ECGR 4101/5101 - Lecture 2

Chapter 1 → Mfg, example of a PCB

Analog - examples → Radio, power, voltage, osc

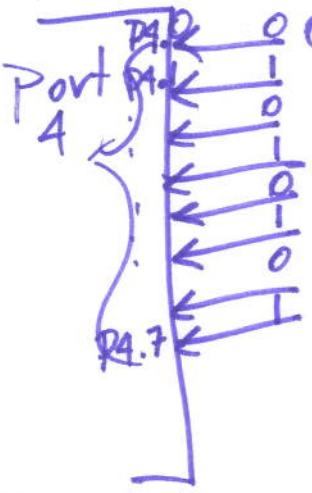
Digital → representation of pictures, 0/1, uproc

Analog → continuous voltage (power/voltage, light, sound)

Digital → discrete, 0/1, 0v & Vcc

on/off

Input - Digital



Input or Output:

Port direction

Registers:

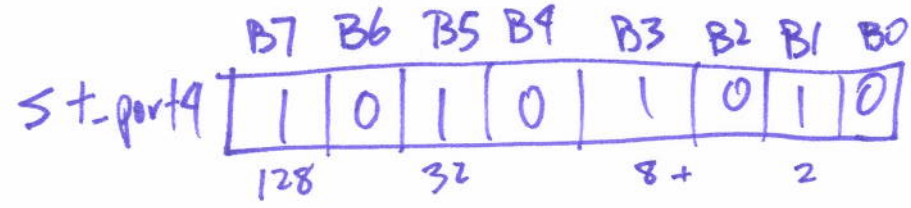
Data

Control

Name

st_port4

Example = what is on st_port4?



data port

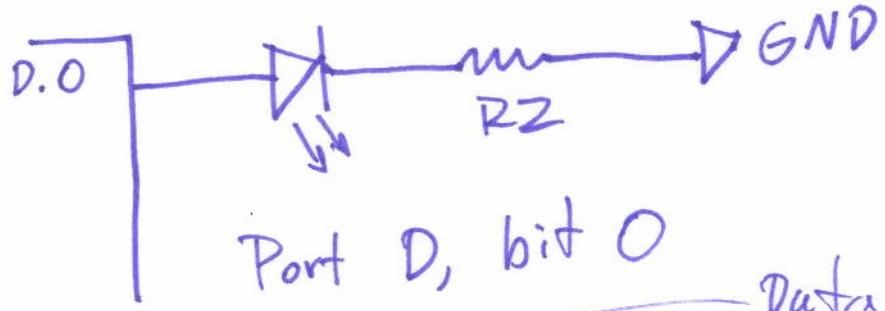
```
int myinput;
myinput=(int)st_port4;
```

(myinput is 170 decimal)

Port direction is controlled with another register

Actually in RX62N

```
PORTD.DDR.BYTE = 0xFF; // inputs
```

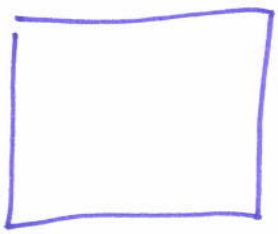



```
PORTD.DDR.BIT.B0 = 1; //direction = output
PORTD.DR.BIT.B0 = 1; // light the LED
```

Data direction register

Data Register

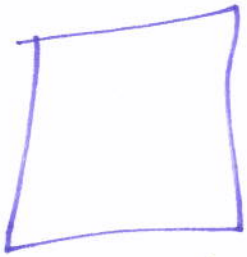
Actual address of PORTD.DR, PORTD.DDR



32K flash

RX62A

PORTD = 0x0000 100E



1 meg flash

RX62N

PORTD = 0x0000 103E

Include file have a mapping from ports (data registers) to hardware addresses

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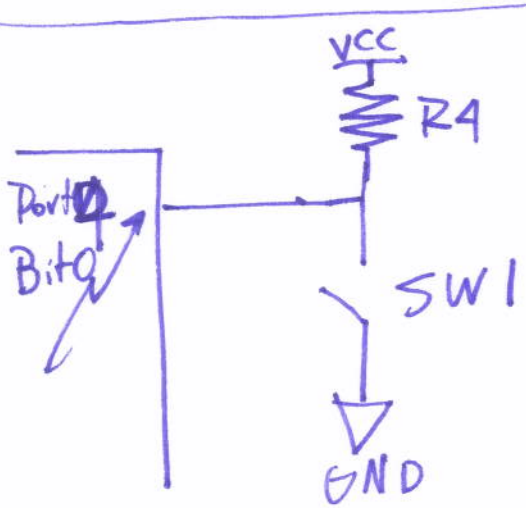
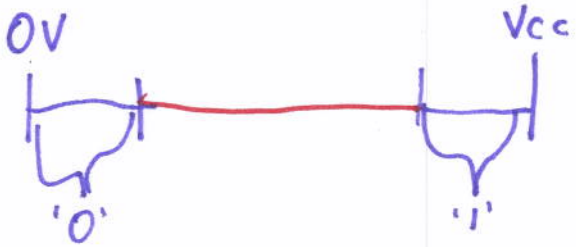




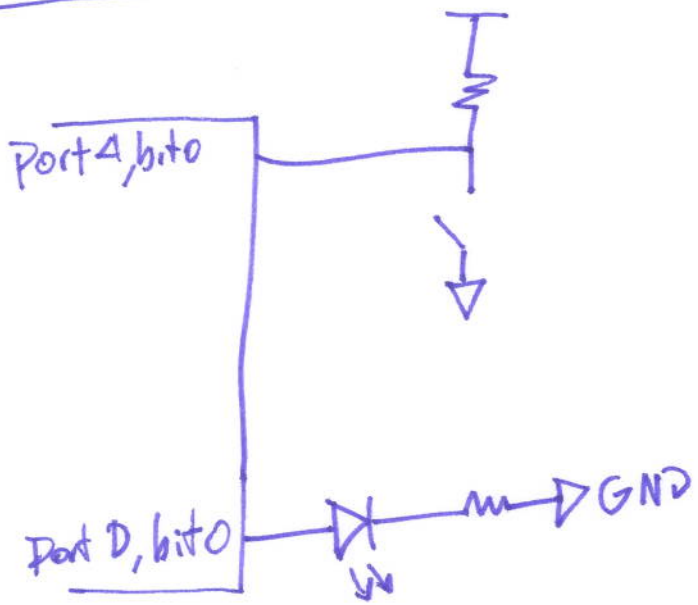
Write the code:

1) Direction
2) Read the bit & put into the variable myinput

Answer:

```
int myinput;
PORT4.DDR.BIT.B0 = 1;
myinput = (int) PORT4.DR.BIT.B0;
```

PORT



Write the code to:

1) Directions of everything
2) Read the button, and if pressed, light the LED
3) Do this Forever

Answer

```
while (1) {
}
```

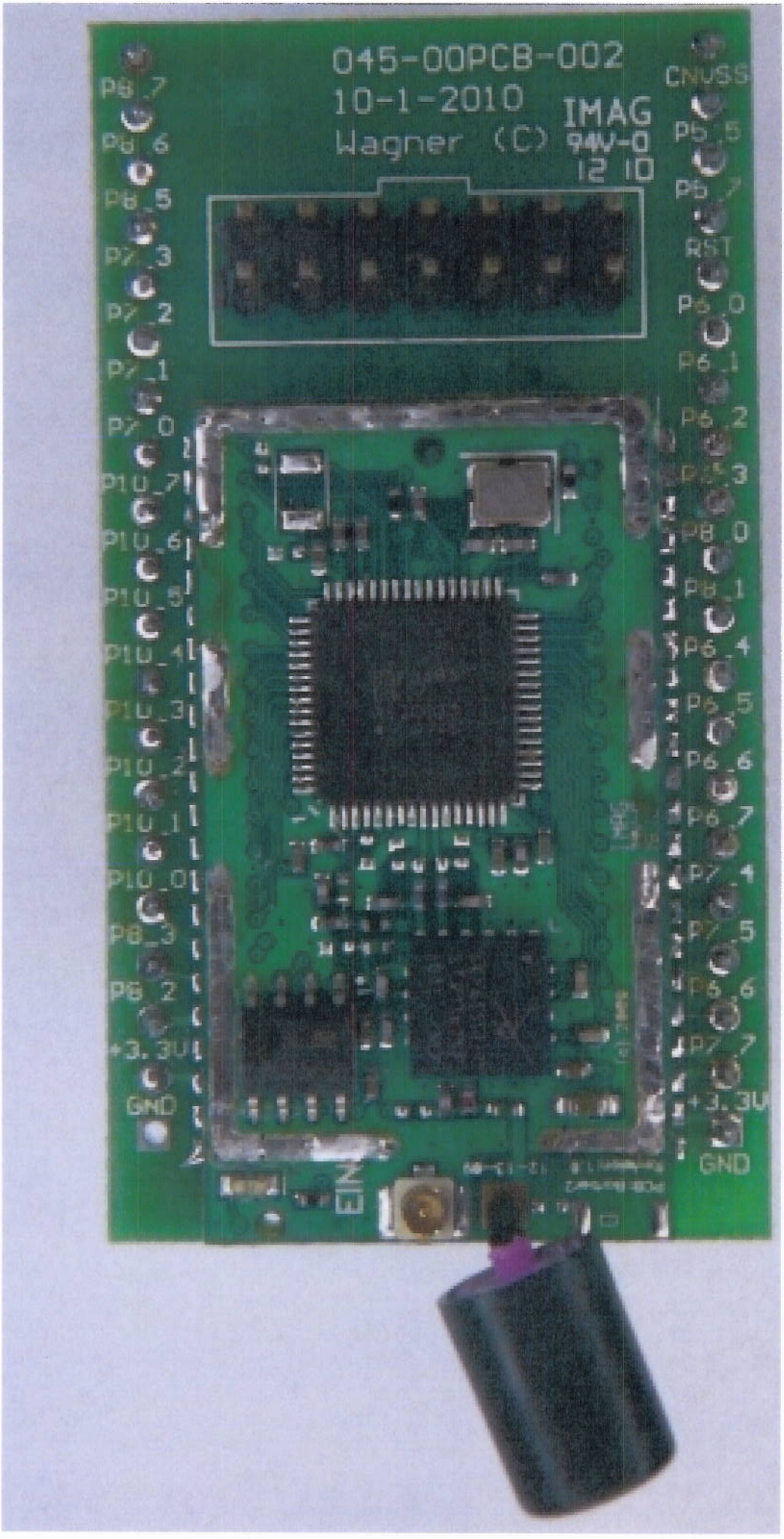
Hint →

this means do forever

Answer

```
PORT4.DDR.BIT.B0 = 0;  // push button → input
PORTD.DDR.BIT.B0 = 1;  // LED → output
while (1) {
    if (!PORT4.DR.BIT.B0)  PORTD.DR.BIT.B0 = 1
     else PORTD.DR.BIT.B0 = 0;
}
```

PORT


045-00PCB-002
10-1-2010
Wagner (C)
IMAG
94V-0
12 10
P8_7
P8_6
P8_5
P7_3
P7_2
P7_1
P7_0
P10_7
P10_6
P10_5
P10_4
P10_3
P10_2
P10_1
P10_0
P8_3
P8_2
+3.3V
GND
EIN
CNVSS
P5_5
P5_7
RST
P6_0
P6_1
P6_2
P6_3
P8_0
P8_1
P6_4
P6_5
P6_6
P6_7
P7_4
P7_5
P7_6
P7_7
+3.3V
GND