# Cardreader Howto

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**Abstract**

This tutorial gives an introduction how to use the cardreaders in the *Microconroller Lab Course*. It describes two ways of accessing sd-cards: raw access and access with a *FAT* filesystem.

Ther are many ways to reach this goals – the following are only suggestions.

# 1 Raw Access

To write raw data to the memory card we use *dd* [3]. For example, to write the file *image.bin* to the card use:

```
dd if=image.bin of=/dev/mcvlcard
```

*Note*: This destroys a, possible existing, filesystem on the card.

# 2 FAT Filesystem

We use *Mtools* [2] to access the sd-card with a *FAT* filesystem. (This is necessary because, to allow raw access, it is not possible to mount the card as usual.)

In the following we first operate on a disk image file and copy the image to the sd-card at the end. This has the advantage, that you can reuse your image, although other students have used the sd-card in the meantime.

To do so, follow these steps:

1. Create an image file.

2. Create a filesystem.

3. Copy files to the image.

4. Copy the image to the sd-card.

## 2.1 Commands

The following list summarizes all basic usefull commands:

- **Create an image file**: This creates a sparse (empty space does not need real disk space) image file, *image.bin* with a size of 50.000.000 bytes.

  ```
  dd if=/dev/zero of=image.bin bs=1 count=1 seek=50000000
  ```

- **Create a filesystem**:

  ```
  /sbin/mkfs.vfat image.bin
  ```

- **List the content of the image**:

  ```
  mdir -i image.bin
  ```

*Note*: *Mtools* only use short filenames by default.

- **Copy a file to the image**: This copies *song1.mp3* into the root directory of the image.

```
mcopy -i image.bin song1.mp3 ::
```

- **Delete a file**: This deletes *song1.mp3*.

```
mdel -i image.bin song1.mp3 ::
```

- **Copy the image to the memory card**:

```
dd if=image.bin of=/dev/mcvlcard
```

- **Eject the memory card**:

```
eject /dev/mcvlcard
```

- **Archive an image**: To archive a sparse image you can use *tar* [1] to get a very memory effizient compressed file. You can use this method to save diskspace in the lab, if you have more images.

```
tar -scjf image.tar.bz2 image.bin
```

- **Extract an archive**

```
tar -sxjf image.tar.bz2
```

# References

[1] Mike Frysinger Debian Linux. tar(1) - linux man page. http://linux.die.net/man/1/tar. [online; last visit 04.04.2011].

[2] Alain Knaff. Mtools. http://www.gnu.org/software/mtools. [online; last visit 04.04.2011].

[3] David MacKenzie Paul Rubin and Stuart Kemp. dd(1) - linux man page. http://linux.die.net/man/1/dd. [online; last visit 04.04.2011].