Serial Communication Packet Logger

Authors: Fraser Dougall

Reviewers: ...

Status: **Drafting |** Ready for Review **|** In Review **|** Complete

Objective

Turn the packets sent to the Arduino into human readable statements, and log all of said statements into a .txt file. The statements logged would be info, warning, errors, and current cart state.

Requirements

- Print the packets in human readable form (angle, velocity, hex values)
- Assign a value to each packet (Control, Kill, Initialization)
- Each log is dated from runtime
- Log file has a similar structure to boot logs (info, warnings, errors are logged)

Serial Packet Structure:

Enable Case:

START_BYTE , ID_ENABLE , serial_crc , STOP_BYTE
0x02 0xF0 ??? 0x02

Control Case:

START_BYTE , ID_CONTROL , data_len_buf , (BRAKE or THROTTLE or STEERING)_buf , serial_crc , STOP_BYTE

Breaking first, throttle, then steer
Can send steering standalone, but for others must have all 3

Kill Case:

START_BYTE , ID_KILL , serial_crc , STOP_BYTE

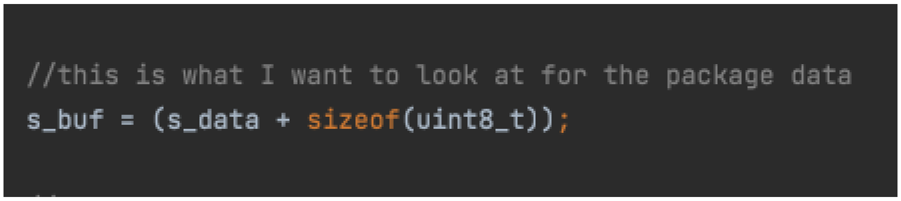
Software Architecture

In serial sender (example: SERIAL_TEST.cpp file): log all the raw packets to a txt file line by line by dumping the raw data buffer to a file, then decoding it in a separate file. Have the first line be the date, second line be ENABLE, then next lines be packets ending the file with DISABLE.

In a separate C++ file: have a translator that takes the txt file and parses it and spits out a 1:1 translation. Use a while loop and loop through the file until hitting DISABLE.

The raw file would be RAW_{date}.txt
The translated file would be PARSED_{date}.txt

Dump s_buf to the new file line by line.



```
//this is what I want to look at for the package data
s_buf = (s_data + sizeof(uint8_t));
```

Example Output

RAW_17_01_2021.txt:
17:01:2021
(packet sent)
(packet sent)
(packet sent)
END

PARSED_17_01_2021.txt
ENABLE
Brake: Velocity: -5 | Angle: 50*
Throttle: Velocity: 10 | Angle: 80*
Throttle: Velocity: 10 | Angle: 81*
DISABLE

(final output may be slightly different, still figuring out how I want to display)