# Experiment Name: Interfacing Servo Motor with PIC Microcontroller

Theory:

Servo Motor uses error sensing negative feedback to control the precise angular position. Servos are used for precise positioning in robotic arms, legs, RC Aeroplanes, Helicopters etc. Please read the article Servo Motor for more information about its working and construction. Hobby Servo Motors have three wires, two of them (RED and BLACK) are used to given power and the third one is used to give control signals. Servo can be easily be controlled using microcontrollers using Pulse Width Modulated (PWM) signals on the control wire. Here we are using a servo whose angular rotation is limited to 0 – 180°. We can control the exact angular position by using a pulse, whose width varying from 1 millisecond to 2 millisecond on the control wire. The actual behavior of a particular motor depends upon its manufacture, please refer the datasheet of the particular motor for that.
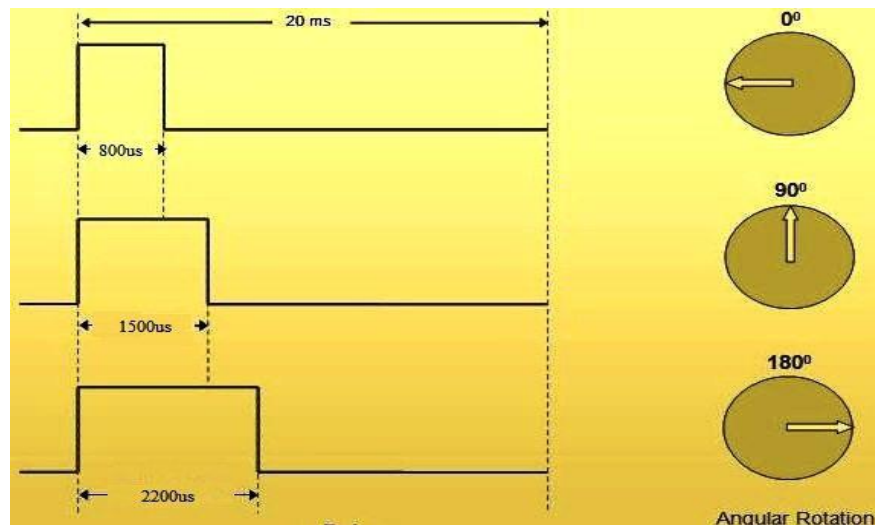
Circuit Diagram:
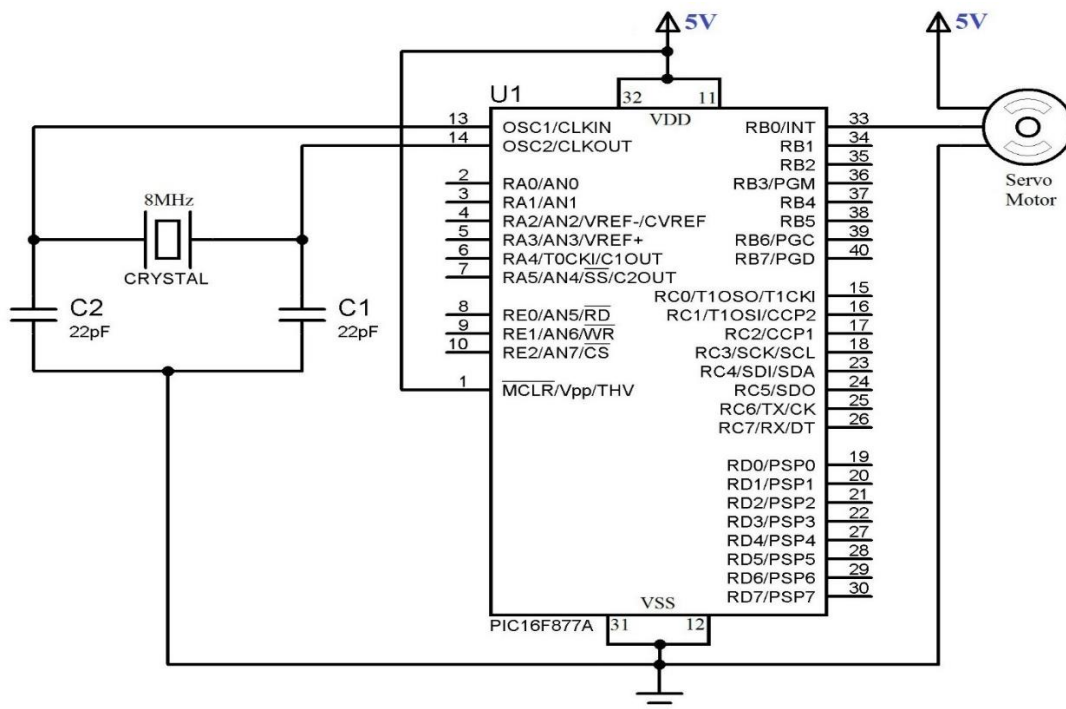
Code in Mikro C:

```c
void servoRotate0() //0 Degree
{
 unsigned int i;
 for(i=0;i<50;i++)
 {
  PORTB.F0 = 1;
  Delay_us(800);
  PORTB.F0 = 0;
  Delay_us(19200);
 }
}

void servoRotate90() //90 Degree
{
 unsigned int i;
 for(i=0;i<50;i++)
 {
  PORTB.F0 = 1;
  Delay_us(1500);
  PORTB.F0 = 0;
  Delay_us(18500);
 }
}

void servoRotate180() //180 Degree
{
 unsigned int i;
 for(i=0;i<50;i++)
 {
  PORTB.F0 = 1;
  Delay_us(2200);
  PORTB.F0 = 0;
  Delay_us(17800);
 }
}
void main()
{
 TRISB = 0; // PORTB as Ouput Port
 do
 {
  servoRotate0(); //0 Degree
  Delay_ms(2000);
  servoRotate90(); //90 Degree
  Delay_ms(2000);
  servoRotate180(); //180 Degree
 }while(1);
}
```