd docs
sphinx-build -E -W -b html . _build/html
```

This will output the documentation to `docs/_build/html`. Open the index.html in your browser to view them. It will also (due to -W) error out on any warning like Travis will. This is a good way to locally verify it will pass.

CHAPTER 5

Table of Contents

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/sd_read_simpletest.py

```
import os
import busio
import digitalio
import board
import storage
import adafruit_sdcard

# The SD_CS pin is the chip select line.
#
#     The Adalogger Featherwing with ESP8266 Feather, the SD CS pin is on board.D15
#     The Adalogger Featherwing with Atmel M0 Feather, it's on board.D10
#     The Adafruit Feather M0 Adalogger use board.SD_CS
#     For the breakout boards use any pin that is not taken by SPI

SD_CS = board.SD_CS # setup for M0 Adalogger; change as needed

# Connect to the card and mount the filesystem.
spi = busio.SPI(board.SCK, board.MOSI, board.MISO)
cs = digitalio.DigitalInOut(SD_CS)
sdcard = adafruit_sdcard.SDCard(spi, cs)
vfs = storage.VfsFat(sdcard)
storage.mount(vfs, "/sd")

# Use the filesystem as normal! Our files are under /sd

# This helper function will print the contents of the SD
def print_directory(path, tabs=0):
```

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```
    for file in os.listdir(path):
        stats = os.stat(path+"/"+file)
        filesize = stats[6]
        isdir = stats[0] & 0x4000

        if filesize < 1000:
            sizestr = str(filesize) + " bytes"
        elif filesize < 1000000:
            sizestr = "%0.1f KB" % (filesize/1000)
        else:
            sizestr = "%0.1f MB" % (filesize/1000000)

        prettyprintname = ""
        for _ in range(tabs):
            prettyprintname += "   "
        prettyprintname += file
        if isdir:
            prettyprintname += "/"
        print('{0:<40} Size: {1:>10}'.format(prettyprintname, sizestr))

        # recursively print directory contents
        if isdir:
            print_directory(path+"/"+file, tabs+1)


print("Files on filesystem:")
print("====================")
print_directory("/sd")
```

5.2 `adafruit_sdcard` - SD card over SPI driver

CircuitPython driver for SD cards using SPI bus.

Requires an SPI bus and a CS pin. Provides readblocks and writeblocks methods so the device can be mounted as a filesystem.

- Author(s): Scott Shawcroft

5.2.1 Implementation Notes

Hardware:

- Adafruit MicroSD card breakout board+ (Product ID: 254)
- Adafruit Assembled Data Logging shield for Arduino (Product ID: 1141)
- Adafruit Feather M0 Adalogger (Product ID: 2796)
- Adalogger FeatherWing - RTC + SD Add-on For All Feather Boards (Product ID: 2922)

Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based boards: https://github.com/adafruit/circuitpython/releases
- Adafruit's Bus Device library: https://github.com/adafruit/Adafruit_CircuitPython_BusDevice

class adafruit_sdcard.**SDCard**(*spi*, *cs*)

Controls an SD card over SPI.

Parameters

- **spi** (*SPI*) – The SPI bus
- **cs** (*DigitalInOut*) – The chip select connected to the card

Example usage:

```
import busio
import storage
import adafruit_sdcard
import os
import board

spi = busio.SPI(SCK, MOSI, MISO)
sd = adafruit_sdcard.SDCard(spi, board.SD_CS)
vfs = storage.VfsFat(sdcard)
storage.mount(vfs, '/sd')
os.listdir('/')
```

count()

Returns the total number of sectors.

Returns The number of 512-byte blocks

Return type int

readblocks(*start_block*, *buf*)

Read one or more blocks from the card

Parameters

- **start_block** (*int*) – The block to start reading from
- **buf** (*bytearray*) – The buffer to write into. Length must be multiple of 512.

writeblocks(*start_block*, *buf*)

Write one or more blocks to the card

Parameters

- **start_block** (*int*) – The block to start writing to
- **buf** (*bytearray*) – The buffer to write into. Length must be multiple of 512.

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