1. Tried the normal procedure of bootloading (Burn Bootloader option in Arduino IDE), it failed. Checking on avrdude gave this error,


```
Error while burning bootloader.

            Programmer Type : STK500
            Description     : Atmel STK500 Version 1.x firmware
            Hardware Version: 2
            Firmware Version: 1.18
            Topcard         : Unknown
            Vtarget         : 0.0 V
            Varef           : 0.0 V
            Oscillator      : Off
            SCK period      : 0.1 us

avrdude.exe: AVR device initialized and ready to accept instructions

Reading | ################################################## | 100% 0.03s

avrdude.exe: Device signature = 0x000000 (retrying)

Reading | ################################################## | 100% 0.02s

avrdude.exe: Device signature = 0x000000 (retrying)

Error while burning bootloader.
Reading | ################################################## | 100% 0.02s

avrdude.exe: Device signature = 0x7fffff
avrdude.exe: Expected signature for ATmega328PB is 1E 95 16
            Double check chip, or use -F to override this check.

avrdude.exe done.  Thank you.
```

```
C:\Users\hp>avrdude -c avrisp -p m328pb -b 19200 -P COM8 -n

avrdude: AVR device initialized and ready to accept instructions

Reading | ################################################## | 100% 0.07s

avrdude: Device signature = 0x000000 (retrying)

Reading | ################################################## | 100% 0.08s

avrdude: Device signature = 0x7f7f00
avrdude: Expected signature for ATmega328PB is 1E 95 16
        Double check chip, or use -F to override this check.

avrdude done.  Thank you.

C:\Users\hp>
```

2. Downloaded latest release of Optiboot bootloader , https://github.com/Optiboot/optiboot
Also, getting an option of only ATmega328p in the processors for Optiboot on 32-pin CPUs.
Changed the signature of ATmega328pb to ATmega328p (read somewhere that treating 328PB like 328P helps)
Getting this error,

```
Error while burning bootloader.
        Programmer Type : STK500
        Description     : Atmel STK500 Version 1.x firmware
        Hardware Version: 2
        Firmware Version: 1.18
        Topcard         : Unknown
        Vtarget         : 0.0 V
        Varef           : 0.0 V
        Oscillator      : Off
        SCK period      : 0.1 us

avrdude: AVR device initialized and ready to accept instructions

Reading | ################################################## | 100% 0.02s

avrdude: Device signature = 0x000000 (retrying)

Reading | ################################################## | 100% 0.02s

avrdude: Device signature = 0x000000 (retrying)

Error while burning bootloader.
Reading | ################################################## | 100% 0.02s

avrdude: Device signature = 0x000000
avrdude: Yikes!  Invalid device signature.
        Double check connections and try again, or use -F to override
        this check.
```
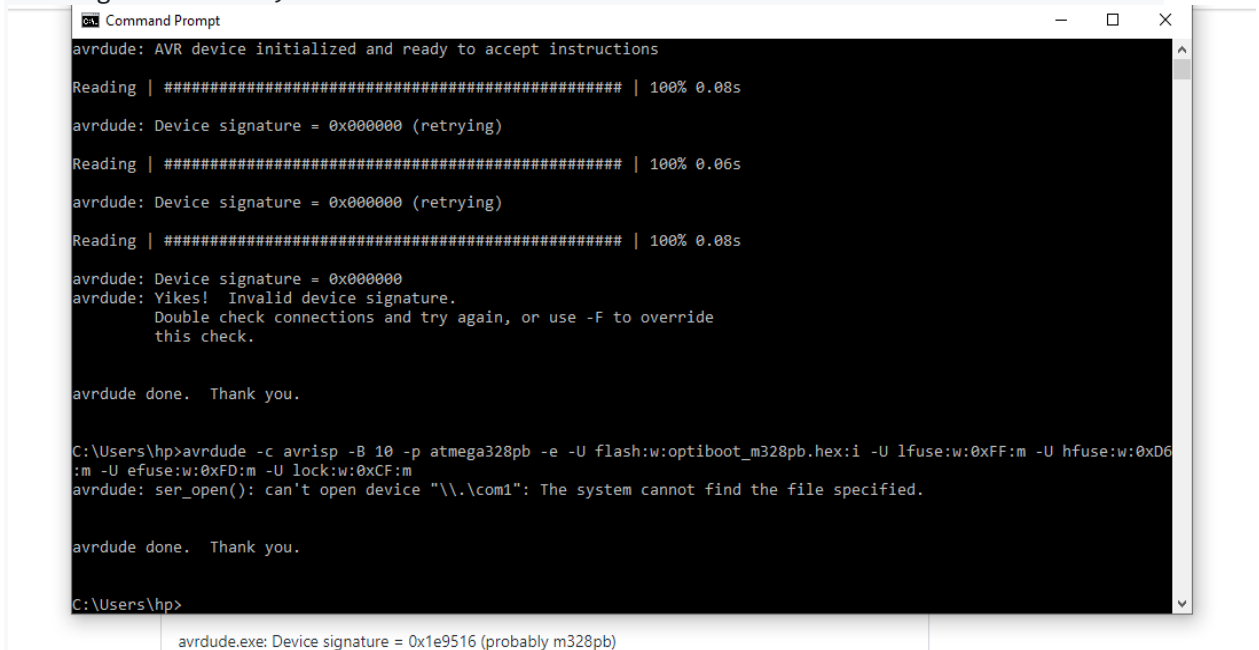
3. Tried to flash the bootloader directly with AVRdude,

```
avrdude -c avrisp2 -B 10 -p atmega328p -e -U flash:w:optiboot_m328p.hex:i -U
lfuse:w:0xFF:m -U hfuse:w:0xD6:m -U efuse:w:0xFD:m -U lock:w:0xCF:m
Getting this error,
```



```
Command Prompt                                                          —   □   ×
avrdude: AVR device initialized and ready to accept instructions

Reading | ################################################## | 100% 0.08s

avrdude: Device signature = 0x000000 (retrying)

Reading | ################################################## | 100% 0.06s

avrdude: Device signature = 0x000000 (retrying)

Reading | ################################################## | 100% 0.08s

avrdude: Device signature = 0x000000
avrdude: Yikes!  Invalid device signature.
        Double check connections and try again, or use -F to override
        this check.

avrdude done.  Thank you.


C:\Users\hp>avrdude -c avrisp -B 10 -p atmega328pb -e -U flash:w:optiboot_m328pb.hex:i -U lfuse:w:0xFF:m -U hfuse:w:0xD6
:m -U efuse:w:0xFD:m -U lock:w:0xCF:m
avrdude: ser_open(): can't open device "\\.\com1": The system cannot find the file specified.


avrdude done.  Thank you.


C:\Users\hp>
```
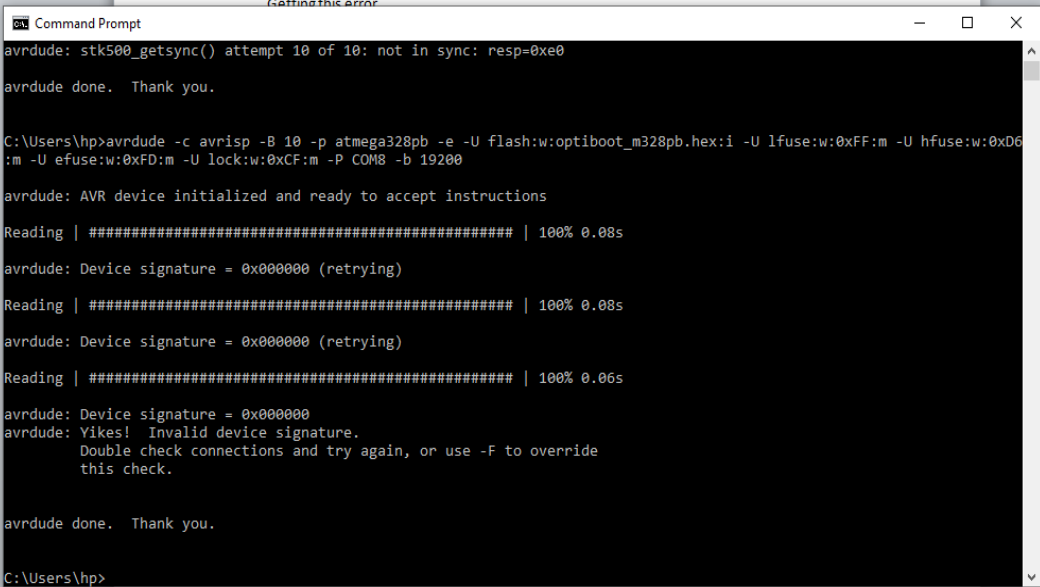
```
avrdude.exe: Device signature = 0x1e9516 (probably m328pb)
```

Thought of adding the COM port and baud rate after this error, so tried this,

```
avrdude -c avrisp -B 10 -p atmega328pb –P COM8 –b 19200 -e -U
flash:w:optiboot_m328pb.hex:i -U lfuse:w:0xFF:m -U hfuse:w:0xD6:m -U
efuse:w:0xFD:m -U lock:w:0xCF:m
```

Got this as error,

4. Uploading optiLoader.ino onto thechip
   https://github.com/WestfW/OptiLoader
   Getting some error like this, will upload the exact error too.

   Using library OptiLoader-master in folder:
   C:\Users\hp\Documents\Arduino\libraries\OptiLoader-master (legacy)
   exit status 1
   'SPCR' was not declared in this scope