Experiment 4 : ARM C-Interfacing - Emulation of Switch LED and Stepper Motor Control

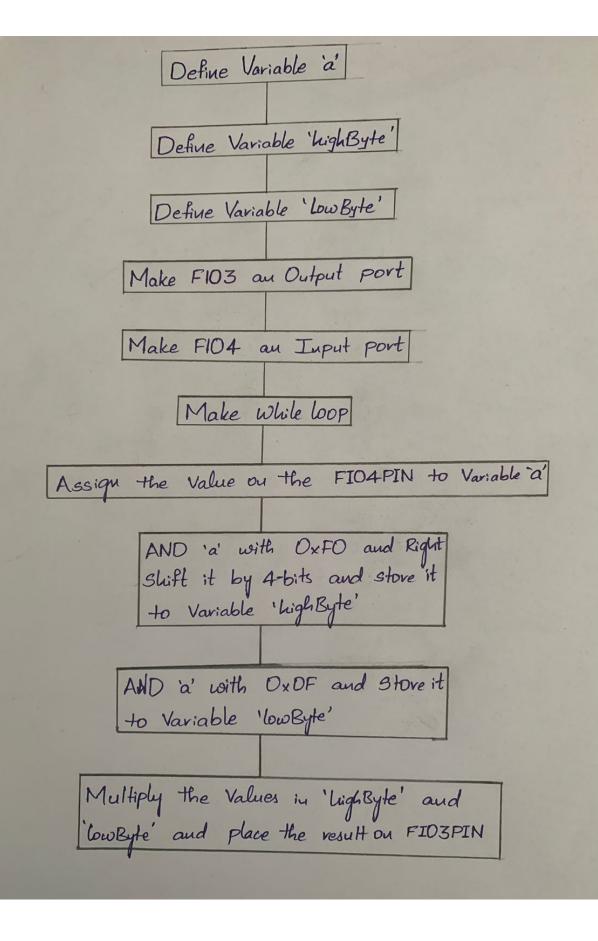
Aim:

Using C-interfacing, use C-programming, to implement the following tasks:

- (i) Read the status (binary position) of the switch and use the LEDs (8 LEDs are provided) to display the status of each of the 8-bit DIP switch
- (ii) Stepp er motor control using Vi Microsystem's Vi ARM 7238 development board.

Code 1:

```
#include "LPC23xx.h"
int main()
{
       int a;
       int highbyte;
       int lowbyte;
       FIO3DIR = 0xFF;
       FIO4DIR = 0x00;
       while(1)
               a = FIO4PIN;
               highbyte = a & 0xF0;
               highbyte = highbyte >> 4;
               lowbyte = a & 0x0F;
              FIO3PIN = highbyte * lowbyte;
       }
       return 0;
}
```



Code 2:

```
#include "LPC23xx.h"
void delay()
       int i,j;
       for(i = 0;i < 0xFF; i++)
       for(j = 0; j < 0xFF; j++);
}
int main()
       IODIR0 = 0xFFFFFFF;
       while(1)
              IOPIN0 = 0x00000280;
              delay();
               IOPINO = 0x00000240;
               delay();
               IOPIN0 = 0x00000140;
              delay();
               IOPINO = 0x00000180;
               delay();
       return 0;
}
```

Logic:

- As per the given sample code we just reversed the loop to rotate steppermoter in anti-clockwise order.
- This is a infinite loop whih keeps on ratating.

Code 3:

```
#include "LPC23xx.h"
void delay()
       int i, j, a=1;
       for(i = 0; i < 0xFF; i++)
       for(j = 0; j < 0xFF; j++);
}
int main()
       IODIR0 = 0xFFFFFFF;
       while (a \le 10)
               IOPIN0 = 0x00000280;
               delay();
               IOPINO = 0x00000240;
               delay();
               IOPINO = 0x00000140;
               delay();
               IOPINO = 0x00000180;
               delay();
               a++;
        }
       return 0;
}
```

Logic:

- If the stepper angle is 2 degrees then for rotating stepper motor 80 degrees while loop should be applied for 10 times as 4*10=40
- 40 steps rotated means 40*2=80 degrees.

Learnings from this experiment:

• Learnt to write basic c programs in keil for showing the result using LED's.

•	Basic programs on stepper motor to rotate it for a specific angle and specific direction.