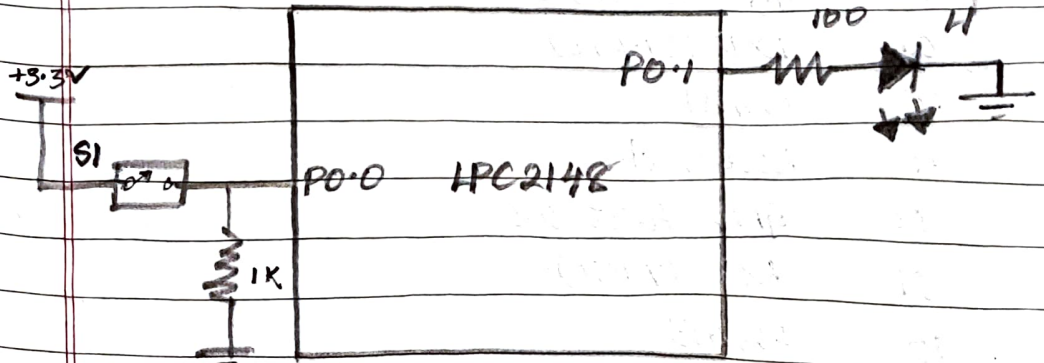
LECTURE 19 - LED SWITCH

* LED CONTROL USING SWITCH - GPIO :



↳ To avoid floating set values pull down resistance

Input [Switch]

* STEPS FOR LED CONTROL USING SWITCH: → Output [LED]

① Configure functionality of P0.0 and P0.1 as GPIO Port
PINSEL0 = 0x00000000;

② Configure Direction of P0.0 as Input Pin
IO0DIR [&] = 0xFFFFFFFE; → clear a particular bit alone without affecting the other bits

③ Configure Direction of P0.1 as Output Pin
IO0DIR [|] = 0x00000002; → set a particular bit alone without affecting the other bits

Infinite loop
④ Check if Switch connected to P0.0 is Pressed
if (IO0PIN & 0x01) == 1)
⑤ If Pressed, Switch ON LED connected to P0.1
IO0SET0 |= 0x00000002;
⑥ else Switch OFF LED connected to P0.1
IO0CLR0 |= 0x00000002;

* STEP 1 - PINSEL0 = 0x00000000;
→ PINSEL Registers:- [Special Function Register (SFR)]
PINSEL0 - P0.0 to P0.15
PINSEL1 - P0.16 to P0.31
PINSEL2 - P1.16 to P1.31

→ PINSEL0 Register:-
Table - Pin function Select register 0 (PINSEL0 - address 0xE002 C000) bit description

Bit	Symbol	Value	Function	Reset Value
1:0	P0.0	00	GPIO Port 0.0	0
		01	TXD (UART0)	
		10	PWM1	
		11	Reserved	
3:2	P0.1	00	GPIO Port 0.0	0
		01	RxD (UART0)	
		10	PWM3	
		11	EINT0	

* STEP 2 - IO0DIR &= 0xFFFFFFFE;

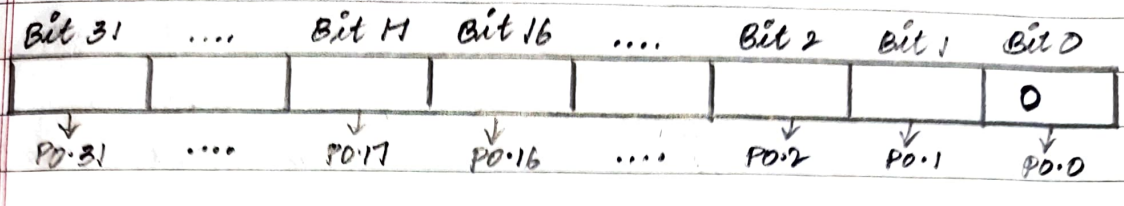
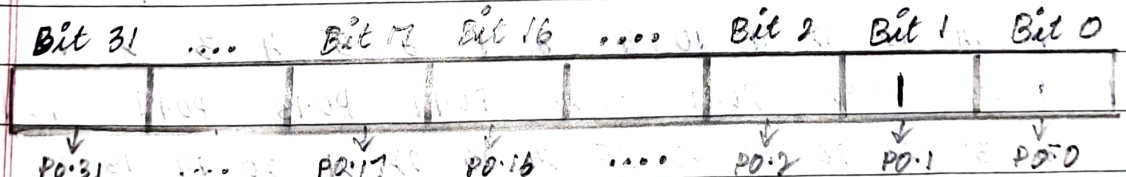


Table - GPIO port 1 Direction register (IO1DIR - address 0xE002 8018) bit description

Bit	Symbol	Value	Description	Reset Value
31:0	P1xDIR		Slow GPIO Direction control bits. Bit 0 in IO1DIR controls P1.0 ... Bit 30 in IO1DIR controls P1.30.	0x0000 0000
		0	Controlled pin is input.	
		1	Controlled pin is output.	

* STEP 3 - IO0DIR |= 0x00000002;

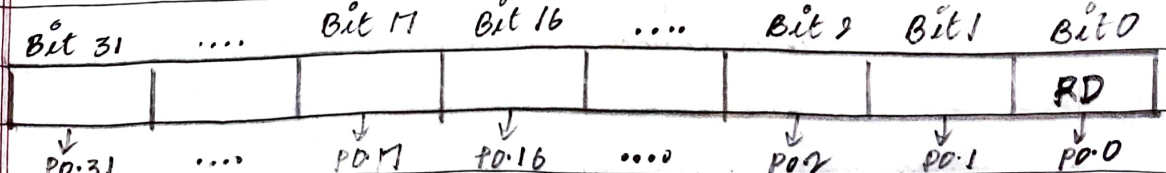


Clear
1111
& 1101
1101

Set
1101
| 0010
1111

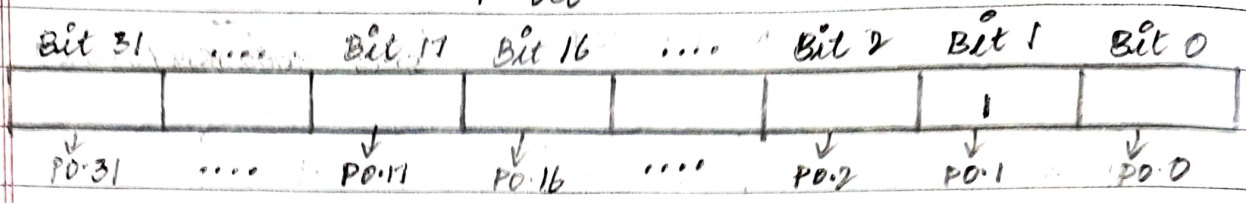
Split a Bit
1111
& 0010
0010

* STEP 4 - If ((IOPIN0 & 0x01) == 1);



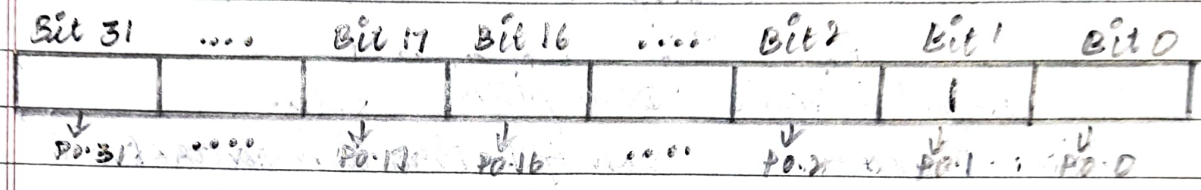
* STEP 5 - IOSET0 |= 0x00000002;

1 - Set



* STEP 6 - IOCLR0 |= 0x00000002;

1 - Clear



* REGISTER SUMMARY - GPIO:

	15 14	13 12	11 10	9 8	7 6	5 4	3 2	1 0
PINSEL0	P0.7	P0.6	P0.5	P0.4	P0.3	P0.2	P0.1	P0.0
	31 30	29 28	27 26	25 24	23 22	21 20	19 18	17 16
PINSEL0	P0.15	P0.14	P0.13	P0.12	P0.11	P0.10	P0.9	P0.8
	15 14	13 12	11 10	9 8	7 6	5 4	3 2	1 0
PINSEL1	P0.23	P0.22	P0.21	P0.20	P0.19	P0.18	P0.17	P0.16
	31 30	29 28	27 26	25 24	23 22	21 20	19 18	17 16
PINSEL1	P0.31	P0.30	P0.29	P0.28	P0.27	P0.26	P0.25	P0.24

	15 14	13 12	11 4	3	2	1 0
PINSEL2				GPIO/TRACE	GPIO/DEBUG	SEL