Nfccontroller library

The Nfccontroller library that can be used to use an NFC microcontroller to communicate with NFC cards.

The library is split into two parts: The microcontroller driver and the Card protocol decorator.

Microcontroller driver.

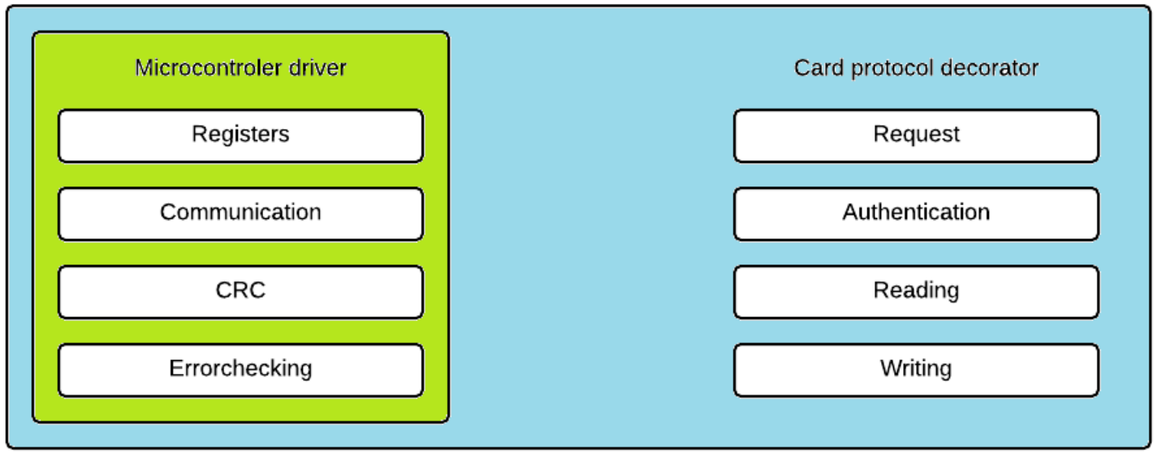
The microcontroller side of the library focuses on the internal workings of a NFC oriented microcontroller.

The core functionality of the drive comes from manipulating the microcontroller's internal registers. These registers control all the functions and settings of the microcontroller. From turning off the antenna to the sending and receiving of data.

The communication functionality handles the successive manipulation of the registers that are needed to send and receive data. The actual data that is sent and the structure hereof is controlled by the protocol decorator.

The CRC (cyclic redundancy check) handles the procedure to check if the data that is sent or received is the correct data. It does this by processing the to be sent data and adding the result to of this process to the data that is to be sent. For incoming data it compares the received CRC answer to its own calculation.

Finally the error checking is handled by reading various internal registers of the microcontroller and comparing them to preset results found in their respective documentation. If the result does not match what is expected and error signal is given.



The Card protocol side of the library focuses on card specific protocols and procedures.

It functions like a wrapper for the controller the Card protocol's functionality has a more linear flow but is also a bit more abstract.

The request sends a specific signal to a card which wakes the card up and allows it to receive additional commands which would otherwise be ignored.

Authentication is required for the actual reading and writing of data. It usually works via a series of challenges and answers that functions as a handshaking procedure that afterwards allows the microcontroller to manipulate the internal data of card. This internal manipulation is done via the respective write and read protocols of the card. The write and read protocols main function is to keep track of how data is stored on the card and how to handle this properly. All of these procedures can be found in the respective documentations of that card. But for ease of use they have been included into the library.