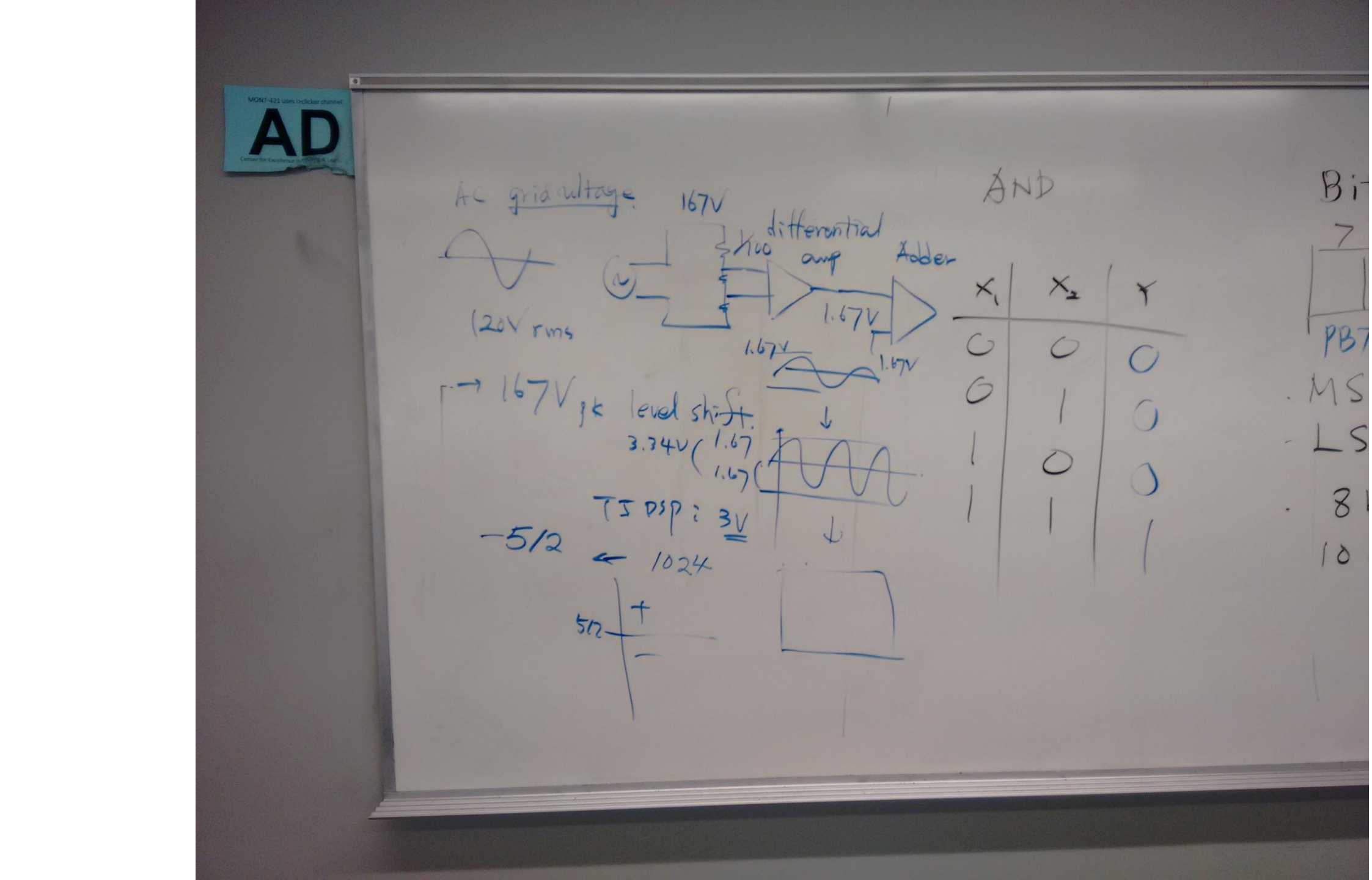
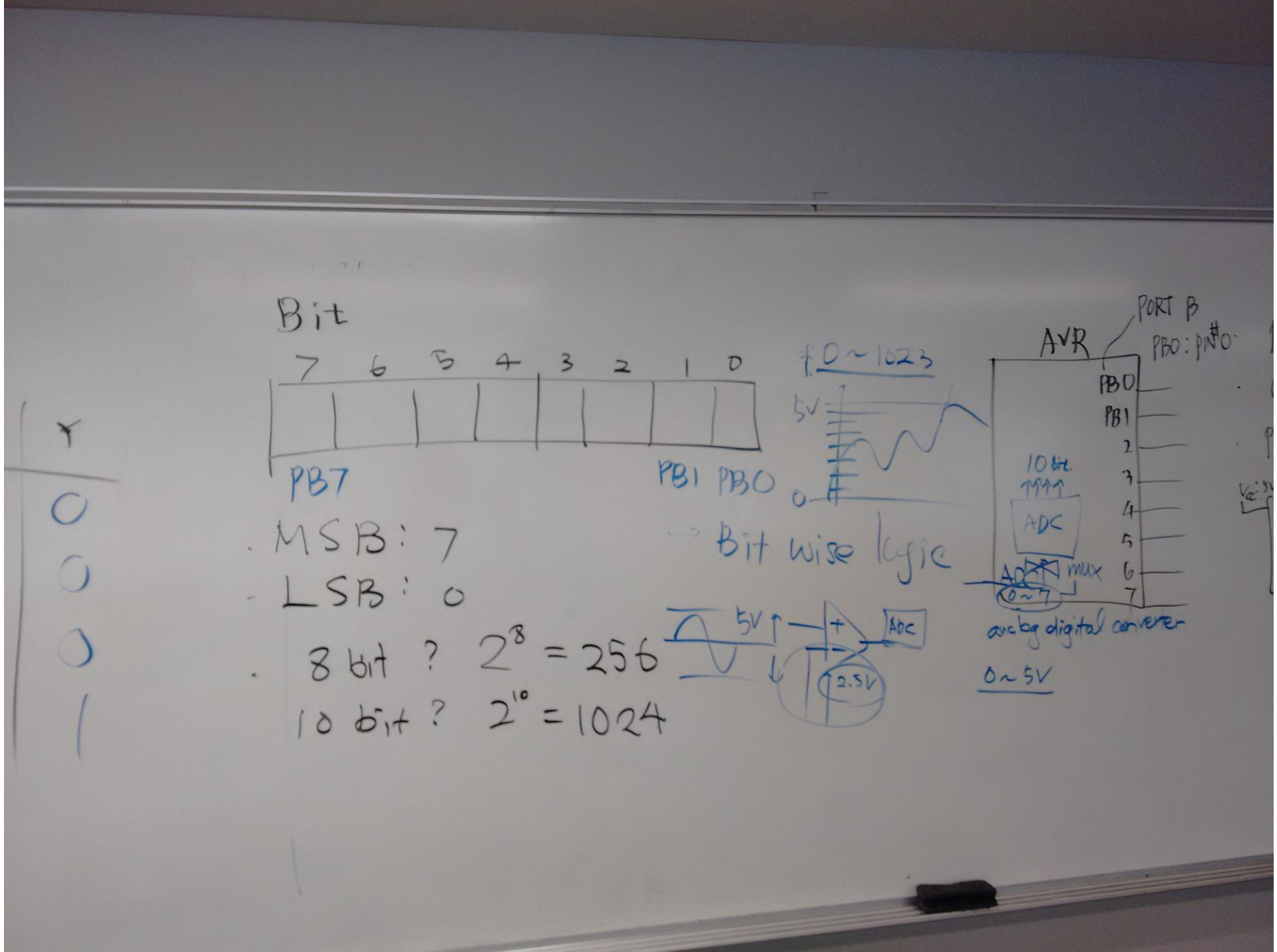
Lecture 01282019


AC grid voltage
167V
differential amp
Adder
120V rms
1.67V
1.67V
1.67V
→ 167V pk level shift.
3.34V (1.67
1.67 (
TI DSP: 3V
-512
← 1024
512
+
−
AND
X1 X2 Y
0 0 0
0 1 0
1 0 0
1 1 1
Bi
7
PBT
MS
LS
8
10

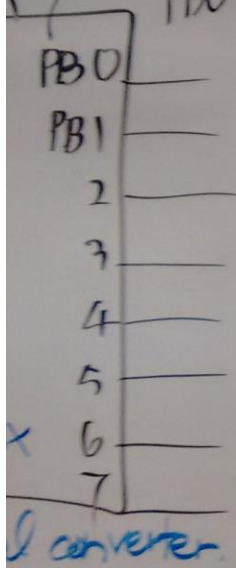

Bit
7 6 5 4 3 2 1 0
PB7
PB1 PB0
MSB: 7
LSB: 0
8 bit ? $2^8 = 256$
10 bit ? $2^{10} = 1024$
0~1023
5V
0
Bit wise logic
5V
ADC
2.5V
AVR
PORT B
PB0: pin#0
PB0
PB1
2
3
4
5
6
7
10 bit
ADC
mux
0~7
analog digital converter
0~5V

PORT B

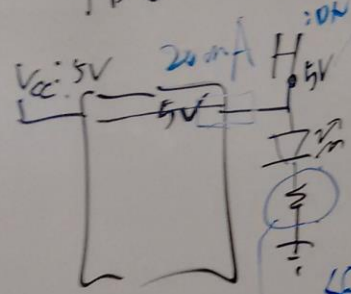
PB0 : PIN#0

PORT. PIN. DDR : Names of register.

- GPDO: General Purpose Digital Output : LED light ON/OFF.
- PB0 → LED Connect and light ON/OFF by Sending Logic H or L



converter



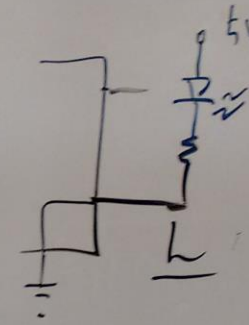
- protect AVR
- protect LED

LED: 10~20mA

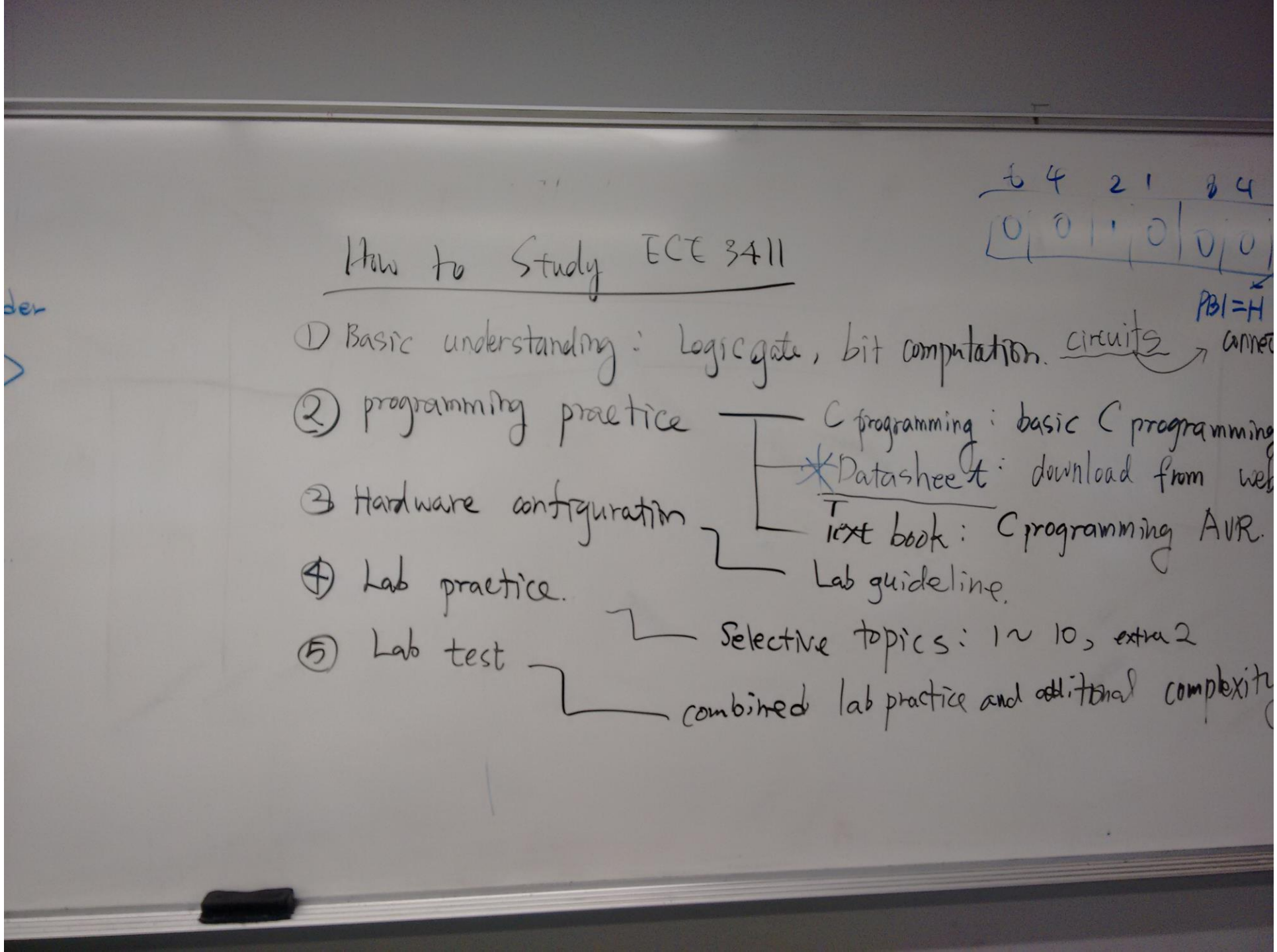
V_d: 1.2V

$$\frac{5 - 1.2V}{10mA} = R$$

$$I_{PB0} = \frac{3.8V}{10m\Omega} = \frac{3.8 \times 10^{2}}{10 \times 10^{-3}} = 380A$$



H, L: off


How to Study ECE 3411
① Basic understanding : Logic gate, bit computation. circuits
② programming practice
C programming : basic C programming
Datasheet : download from web
③ Hardware configuration
Text book : C programming AVR.
④ Lab practice.
Lab guideline.
⑤ Lab test
Selective topics : 1 ~ 10, extra 2
combined lab practice and additional complexity
PB1=H

8 4 2 1

0 0 1 0 PORTB = 0x22;

PB1=H PB0=L

connections, selection of parts. → follow step-by-step guideline. → Explained bd explore. → Need to order.

→ Wait practi

gramming reference.

rom website.

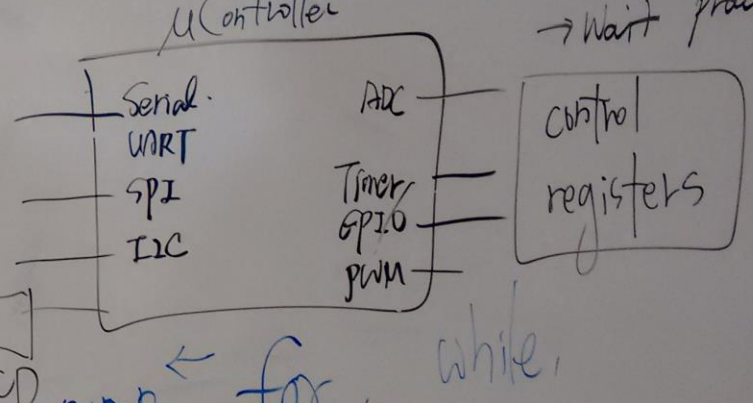
AVR peripheral. H/W explanation

GPIO: PORTB →

PIN B: ←

DDRB: 1/0

output



while.

PINB ← for.

ReadB = PINBvalue

2

complexity : demonstrate your understanding to performance