

## Tarea 16 de Micro Controladores

Con el microcontrolador 16F887, teclado y LCD, programe un juego sencillo que utilice estos recursos, deberá ser capaz de demostrar el dominio de su programa portando los archivos necesarios.

- Código del programa

```
char certain, kp, cnt, f_aux;
// Keypad module connections

char keypadPort at PORTD;

// End Keypad module connections

// LCD module connections
sbit LCD_RS at RB4_bit;
sbit LCD_EN at RB5_bit;
sbit LCD_D4 at RB0_bit;
sbit LCD_D5 at RB1_bit;
sbit LCD_D6 at RB2_bit;
sbit LCD_D7 at RB3_bit;

sbit LCD_RS_Direction at TRISB4_bit;
sbit LCD_EN_Direction at TRISB5_bit;
sbit LCD_D4_Direction at TRISB0_bit;
sbit LCD_D5_Direction at TRISB1_bit;
sbit LCD_D6_Direction at TRISB2_bit;
sbit LCD_D7_Direction at TRISB3_bit;

// End LCD module connections

void main() {
    Keypad_Init();                // Initialize Keypad
    ANSEL = 0;                    // Configure AN pins as digital I/O
    ANSELH = 0;
    Lcd_Init();                   // Initialize LCD
    Lcd_Cmd(_LCD_CLEAR);          // Clear display
    Lcd_Cmd(_LCD_CURSOR_OFF);     // Cursor off
    /*for(f_aux = 0; f_aux<3; f_aux++){
        for(cnt = 0; cnt <=6; cnt++){
            Lcd_Out(1, 1+cnt, "Adivine el");
            Lcd_Out(2, 1+cnt, " Numero");
            Lcd_Chr(2, 16, 3-f_aux+0x30);
            Lcd_Chr(2, 1, 3-f_aux+0x30);
            Delay_ms(50);
            Lcd_Cmd(_LCD_CLEAR);
        }
        for(cnt = 5; cnt >=1; cnt--){
            Lcd_Out(1, cnt, "Adivine el");
            Lcd_Out(2, cnt, " Numero");
            Lcd_Chr(2, 16, 3-f_aux+0x30);
            Lcd_Chr(2, 1, 3-f_aux+0x30);
            Delay_ms(50);
            Lcd_Cmd(_LCD_CLEAR);
        }
    } */
    for(f_aux=0;f_aux<3;f_aux++){
        Lcd_Out(2, 1, "LOADING");
        Delay_ms(200);
        Lcd_Out(2, 1, "LOADING.");
        Delay_ms(200);
        Lcd_Out(2, 1, "LOADING..");
        Delay_ms(200);
        Lcd_Out(2, 1, "LOADING...");
        Delay_ms(200);
    }
}
```

```

    Lcd_Out(2, 1, "LOADING....");
    Delay_ms(200);
    Lcd_Cmd(_LCD_CLEAR);
}
Delay_ms(600);
cnt = 2; // # de vidas
do {
    if (cnt != 0){
        kp = 0;
        Lcd_Cmd(_LCD_CLEAR);
        Lcd_Out(1, 1, "numero:");
        Lcd_Out(2, 1, "chance:");
        Lcd_Chr(2, 14, cnt+0x30);
        Lcd_Chr(1, 14, kp);
    }
    else{
        Lcd_Cmd(_LCD_CLEAR);
        Lcd_Out(1, 4, "GAME OVER");
        Delay_ms(400);
        break;
    }
}
do{
    kp = Keypad_Key_Click();
}while (!kp);
switch (kp){
    case 1: kp = 49; break; // 1
    case 2: kp = 50; break; // 2
    case 3: kp = 51; break; // 3
    case 4: kp = 65; break; // A
    case 5: kp = 52; break; // 4
    case 6: kp = 53; break; // 5
    case 7: kp = 54; break; // 6
    case 8: kp = 66; break; // B
    case 9: kp = 55; break; // 7
    case 10: kp = 56; break; // 8
    case 11: kp = 57; break; // 9
    case 12: kp = 67; break; // C
    case 13: kp = 42; break; // *
    case 14: kp = 48; break; // 0
    case 15: kp = 35; break; // #
    case 16: kp = 68; break; // D
} ////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

certain = 55; // numero secreto 2 equivalente a 50 tabla swich-case
if(kp == certain){
    Lcd_Chr(1, 14, kp);
    Lcd_Chr(2, 14, cnt+0x30);
    Delay_ms(600);
    break;
}
else{
    Lcd_Chr(1, 14, kp);
    Lcd_Chr(2, 14, cnt+0x30);
    Delay_ms(600);
    Lcd_Cmd(_LCD_CLEAR);
    cnt--;
    if (cnt != 0){
        Lcd_Out(1, 4, "NO ACERTO");
        Lcd_Out(2, 4, "TRY AGAIN");
    }
    else
        Lcd_Out(1, 3, "NO ACERTO :(");
    Delay_ms(1000);
    Lcd_Cmd(_LCD_CLEAR);
}
}while (1);
Lcd_Cmd(_LCD_CLEAR);
if(cnt!=0){
    for(cnt=0; cnt<255; cnt++){
        Lcd_Out(1, 6, "YOU WIN");
        Lcd_Out(2, 8, "!!!");
    }
}

```

```

        Delay_ms(300);
        Lcd_Cmd(_LCD_CLEAR);
        Delay_ms(300);
    }
    if(cnt == 0){
        Lcd_Cmd(_LCD_CLEAR);
        Lcd_Out(1, 5, "YOU LOSE");
        Lcd_Out(2, 8, ":(");
        Delay_ms(2000);
    }
}

```

- Simulación



