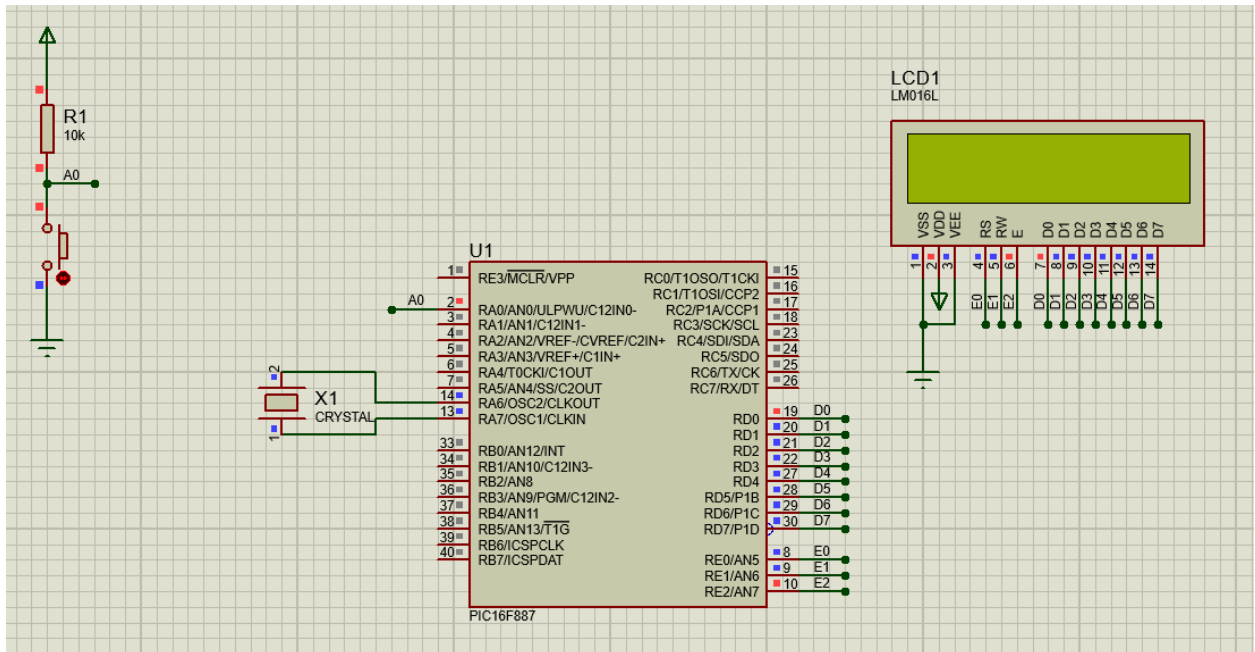


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Midterm Test

I) Hardware



II) Code

1) Mode 1

```
void mode1()
{
    lcd_command(0x01);delay_ms(100);
    lcd_command(0x38);
    // Name
    lcd_command(0x81);lcd_data(0x54);delay_ms(10);
    lcd_command(0x82);lcd_data(0x72);delay_ms(10);
    lcd_command(0x83);lcd_data(0x61);delay_ms(10);
    lcd_command(0x84);lcd_data(0x6E);delay_ms(10);
    lcd_command(0x86);lcd_data(0x4D);delay_ms(10);
    lcd_command(0x87);lcd_data(0x69);delay_ms(10);
    lcd_command(0x88);lcd_data(0x6E);delay_ms(10);
    lcd_command(0x89);lcd_data(0x68);delay_ms(10);
    lcd_command(0x8B);lcd_data(0x51);delay_ms(10);
    lcd_command(0x8C);lcd_data(0x75);delay_ms(10);
    lcd_command(0x8D);lcd_data(0x61);delay_ms(10);
    lcd_command(0x8E);lcd_data(0x6E);delay_ms(10);
    // ID
    lcd_command(0xC4);lcd_data(0x31);delay_ms(10);
    lcd_command(0xC5);lcd_data(0x39);delay_ms(10);
    lcd_command(0xC6);lcd_data(0x31);delay_ms(10);
    lcd_command(0xC7);lcd_data(0x35);delay_ms(10);
    lcd_command(0xC8);lcd_data(0x31);delay_ms(10);
    lcd_command(0xC9);lcd_data(0x30);delay_ms(10);
    lcd_command(0xCA);lcd_data(0x37);delay_ms(10);
    lcd_command(0xCB);lcd_data(0x38);delay_ms(10);
}
```

Figure 1: Display Name and ID

```
check1:
if (!input(pin_a0))
    temp++;
else
    goto check1;
```

Figure 2: Check if button press? In mode 1

2) Mode 2

```

void mode2()
{
    lcd_command(0x01); delay_ms(100);
    for (i=count; (i<1000 && temp==2); i++)
    {
        lcd_command(0x80); lcd_data(i/100 + 0x30);
        lcd_command(0x88); lcd_data(i/10 + 0x30);
        lcd_command(0x8F); lcd_data(i%10 + 0x30);
        if (i==999)
            {i=-1;}
    }
}

```

Figure 3: Count up and display in LCD

```

        if (!input(pin_a0))
        {
            temp++;
            count=i;
        }
    }
}

```

Figure 4: Check if press? in mode 2

3) Mode 3

```

void mode3()
{
    lcd_command(0x01); delay_ms(100);
    lcd_command(0x38);
    for (i=count; (i>0 && temp==3); i--)
    {
        lcd_command(0xC0); lcd_data(i/100 + 0x30);
        lcd_command(0xC8); lcd_data(i/10 + 0x30);
        lcd_command(0xCF); lcd_data(i%10 + 0x30);
        if (i==0)
            {i=1000;}
    }
}

```

Figure 5: Count down and display

```

        {i=1000;}
    if (!input(pin_a0))
    {
        temp=1;
        count=i;
    }
    delay_ms(100);
}

```

Figure 6: Check if press? in mode 3

4) Main

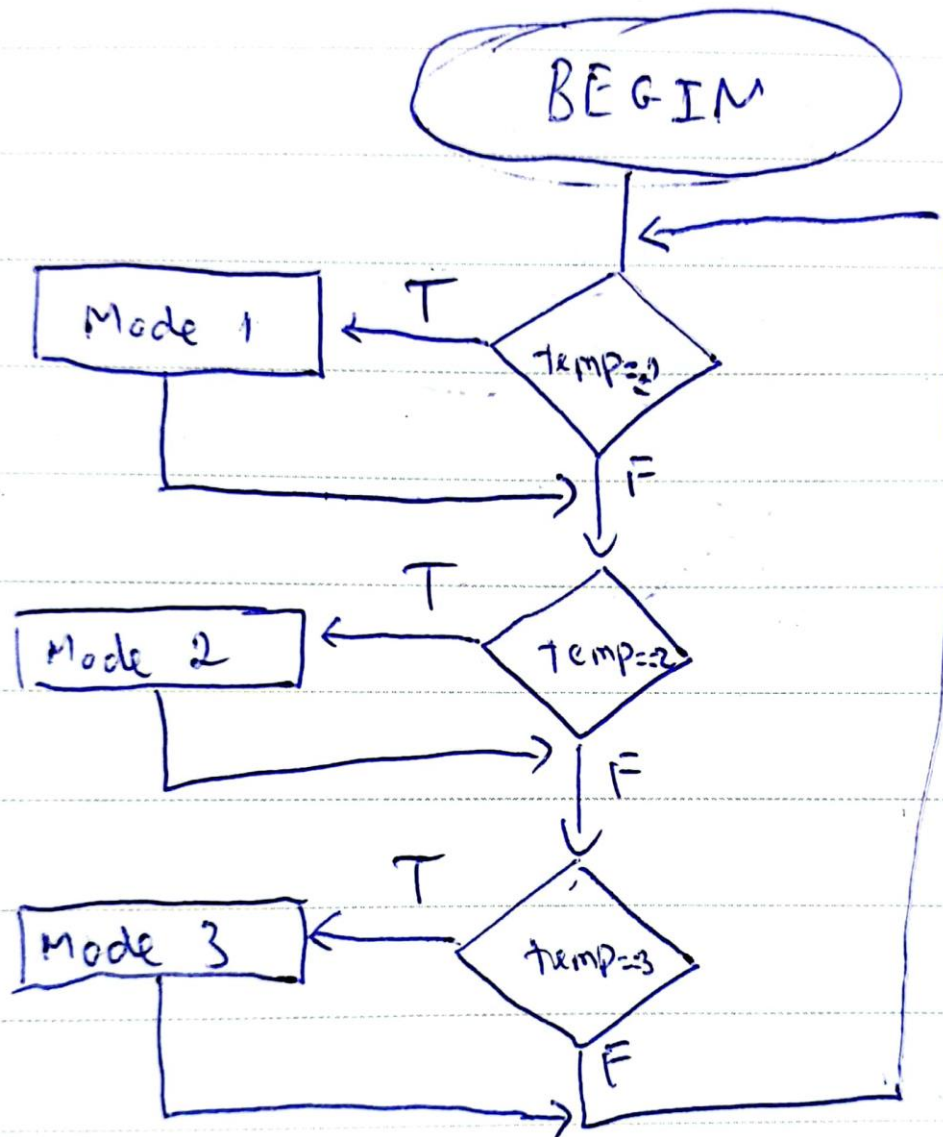
```

void main()
{
    set_tris_d(0x00);
    set_tris_a(0xFF);
    set_tris_e(0xFF);
    lcd_setup();
    while (true)
    {
        if (temp==1)
            {mode1();}
        if (temp==2)
            {mode2();}
        if (temp==3)
            {mode3();}
    }
}

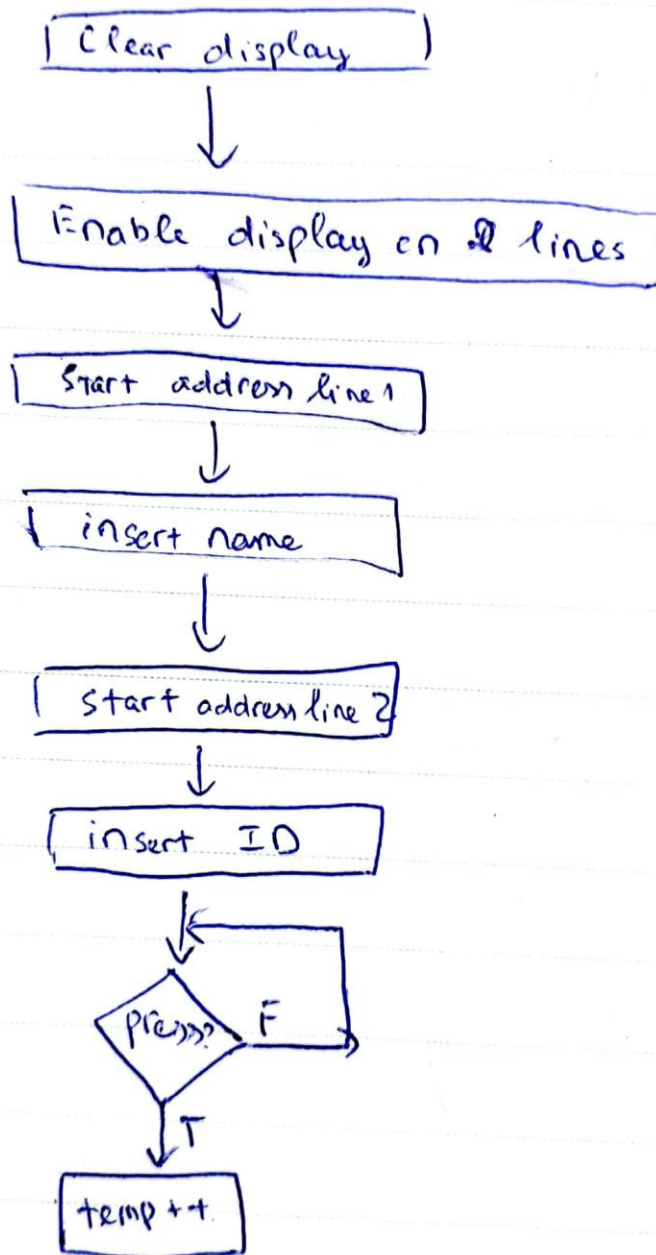
```

Figure 7: Main

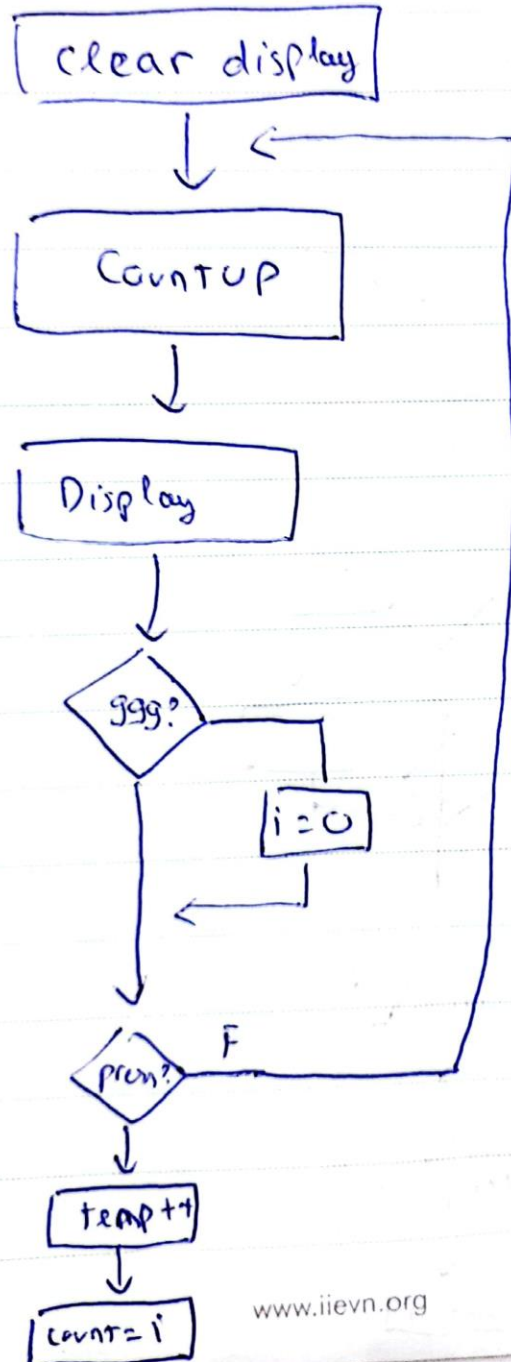
III) Flow chart



Mode 1:



Mode 2



Mode 3:

