Lab 13

C code

```
#include "xgpio.h"
#include "led_ip.h"
#include <stdio.h>

int main(void)
{
                        XGpio btn,led,sw;          // Input/Output ports
        int push;
        int pause=0;
        int counter=0;
                        int val=1;                 // Used for up/down counting
              int delay_value=9999999;             // Initial value of Delay

              XGpio_Initialize(&btn,XPAR_GPIO_0_DEVICE_ID);  //
Initialization for the push button
       XGpio_SetDataDirection(&btn,1,0x41200000);  //  Setting direction
for the push button
        XGpio_Initialize(&sw,XPAR_XGPIOPS_0_DEVICE_ID);  //
Initialization for the switch
        XGpio_SetDataDirection(&sw,1,0xE000A000);  // Setting direction
for the switch
             XGpio_Initialize(&led,XPAR_LED_IP_0_DEVICE_ID);  //
Initialization for the led
       XGpio_SetDataDirection(&led,1,0x43C00000);  // Setting direction
for the led
```

```
while(1)
{
        push=XGpio_DiscreteRead(&btn,1);   // inputting value from push button
       printf("Push Buttons Status %x\r\n",push);

       print("Pause- 1/0: ");
           pause=XGpio_DiscreteRead(&sw,1);   // inputting value of pause

       if(push==1)
                          val=1;                          // Up counting

       else if(push==2)
                                 val=-1;                  // Down counting

       else if(push==4)
                  delay_value=4099999;                    //  Increasing the speed of counter

       else if(push==8)
                 delay_value=19999999;                    //  Decreasing the speed of counter


        counter=counter+val;                              // Incrementing/Decrementing counter accordingly

       if(pause==0)
       {
              if(counter>15)
                     counter=0;
              if(counter<0)
                     counter=15;
```

```
            }
        else if(pause==1)                    // if pause is pressed, no change in counter value
            counter=counter;

 LED_IP_mWriteReg(XPAR_LED_IP_0_S00_AXI_BASEADDR,0,
    counter);                                // Displaying the counter value on the LEDs

            for (int i=0;i<delay_value;i++);
      }
      return (0);
}
```

Block Diagram