**Programación del entorno del manejo**

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Windows.Forms;

using System.IO.Ports;

namespace WindowsFormsApplication1

{

public partial class Form1 : Form

{

private SerialPort Puerto;

private string[] Puertos;

public Form1()

{

InitializeComponent();

listarPuertos();

}

#region STATUS

private void defineStatus(bool status)

{

if (status == true)

{

statusLabel.Text = "Conectado";

statusLabel.ForeColor = Color.Green;

}

else

{

statusLabel.Text = "Desconectado";

statusLabel.ForeColor = Color.Red;

}

}

#endregion

#region LISTAR COM EN COMBOBOX

private void listarPuertos()

{

Puertos = SerialPort.GetPortNames();

if (Puertos.Length > 0)

{

comboBoxPuertos.Items.Clear();

foreach (string s in SerialPort.GetPortNames())

{

comboBoxPuertos.Items.Add(s);

}

defineStatus(false);

habilitar(true, true, false, false, false, false, false);

}

}

#endregion

#region HABILITACIONES

private void habilitar(bool COM, bool conectar, bool desconectar, bool automovil, bool camara, bool brazo, bool Luz)

{

comboBoxPuertos.Enabled = COM;

botonConectar.Enabled = conectar;

botonDesconectar.Enabled = desconectar;

groupBoxAuto.Enabled = automovil;

groupBoxCamara.Enabled = camara;

groupBoxBrazo.Enabled = brazo;

groupBoxLuces.Enabled = Luz;

}

#endregion

#region CERRAR PUERTO

private void cerrarPuerto()

{

if (Puerto != null && Puerto.IsOpen)

{

Puerto.Close();

Puerto = null;

defineStatus(false);

listarPuertos();

}

}

#endregion

#region Boton DESCONECTAR

private void botonDesconectar\_Click(object sender, EventArgs e)

{

cerrarPuerto();

}

#endregion

#region Boton CONECTAR

private void botonConectar\_Click(object sender, EventArgs e)

{

try

{

if (comboBoxPuertos.SelectedIndex != -1)

{

Puerto = new SerialPort();

Puerto.PortName = comboBoxPuertos.SelectedItem.ToString();

Puerto.BaudRate = 9600;

}

else

{

throw new Exception("Seleccione un puerto para conectar");

}

if (!Puerto.IsOpen)

{

Puerto.Open();

defineStatus(true);

habilitar(false, false, true, true, true, true, true);

}

}

catch (Exception ex)

{

MessageBox.Show(this, "NO ES POSIBLE LA CONEXION. \n" + ex.Message, "Error", MessageBoxButtons.OK, MessageBoxIcon.Error);

}

}

#endregion

#region Cerrar Formulario

private void Form1\_FormClosed(object sender, FormClosedEventArgs e)

{

cerrarPuerto();

}

#endregion

#region BOTONES AUTO

private void btUpAuto\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x38; //Letra 8 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Adelante...";

}

private void btDownAuto\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x35; //Letra 5 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Atras...";

}

private void btIzqAuto\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x34; //Letra 4 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Izquierda...";

}

private void btDerAuto\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x36; //Letra 6 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Derecha...";

}

#endregion

#region BOTONES CAMARA

private void btIzqCamara\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4A; //Letra J en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Izquierda...";

}

private void btDerCamara\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4C; //Letra L en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Derecha...";

}

private void btUpCamara\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x49; //Letra I en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Arriba...";

}

private void btDownCamara\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4B; //Letra K en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Abajo...";

}

#endregion

#region BOTONES BRAZO

private void btAntiBrazo\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x41; //Letra A en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Antihorario...";

}

private void btHoraBrazo\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x44; //Letra D en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Horario...";

}

private void btSubirBrazo\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x57; //Letra W en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Subiendo...";

}

private void btBajarBrazo\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x53; //Letra S en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Bajando...";

}

private void btAbrirPinza\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x5A; //Letra Z en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Abriendo...";

}

private void btCerrarPinza\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x58; //Letra X en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Cerrando...";

}

#endregion

#region TECLAS

protected override bool ProcessCmdKey(ref Message m, Keys keyData)

{

bool blnProcess = false;

#region TECLAS PARA AUTO

if (keyData == Keys.Up)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x38; //Letra 8 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Adelante...";

}

if (keyData == Keys.Down)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x35; //Letra 5 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Atras...";

}

if (keyData == Keys.Left)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x34; //Letra 4 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Izquierda...";

}

if (keyData == Keys.Right)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x36; //Letra 6 en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovAuto.Text = "Derecha...";

}

#endregion

#region TECLAS PARA CAMARA

if (keyData == Keys.J)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4A; //Letra J en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Izquierda...";

}

if (keyData == Keys.L)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4C; //Letra L en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Derecha...";

}

if (keyData == Keys.I)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x49; //Letra I en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Arriba...";

}

if (keyData == Keys.K)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x4B; //Letra K en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovCam.Text = "Abajo...";

}

#endregion

#region TECLAS PARA BRAZO

if (keyData == Keys.D)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x44; //Letra D en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Horario...";

}

if (keyData == Keys.A)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x41; //Letra A en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Antihorario...";

}

if (keyData == Keys.W)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x57; //Letra W en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Subiendo...";

}

if (keyData == Keys.S)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x53; //Letra S en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Bajando...";

}

if (keyData == Keys.Z)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x5A; //Letra Z en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Abriendo...";

}

if (keyData == Keys.X)

{

blnProcess = true;

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x58; //Letra X en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

labelMovBrazo.Text = "Cerrando...";

}

#endregion

if (blnProcess == true)

{

return true;

}

else

{

return base.ProcessCmdKey(ref m, keyData);

}

}

#endregion

private void btON\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x47; //Letra G en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

}

private void btOFF\_Click(object sender, EventArgs e)

{

byte[] mBuffer = new byte[1];

mBuffer[0] = 0x42; //Letra B en ascii

Puerto.Write(mBuffer, 0, mBuffer.Length);

}

}

}