EXPERIMENT 1

NAME: Rahil Sharma
PRN: 18070123062
BATCH: EA-3

SUBJECT: ESRTOS

Aim:

(i) To understand the basics of LPC2129 in embedded systems and get familiar with the working environment of KEIL IDE.

(ii) LED Interfacing using LPC2129 in Keil IDE

Theory: LPC2129 is a single-chip 32-bit microcontroller with 256KB on-chip Flash ROM with In-System Programming (ISP) and In-Application Programming (IAP) 16KB RAM having Real Time Clock, Watchdog Timer, General purpose I/O pins. CPU clock up to 60 MHz, On-chip crystal oscillator and On-chip PLL. This IC also supports Interrupt Controller, 2 SPI serial interfaces, Two UARTs, I2C serial interface, PWM unit with up to 6 PWM outputs, Two timers (7 capture/compare channels), 4-channels 10bit ADC, 2 CAN channels.

(i) Understand the basics of LPC2129 in embedded systems

Features:

1. Stackable daughter board LPC2129
2. On board debugging JTAG Option
3. USB onboard programming
4. 8 interfacing LED's.
5. 1 * 4 interfacing keys.
6. 4* 4 interfacing keypad matrix.
7. Two channel RS232 port for communication.
8. 3 ADC potentiometer input interface..

9. 16X2 LCD interface.
10. 46 general purpose IO
11. On Board Power supply 3.3V,5V 12V,GND.
12. 8 pin DIP switches.
13. On board voltage level converter
14. Board enabled with the header for stacking the Xbee product.
15. Board enabled with the header for Stacking the Arduino shields.
16. ON board Micro SD card
17. ON/OFF slide switch.
18. RDL bus.
19. External jumper nodes.
20. ON board 2 channel CAN interface *
21. Reset button.
22. Power plug-in DC Socket.
23. Power supply indicator LED.
24. Test led for Tx, Rx.
25. 4 digit 7Seg Multiplexed Display.
26. FT232RL USB communication.

		PINSELO	VALUE
P0.0	TXD	1:0	0 1
P0.1	PW3	3:2	1 0
P0.2	Capture	5:4	1 0
P0.3	EINT1	7:6	1 1
P0.4	GPIO	9:8	0 0
P0.5	MISO	11:10	0 1

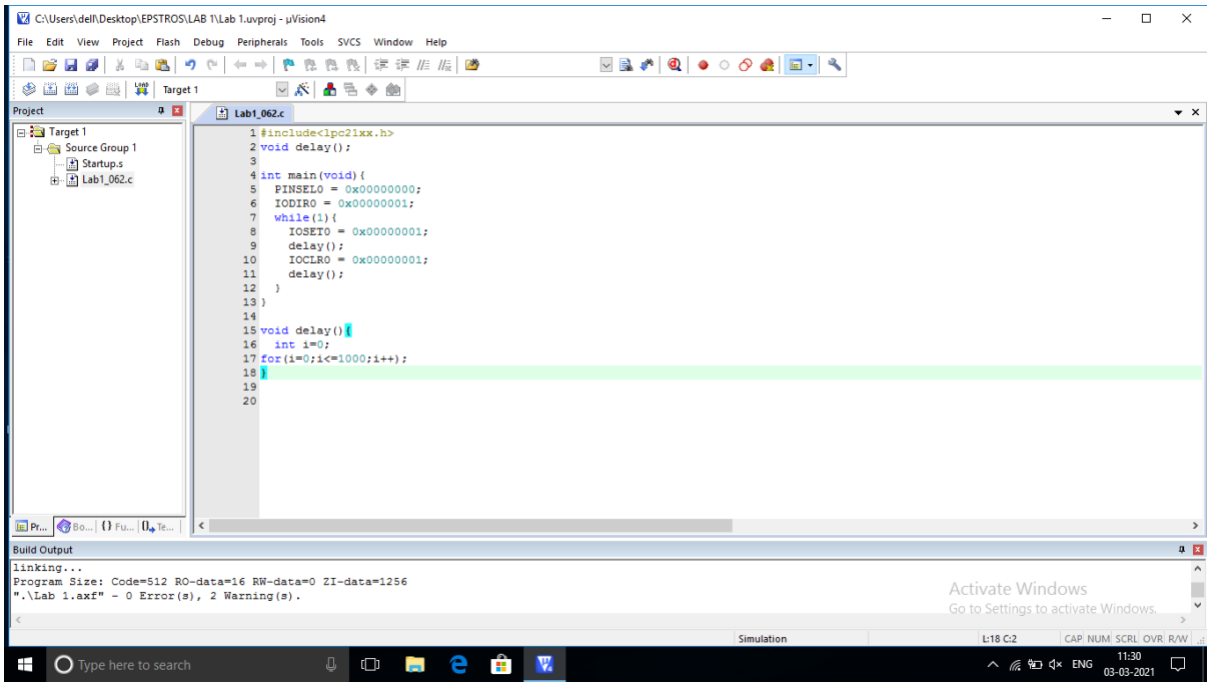
(ii) LED Interfacing using LPC2129 in Keil IDE

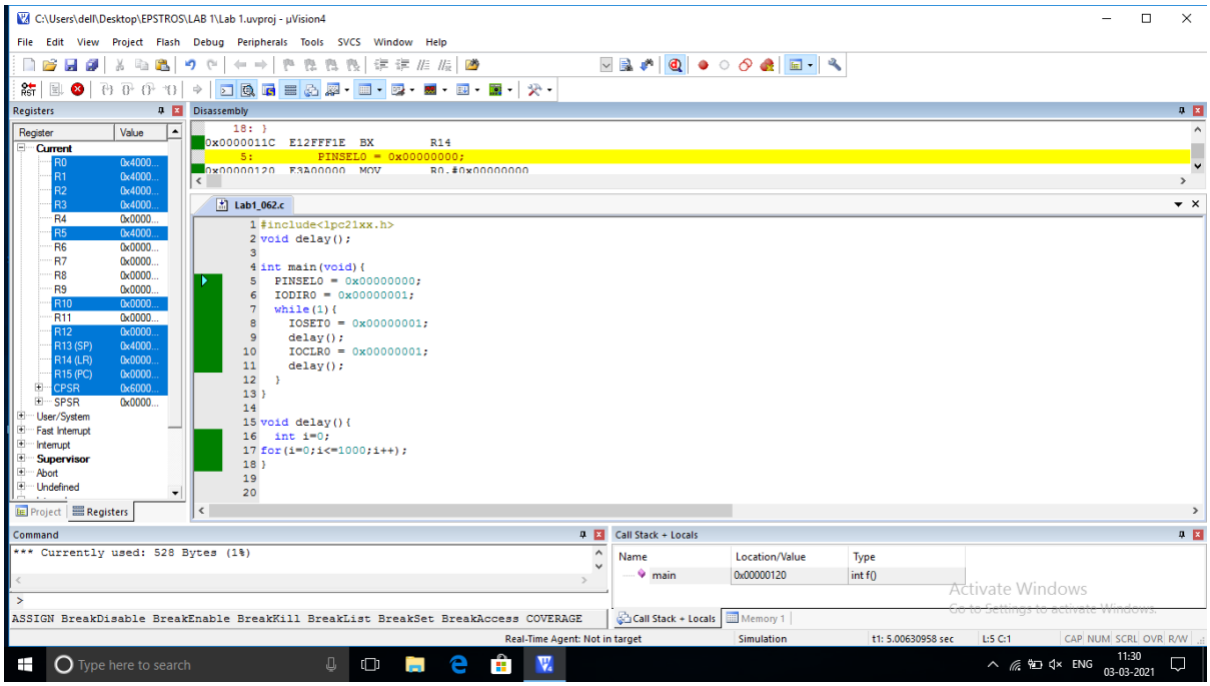
Code of the program:

```
#include<lpc21xx.h>

void delay();


int main(void){
	PINSEL0 = 0x00000000;
	IODIR0 = 0x00000001;
	while(1){
		IOSET0 = 0x00000001;
		delay();
		IOCLR0 = 0x00000001;
		delay();
	}

}

void delay(){
	int i = 0;
```

```
        for(i = 0;i<=1000;i++);
}
```

Screenshots of the program:





Conclusion: From this experiment we have understood the basics of LPC2129 and LED interfacing in embedded systems.