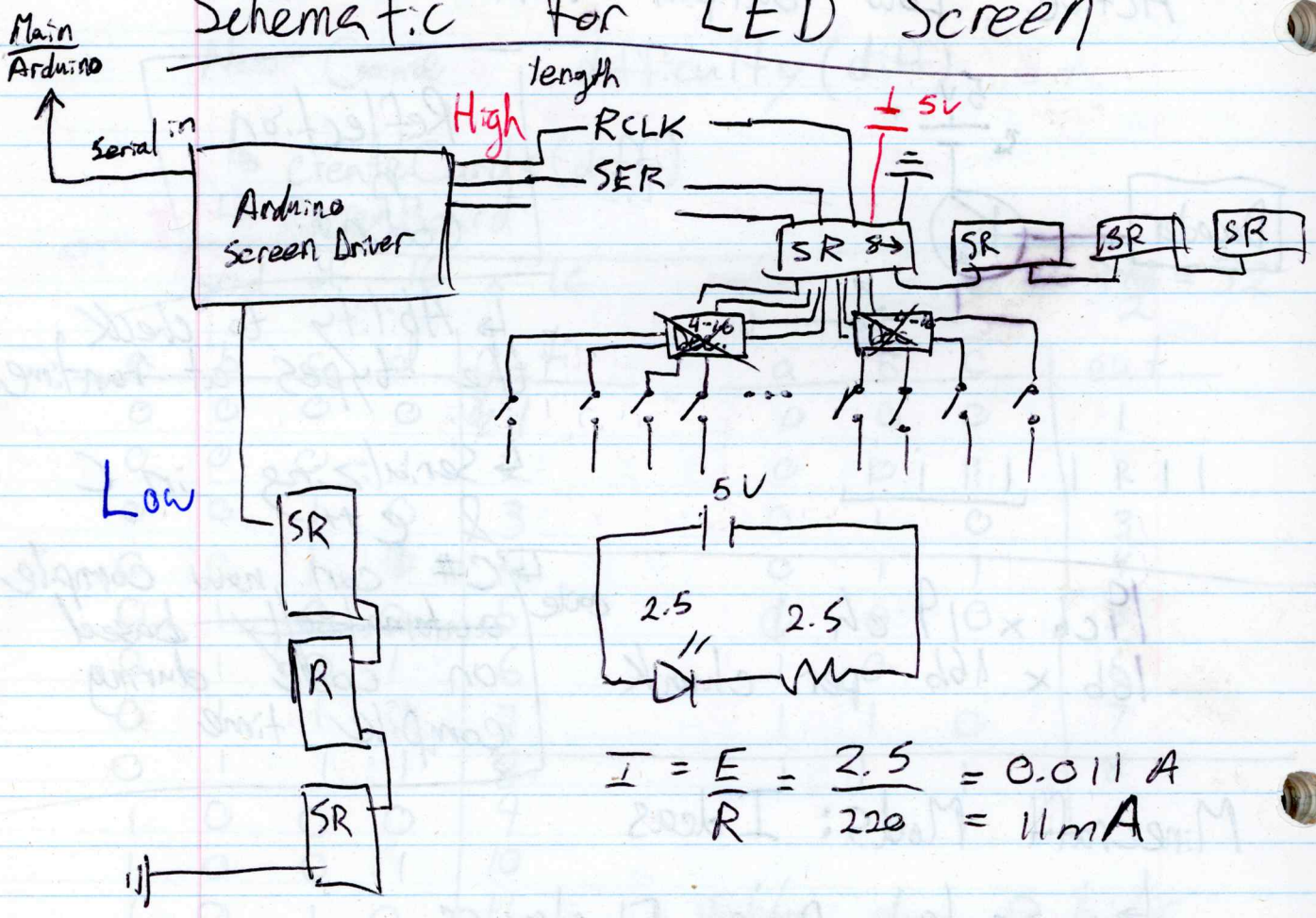
Rough 30 x 20

Schematic For LED Screen



$$I = \frac{E}{R} = \frac{2.5}{220} = 0.011\,A = 11mA$$

$$I = \frac{E}{R}$$

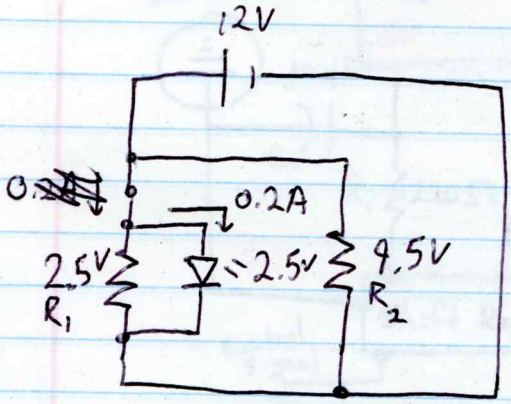
$$R = \frac{E}{I} = \frac{5v}{0.07a} = 71\,\Omega$$

$$I = \frac{E}{R} \qquad R = \frac{E}{I} = \frac{5}{0.8} \doteq 6\,\Omega$$

max 0.200 A

~~max~~ 12 V

$$R = \frac{E}{I} = \frac{12}{0.2} = 60\,\Omega$$



~~R=V~~

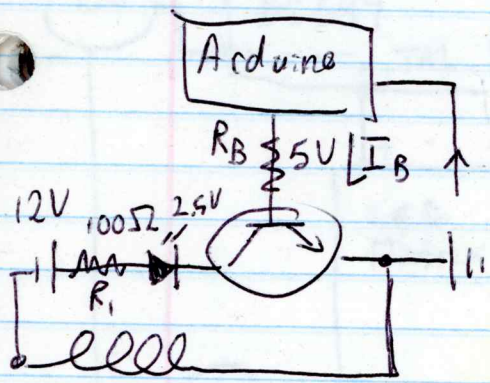
$R_1 + R_2 =$

$$R = \frac{V_s - V_f}{I_f}$$

$$= \frac{12 - 2.5}{0.1}$$

$R = ~~47\,\Omega~~$

$= 95\,\Omega$

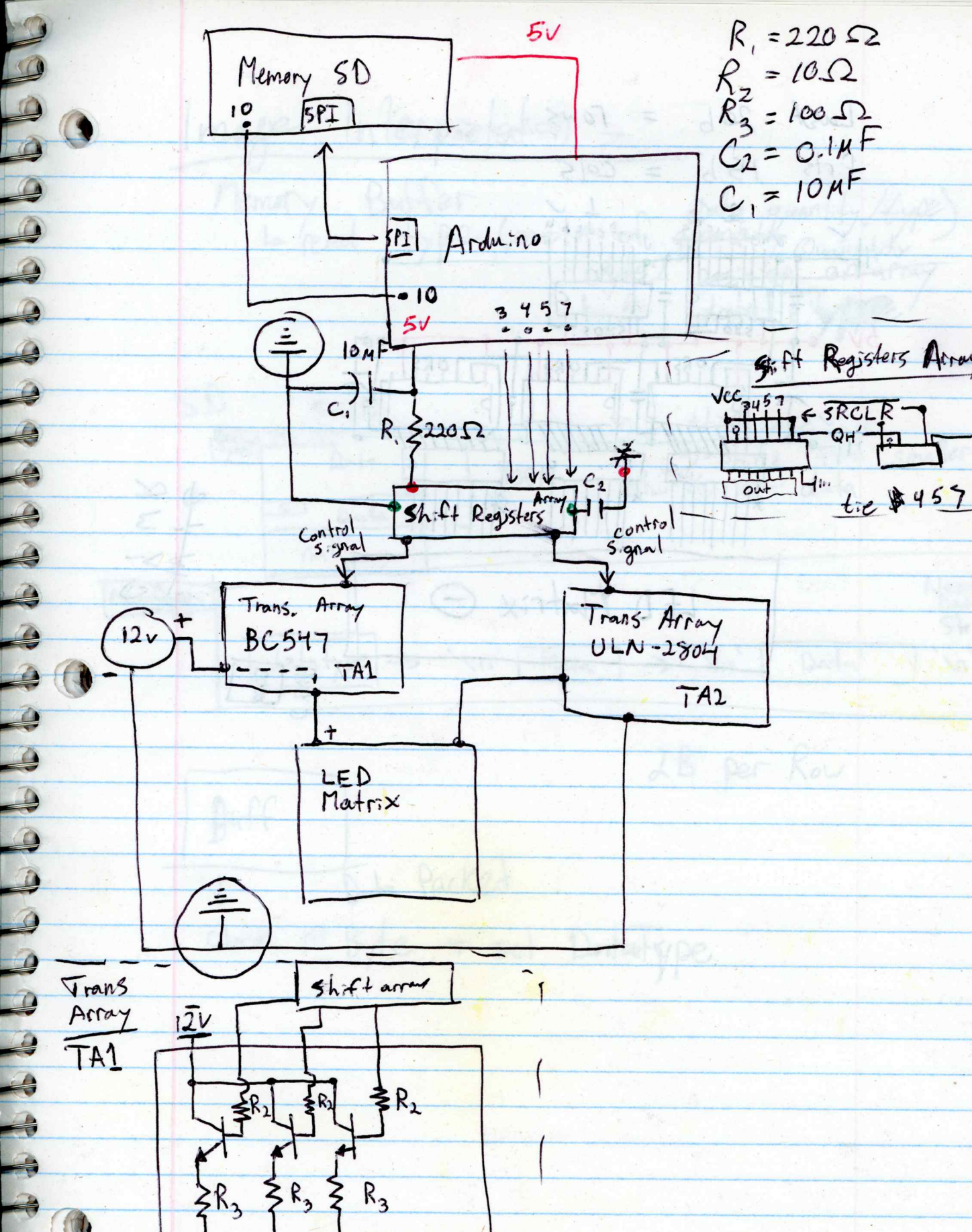


$$R_B = \frac{5 - 0.9}{}$$

$$~~\beta_{sat} = \frac{I_c}{I_B} = \frac{0.001}{0.5}~~$$

$$R_B = \frac{5 - 0.25}{0.5} = 9\,\Omega$$

$\boxed{R_1 = 100\,\Omega}$ $\boxed{R_B = 10\,\Omega}$


5V
Memory SD
10
SPI
SPI
Arduino
10
5V
3 4 5 7
10μF
C1
R1 220Ω
C2
Shift Registers Array
Control signal
control signal
Trans. Array
BC547
TA1
12v
+
-
Trans. Array
ULN-2804
TA2
LED Matrix
Trans Array
TA1
12V
shift array
R2
R2
R2
R3
R3
R3
R1 = 220Ω
R2 = 10Ω
R3 = 100Ω
C2 = 0.1μF
C1 = 10μF
Shift Registers Array
Vcc
3457
SRCLR
QH'
out
tie # 457

Last 20b = rows

firts 15b = cols

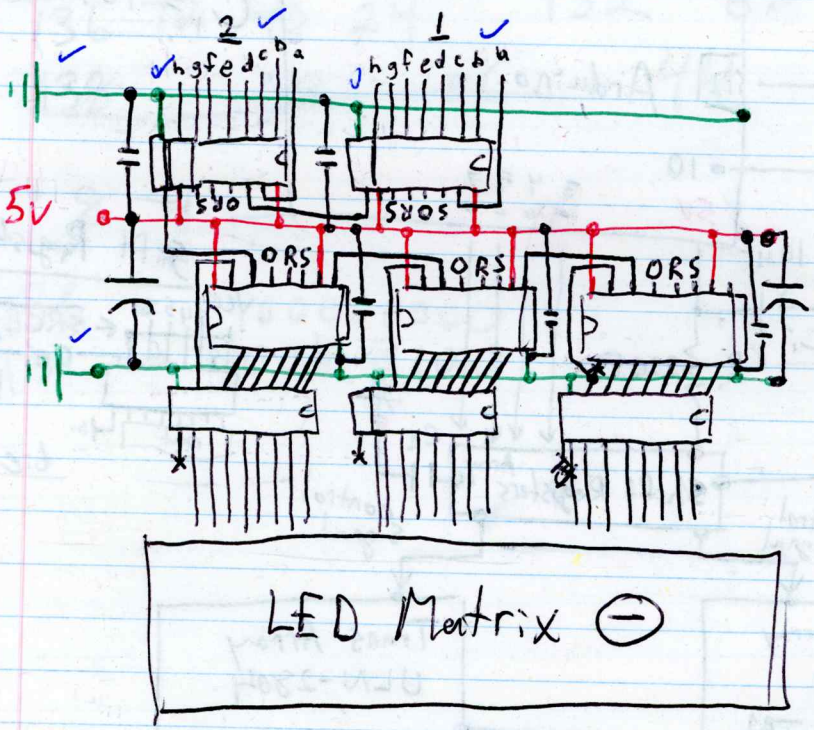
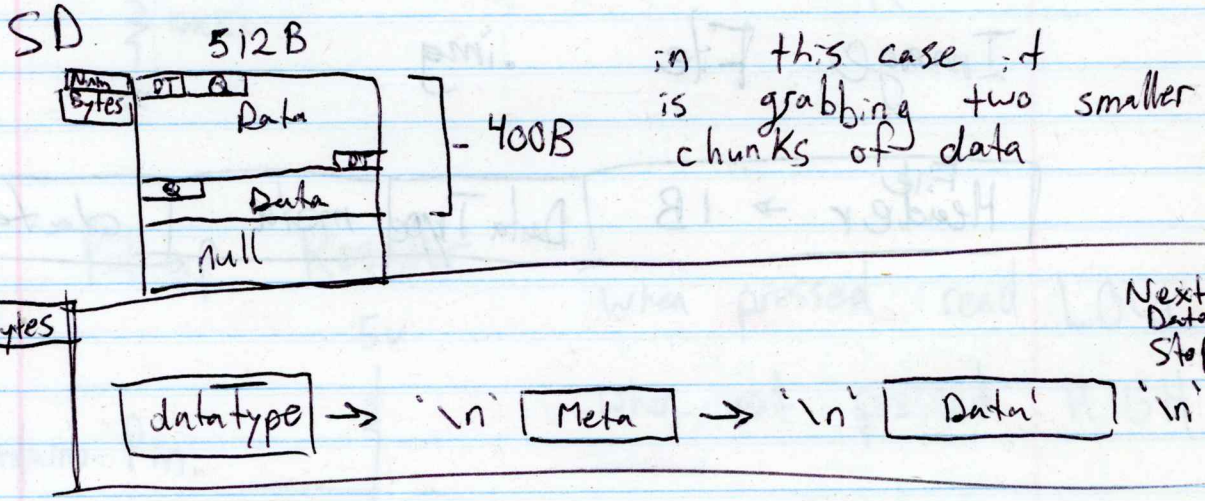
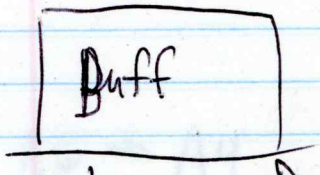


Image Interpretation

Memory Buffer
↳ read type (meta of data quantity/type)
byte2 ~~position on array~~ Quantity
byte datatType



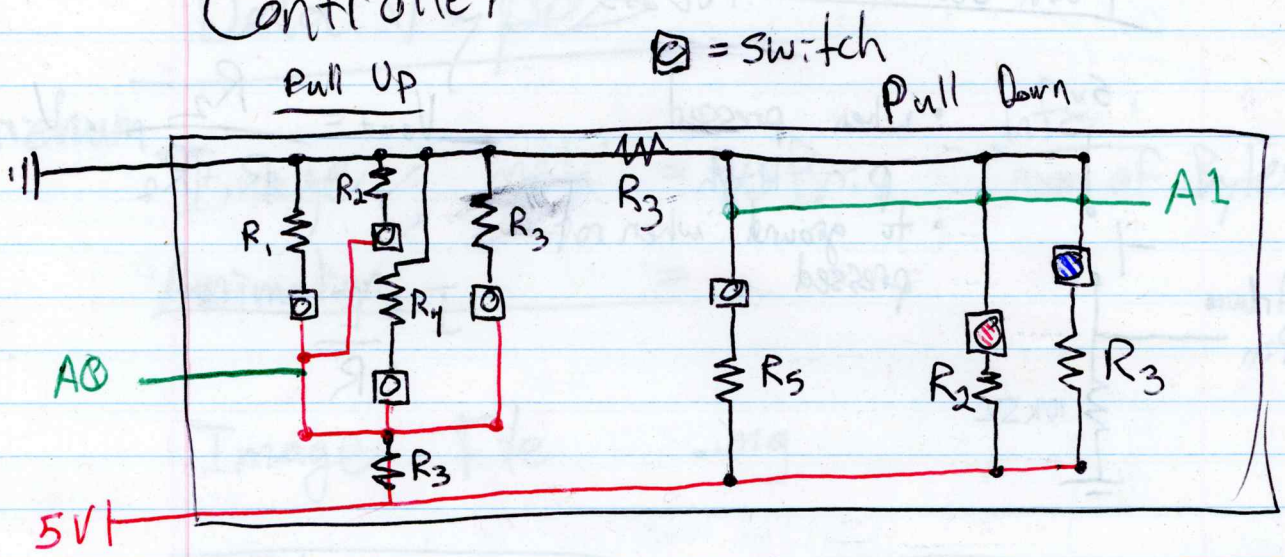
2B per Row



↓ Data Packet

check 1st Byte → set Datatype

Controller



R_1 = 2.2kΩ ×1 ✓
R_2 = 4.7kΩ ×2 ✓
R_3 = 10kΩ ×4 — ✓
R_4 = 22kΩ ×1 -✓
R_5 = 220Ω ×1 ✓

0 → 1023

ADC Values

Left	183	
Up	322	
Right	511	699
Down	703	510
Start	1001	

u

comm Controller

Needs
check status
decide to send or Not → isReady?
↳ send
↳ wait

```
Send (DataPacket &data) {
    loop (dataSize);
    checkRecieved();
}
```

controllerDataPacket → PerphPacketBuffer

↳ ~~send data~~
↳ send type
↳ send meta
↳ send data

interrupt
↳ put in buffer
head ++

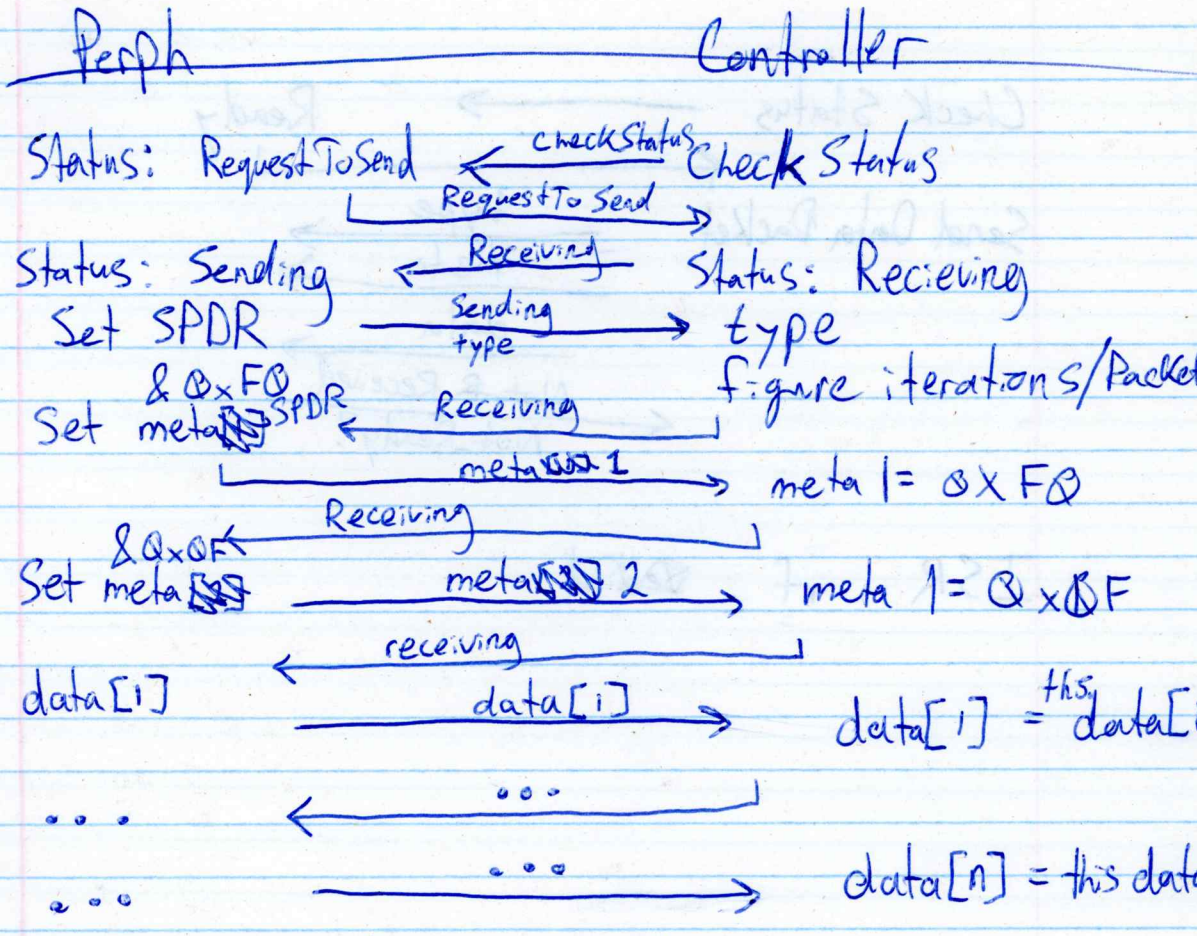
↖ Wait certain amount of time?

if Buffer full → hold of Sending more Data

Ready → Head == tail
Receive data

if requestToSend
↳ checkStatus (SPDR)

Perph → sending to → Controller



Iterations will stop the sending of data to Controller by the controller since it needs to dictate the sending/receiving of data