Andhra Pradesh State Skill Development Corporation

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Embedded systems

Button and LED interfacing to the ARM7

BUTTON INTERFACING WITH ARM 7

Aim : To interface button with ARM 7.

Software:

Keil uVision 5

Magic Flash Tool
Before getting into the project we must know few things about the led modes of operation and about the led Hex codes

Components required:

ARM7-LPC2148 Microcontroller board
Led
switch
resistor
Breadboard
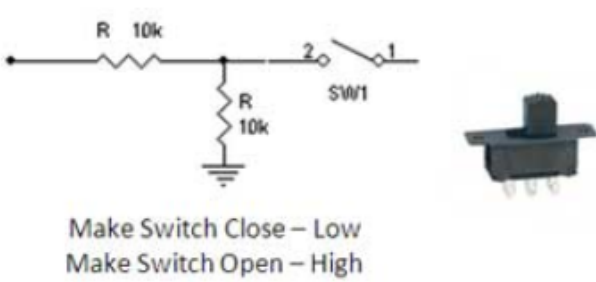Connecting Wires
Micro USB cable

Theory:

A switch is an electrical component that can break an electrical circuit, interrupting the current or diverting it from one conductor to another. A switch may be directly manipulated by a human as a control signal to a system, or to control power flow in a circuit. A simple switch has an open state and closed state. However, a microcontroller needs to see a definite high or low voltage level at a digital input. A switch requires a pull-up or pull-down resistor to produce a definite high or low voltage when it is open or closed. A resistor placed between a digital input and the supply voltage is called a "pull-up" resistor because it normally pulls the pin's voltage up to the supply.

Circuit Diagram:
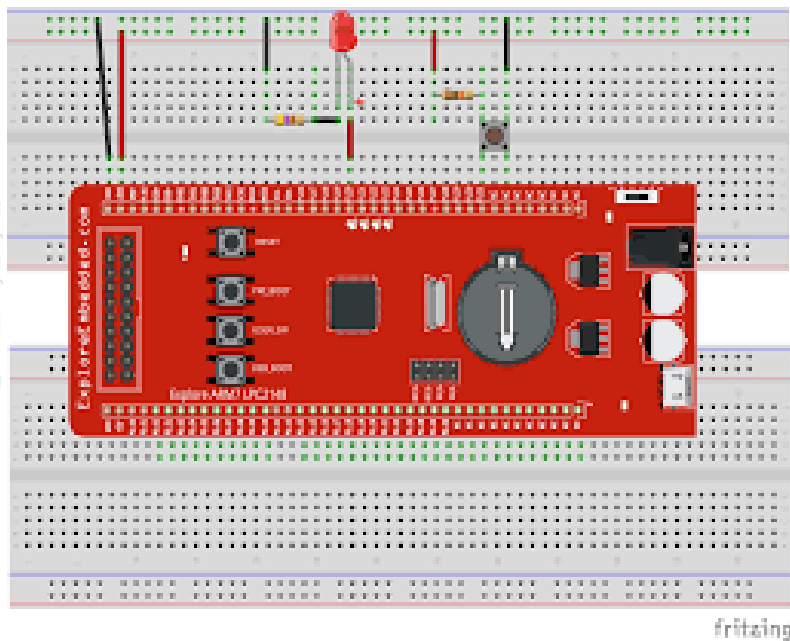
Procedure:

Pin Assignment with LPC2148

	Slide Switch	LPC2148 Lines	Input Logic Selection
DIGITAL INPUTS	SW20	P1.24	
	SW21	P1.25	
	SW22	P1.26	
	SW23	P1.27	
	SW24	P1.28	
	SW25	P1.29	
	SW26	P1.30	
	SW27	P1.31	

Make Switch Close – Low
Make Switch Open – High

Controlling LED by using switch in **LPC2148 Development Board**. It works by turning ON a LED & then turning it OFF when switch is going to LOW or HIGH.

The ARM7 **LPC2148 Development Board** has LED, connected with I/O Port lines P0.0 to make port pins high. switch connected with I/O port lines P0.1 are used to control LED.

Code:

```
/* if button is pressed  turn on led
 turn off led

 not pressed  the output is logic 1
 pressed the output is logic 0

 assigne logic 0 for turn off led
 assigne logic 1 for turn on led*/

#include<lpc21xx.h>

 #define led 0x00000001 //P0.0
 #define button 0x00000002  //P0.1

int main(){
IODIR0|=led;
while(1){

if(((IOPIN0) & (button)) == 0)
IOSET0|=led;
else
IOCLR0|=led;

}
}
```

Result: when you press the button the LED gets ON else, the LED gets OFF.