**BÀI TẬP TUẦN 5**

**1. Tạo Project Windows Forms Application trên Microsoft visualstudio 2022**

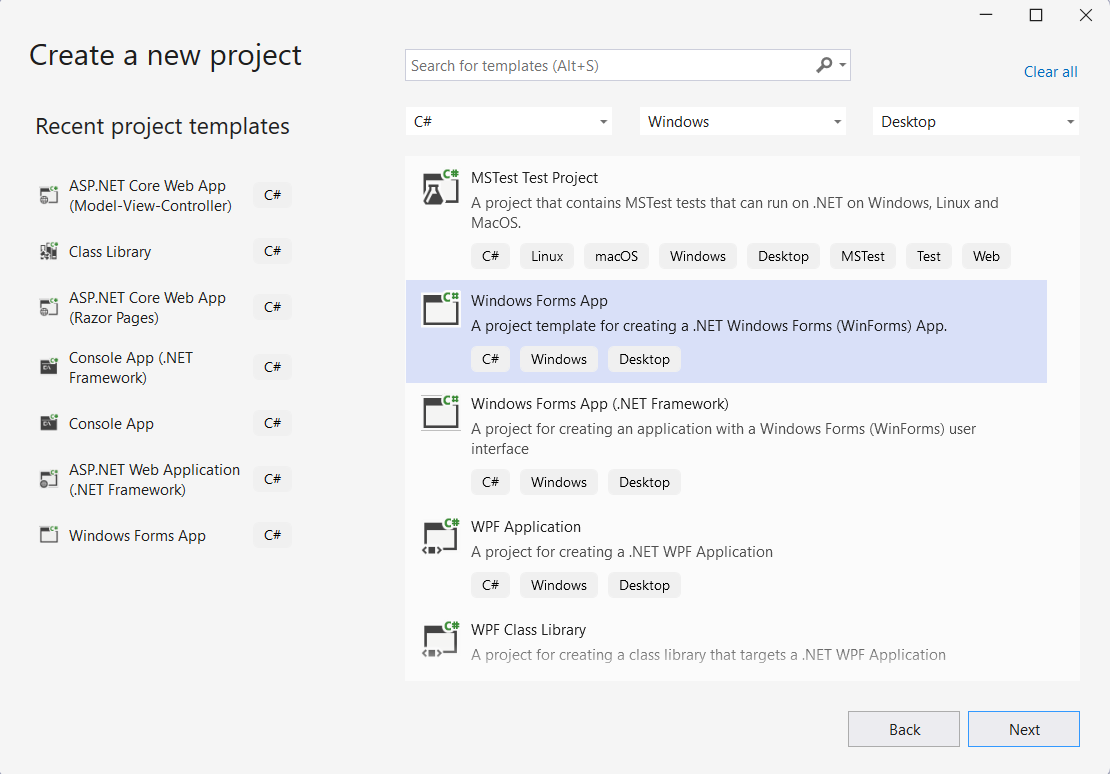
Khởi động chương trình visual studio 2022. Hình ảnh dưới đây là màn

hình khởi động của ứng dụng

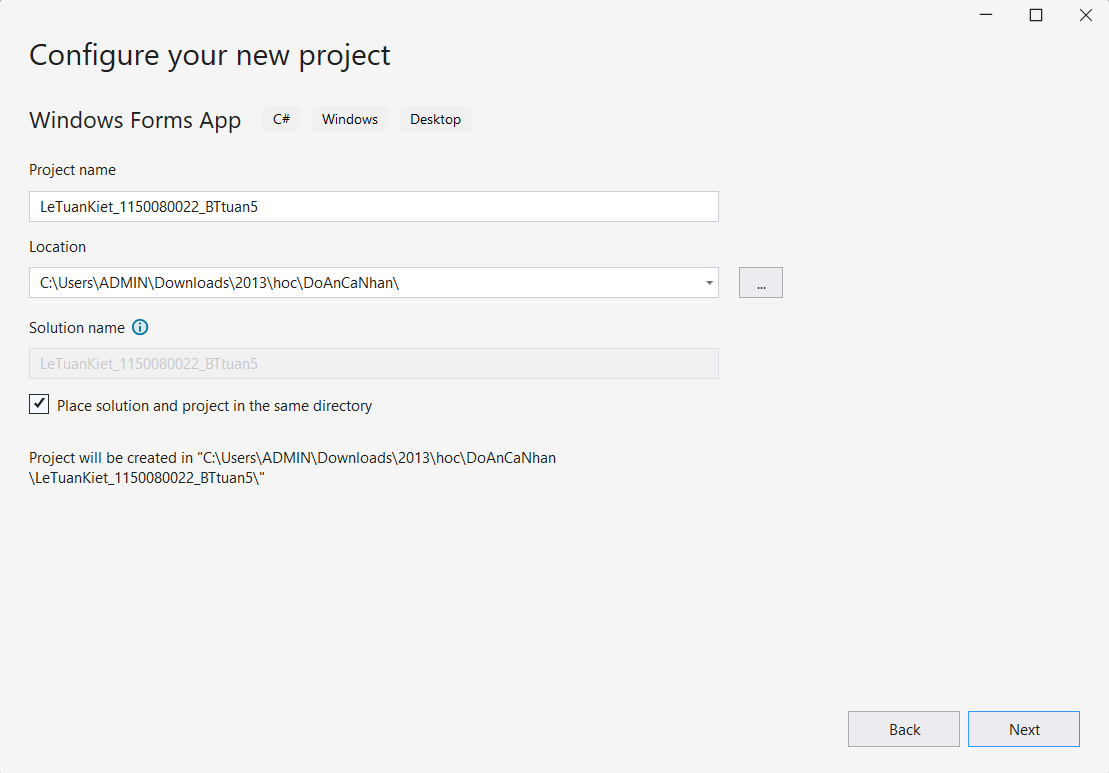
Chọn Create a new project trên màn hình khởi động. Trong màn hình

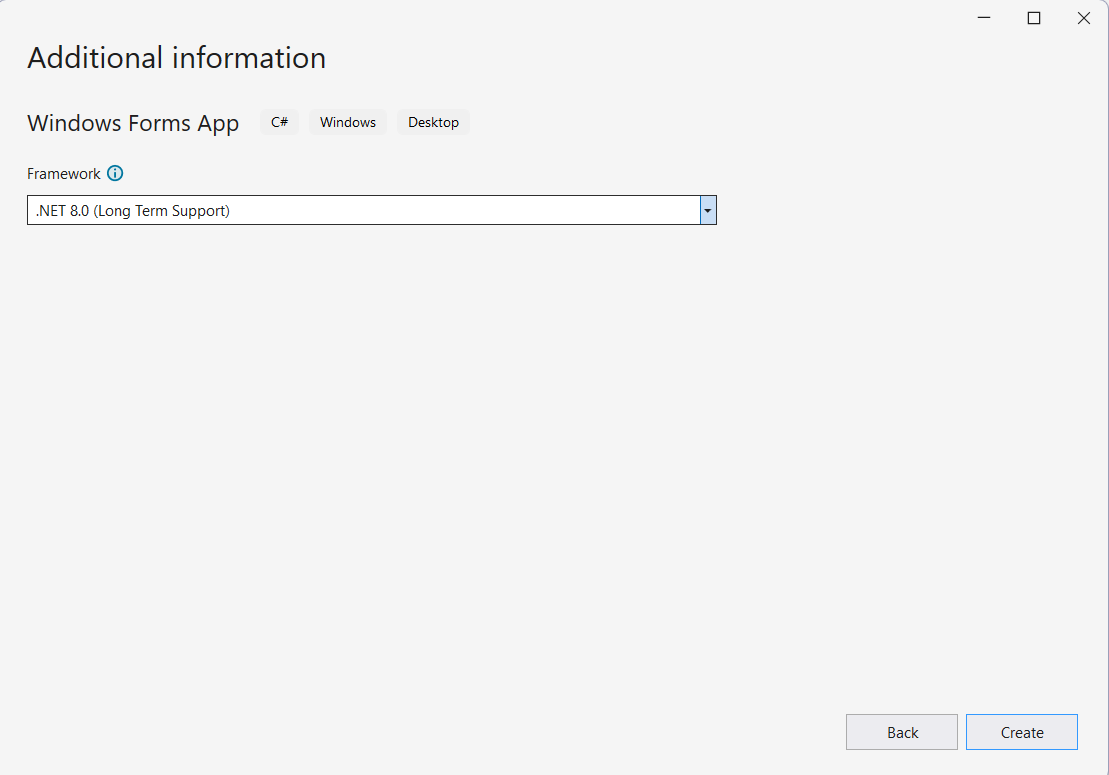
tiếp theo, ở mục All languages → chọn C# trong danh sách ngôn ngữ lập trình.

Mục All platforms → chọn Windows. Ở mục All project types → chọn Desktop.

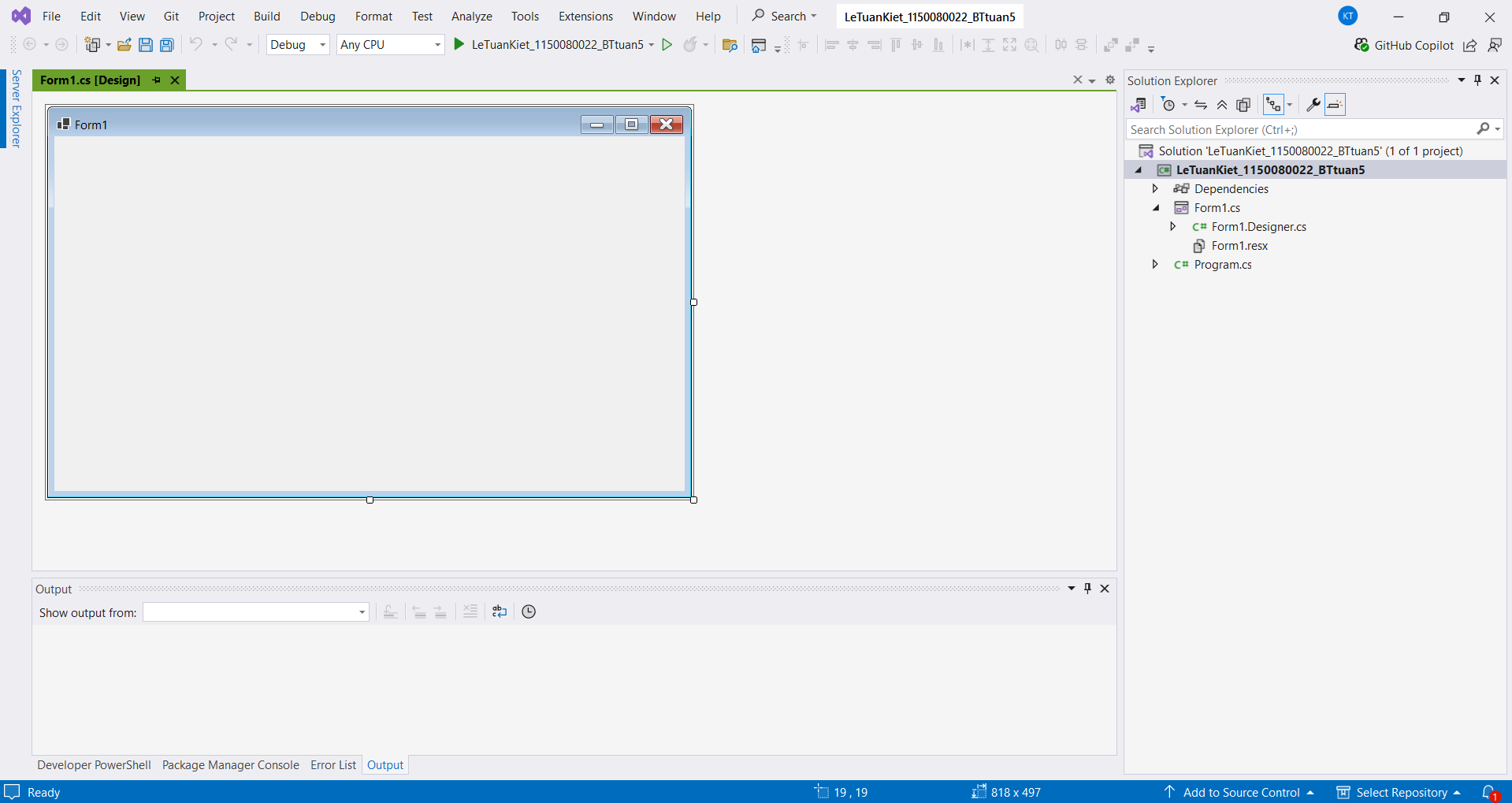


Trong cửa sổ tiếp theo, bạn điền đầy đủ các thông tin

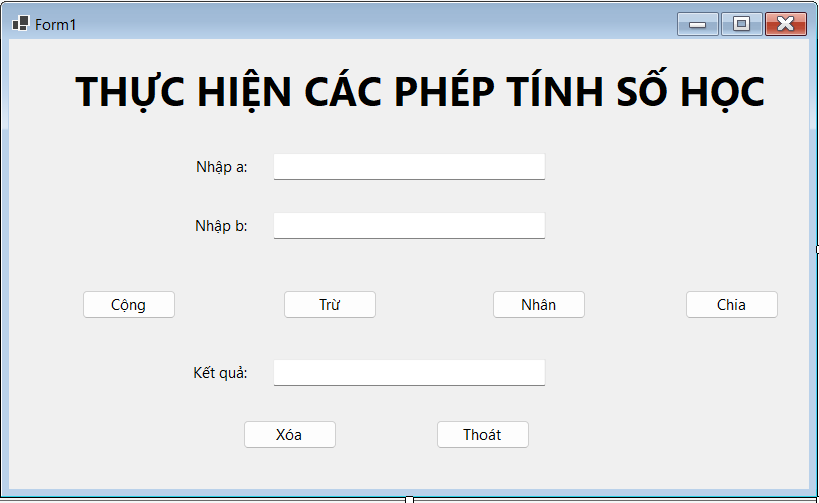




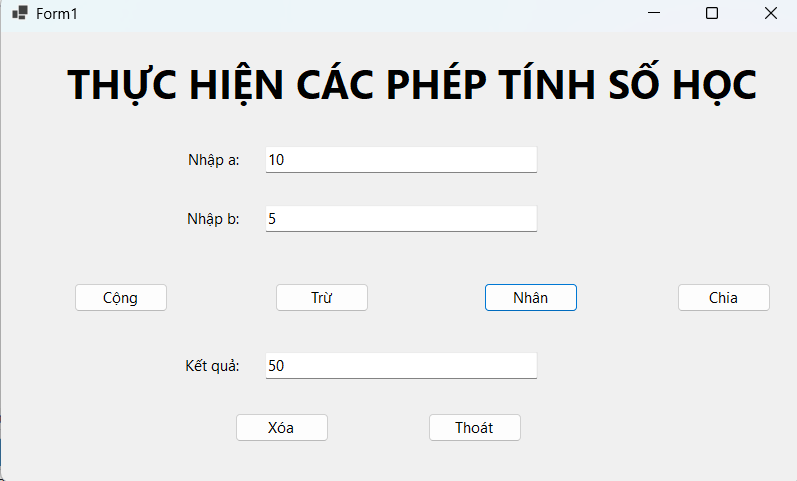
Đây là kết quả!



Thiết kế form dùng ToolBox ở phần View kéo thả các Label, TextBox



Chức năng của cac cộng trừ nhân chia xóa thoát



using System;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public partial class Form1 : Form

    {

        public Form1()

        {

            InitializeComponent();

            // Gắn sự kiện cho các nút còn lại (nếu chưa gắn trong Designer)

            btnTru.Click += btnTru\_Click;

            btnNhan.Click += btnNhan\_Click;

            btnChia.Click += btnChia\_Click;

            btnXoa.Click += btnXoa\_Click;

            btnThoat.Click += btnThoat\_Click;

        }

        private void button1\_Click(object sender, EventArgs e) // bạn đã gắn btnCong.Click += button1\_Click trong Designer

        {

            try

            {

                double a = Convert.ToDouble(txtA.Text.Trim());

                double b = Convert.ToDouble(txtB.Text.Trim());

                txtKetQua.Text = (a + b).ToString();

            }

            catch (Exception ex)

            {

                MessageBox.Show(ex.Message, "Lỗi", MessageBoxButtons.OK, MessageBoxIcon.Error);

            }

        }

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

        {

            try

            {

                double a = Convert.ToDouble(txtA.Text.Trim());

                double b = Convert.ToDouble(txtB.Text.Trim());

                txtKetQua.Text = (a - b).ToString();

            }

            catch (Exception ex)

            {

                MessageBox.Show(ex.Message, "Lỗi", MessageBoxButtons.OK, MessageBoxIcon.Error);

            }

        }

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

        {

            try

            {

                double a = Convert.ToDouble(txtA.Text.Trim());

                double b = Convert.ToDouble(txtB.Text.Trim());

                txtKetQua.Text = (a \* b).ToString();

            }

            catch (Exception ex)

            {

                MessageBox.Show(ex.Message, "Lỗi", MessageBoxButtons.OK, MessageBoxIcon.Error);

            }

        }

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

        {

            try

            {

                double a = Convert.ToDouble(txtA.Text.Trim());

                double b = Convert.ToDouble(txtB.Text.Trim());

                if (b == 0)

                {

                    MessageBox.Show("Mẫu số không được phép bằng 0. Nhập lại!", "Thông báo", MessageBoxButtons.OK, MessageBoxIcon.Warning);

                    txtB.Text = "";

                    txtB.Focus();

                    return;

                }

                txtKetQua.Text = (a / b).ToString();

            }

            catch (Exception ex)

            {

                MessageBox.Show(ex.Message, "Lỗi", MessageBoxButtons.OK, MessageBoxIcon.Error);

            }

        }

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

        {

            txtA.Clear();

            txtB.Clear();

            txtKetQua.Clear();

            txtA.Focus();

        }

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

        {

            DialogResult result = MessageBox.Show("Bạn có thực sự thoát không?",

                                                  "Thoát chương trình",

                                                  MessageBoxButtons.YesNo,

                                                  MessageBoxIcon.Question);

            if (result == DialogResult.Yes)

            {

                this.Close();

            }

        }

        // Nếu Designer có label1\_Click thì thêm tạm hàm trống để không báo lỗi:

        private void label1\_Click(object sender, EventArgs e)

        {

            // không làm gì

        }

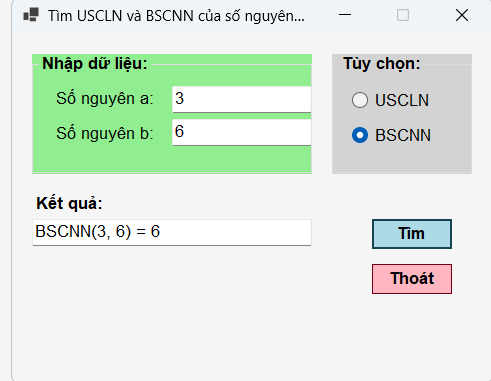
    }

}

**Nhớ đổi Program.cs qua Form1**

**Áp dụng 1:** Thêm vào một project có tên là “ApDung1”, comment tất cả code “ApDung1.Designer.cs” hoặc xóa, thực hiện tìm ước số chung lớn nhất và bội số chung nhỏ nhất của 2 số nguyên a và b:

Code ở ApDung1.cs



Code ApDung1.cs

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public class Form2 : Form

    {

        private GroupBox grpNhapDuLieu;

        private GroupBox grpTuyChon;

        private Label lblA;

        private Label lblB;

        private Label lblKetQua;

        private TextBox txtA;

        private TextBox txtB;

        private TextBox txtKetQua;

        private RadioButton rdoUSCLN;

        private RadioButton rdoBSCNN;

        private Button btnTim;

        private Button btnThoat;

        public Form2()

        {

            InitializeComponent();

        }

        private void InitializeComponent()

        {

            grpNhapDuLieu = new GroupBox();

            lblA = new Label();

            txtA = new TextBox();

            lblB = new Label();

            txtB = new TextBox();

            grpTuyChon = new GroupBox();

            rdoUSCLN = new RadioButton();

            rdoBSCNN = new RadioButton();

            lblKetQua = new Label();

            txtKetQua = new TextBox();

            btnTim = new Button();

            btnThoat = new Button();

            grpNhapDuLieu.SuspendLayout();

            grpTuyChon.SuspendLayout();

            SuspendLayout();

            //

            // grpNhapDuLieu

            //

            grpNhapDuLieu.BackColor = Color.FromArgb(144, 238, 144);

            grpNhapDuLieu.Controls.Add(lblA);

            grpNhapDuLieu.Controls.Add(txtA);

            grpNhapDuLieu.Controls.Add(lblB);

            grpNhapDuLieu.Controls.Add(txtB);

            grpNhapDuLieu.Font = new Font("Arial", 10F, FontStyle.Bold);

            grpNhapDuLieu.Location = new Point(20, 20);

            grpNhapDuLieu.Name = "grpNhapDuLieu";

            grpNhapDuLieu.Size = new Size(280, 120);

            grpNhapDuLieu.TabIndex = 0;

            grpNhapDuLieu.TabStop = false;

            grpNhapDuLieu.Text = "Nhập dữ liệu:";

            //

            // lblA

            //

            lblA.AutoSize = true;

            lblA.BackColor = Color.Transparent;

            lblA.Font = new Font("Arial", 10F);

            lblA.Location = new Point(20, 35);

            lblA.Name = "lblA";

            lblA.Size = new Size(107, 19);

            lblA.TabIndex = 0;

            lblA.Text = "Số nguyên a:";

            //

            // txtA

            //

            txtA.Font = new Font("Arial", 10F);

            txtA.Location = new Point(140, 32);

            txtA.Name = "txtA";

            txtA.Size = new Size(140, 27);

            txtA.TabIndex = 1;

            //

            // lblB

            //

            lblB.AutoSize = true;

            lblB.BackColor = Color.Transparent;

            lblB.Font = new Font("Arial", 10F);

            lblB.Location = new Point(20, 70);

            lblB.Name = "lblB";

            lblB.Size = new Size(107, 19);

            lblB.TabIndex = 2;

            lblB.Text = "Số nguyên b:";

            //

            // txtB

            //

            txtB.Font = new Font("Arial", 10F);

            txtB.Location = new Point(140, 65);

            txtB.Name = "txtB";

            txtB.Size = new Size(140, 27);

            txtB.TabIndex = 3;

            //

            // grpTuyChon

            //

            grpTuyChon.BackColor = Color.FromArgb(211, 211, 211);

            grpTuyChon.Controls.Add(rdoUSCLN);

            grpTuyChon.Controls.Add(rdoBSCNN);

            grpTuyChon.Font = new Font("Arial", 10F, FontStyle.Bold);

            grpTuyChon.Location = new Point(320, 20);

            grpTuyChon.Name = "grpTuyChon";

            grpTuyChon.Size = new Size(140, 120);

            grpTuyChon.TabIndex = 1;

            grpTuyChon.TabStop = false;

            grpTuyChon.Text = "Tùy chọn:";

            //

            // rdoUSCLN

            //

            rdoUSCLN.AutoSize = true;

            rdoUSCLN.BackColor = Color.Transparent;

            rdoUSCLN.Checked = true;

            rdoUSCLN.Font = new Font("Arial", 10F);

            rdoUSCLN.Location = new Point(20, 35);

            rdoUSCLN.Name = "rdoUSCLN";

            rdoUSCLN.Size = new Size(84, 23);

            rdoUSCLN.TabIndex = 0;

            rdoUSCLN.TabStop = true;

            rdoUSCLN.Text = "USCLN";

            rdoUSCLN.UseVisualStyleBackColor = false;

            //

            // rdoBSCNN

            //

            rdoBSCNN.AutoSize = true;

            rdoBSCNN.BackColor = Color.Transparent;

            rdoBSCNN.Font = new Font("Arial", 10F);

            rdoBSCNN.Location = new Point(20, 70);

            rdoBSCNN.Name = "rdoBSCNN";

            rdoBSCNN.Size = new Size(86, 23);

            rdoBSCNN.TabIndex = 1;

            rdoBSCNN.Text = "BSCNN";

            rdoBSCNN.UseVisualStyleBackColor = false;

            //

            // lblKetQua

            //

            lblKetQua.AutoSize = true;

            lblKetQua.Font = new Font("Arial", 10F, FontStyle.Bold);

            lblKetQua.Location = new Point(20, 160);

            lblKetQua.Name = "lblKetQua";

            lblKetQua.Size = new Size(76, 19);

            lblKetQua.TabIndex = 2;

            lblKetQua.Text = "Kết quả:";

            //

            // txtKetQua

            //

            txtKetQua.BackColor = Color.White;

            txtKetQua.Font = new Font("Arial", 10F);

            txtKetQua.Location = new Point(20, 185);

            txtKetQua.Name = "txtKetQua";

            txtKetQua.ReadOnly = true;

            txtKetQua.Size = new Size(280, 27);

            txtKetQua.TabIndex = 3;

            //

            // btnTim

            //

            btnTim.BackColor = Color.FromArgb(173, 216, 230);

            btnTim.Cursor = Cursors.Hand;

            btnTim.FlatStyle = FlatStyle.Popup;

            btnTim.Font = new Font("Arial", 10F, FontStyle.Bold);

            btnTim.Location = new Point(360, 185);

            btnTim.Name = "btnTim";

            btnTim.Size = new Size(80, 30);

            btnTim.TabIndex = 4;

            btnTim.Text = "Tìm";

            btnTim.UseVisualStyleBackColor = false;

            btnTim.Click += btnTim\_Click;

            //

            // btnThoat

            //

            btnThoat.BackColor = Color.FromArgb(255, 182, 193);

            btnThoat.Cursor = Cursors.Hand;

            btnThoat.FlatStyle = FlatStyle.Popup;

            btnThoat.Font = new Font("Arial", 10F, FontStyle.Bold);

            btnThoat.Location = new Point(360, 230);

            btnThoat.Name = "btnThoat";

            btnThoat.Size = new Size(80, 30);

            btnThoat.TabIndex = 5;

            btnThoat.Text = "Thoát";

            btnThoat.UseVisualStyleBackColor = false;

            btnThoat.Click += btnThoat\_Click;

            //

            // Form2

            //

            BackColor = Color.FromArgb(245, 245, 245);

            ClientSize = new Size(480, 350);

            Controls.Add(grpNhapDuLieu);

            Controls.Add(grpTuyChon);

            Controls.Add(lblKetQua);

            Controls.Add(txtKetQua);

            Controls.Add(btnTim);

            Controls.Add(btnThoat);

            FormBorderStyle = FormBorderStyle.FixedSingle;

            MaximizeBox = false;

            Name = "Form2";

            StartPosition = FormStartPosition.CenterScreen;

            Text = "Tìm USCLN và BSCNN của số nguyên a và b";

            grpNhapDuLieu.ResumeLayout(false);

            grpNhapDuLieu.PerformLayout();

            grpTuyChon.ResumeLayout(false);

            grpTuyChon.PerformLayout();

            ResumeLayout(false);

            PerformLayout();

        }

        // Hàm tính USCLN (Ước số chung lớn nhất)

        private int TinhUSCLN(int a, int b)

        {

            a = Math.Abs(a);

            b = Math.Abs(b);

            while (b != 0)

            {

                int temp = b;

                b = a % b;

                a = temp;

            }

            return a;

        }

        // Hàm tính BSCNN (Bội số chung nhỏ nhất)

        private int TinhBSCNN(int a, int b)

        {

            if (a == 0 || b == 0) return 0;

            int uscln = TinhUSCLN(a, b);

            return Math.Abs(a \* b) / uscln;

        }

        // Hàm kiểm tra và lấy số nguyên từ textbox

        private bool LayGiaTri(out int a, out int b)

        {

            bool hopLe1 = int.TryParse(txtA.Text.Trim(), out a);

            bool hopLe2 = int.TryParse(txtB.Text.Trim(), out b);

            if (!hopLe1 || !hopLe2)

            {

                MessageBox.Show("Vui lòng nhập số nguyên hợp lệ!", "Lỗi nhập liệu",

                               MessageBoxButtons.OK, MessageBoxIcon.Warning);

                return false;

            }

            if (a == 0 && b == 0)

            {

                MessageBox.Show("Không thể tính USCLN và BSCNN khi cả hai số đều bằng 0!", "Lỗi",

                               MessageBoxButtons.OK, MessageBoxIcon.Warning);

                return false;

            }

            return true;

        }

        // Event handler cho button Tìm

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

        {

            if (LayGiaTri(out int a, out int b))

            {

                int ketQua;

                string loaiPhepTinh;

                if (rdoUSCLN.Checked)

                {

                    ketQua = TinhUSCLN(a, b);

                    loaiPhepTinh = "USCLN";

                }

                else

                {

                    ketQua = TinhBSCNN(a, b);

                    loaiPhepTinh = "BSCNN";

                }

                txtKetQua.Text = $"{loaiPhepTinh}({a}, {b}) = {ketQua}";

            }

        }

        // Event handler cho button Thoát

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

        {

            DialogResult result = MessageBox.Show("Bạn có chắc chắn muốn thoát?", "Xác nhận",

                                                 MessageBoxButtons.YesNo, MessageBoxIcon.Question);

            if (result == DialogResult.Yes)

            {

                this.Close();

            }

        }

        private void Form2\_Load(object sender, EventArgs e)

        {

            txtA.Focus();

        }

    }

}

**Nhớ đổi Program.cs qua Form2**

**Áp dụng 2**: Thêm vào một project có tên là “ApDung2”, comment tất cả code “ApDung2.Designer.cs

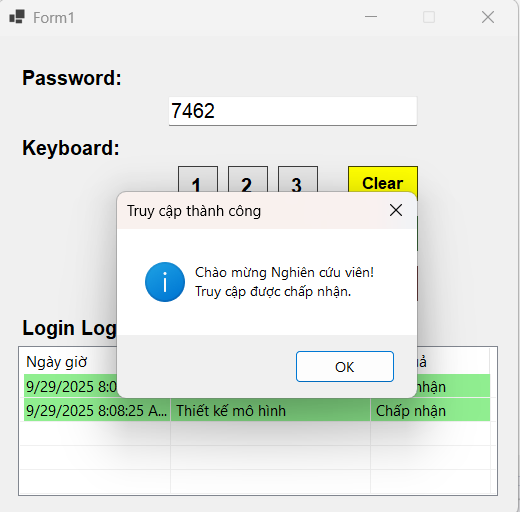
Nếu nhập đúng password

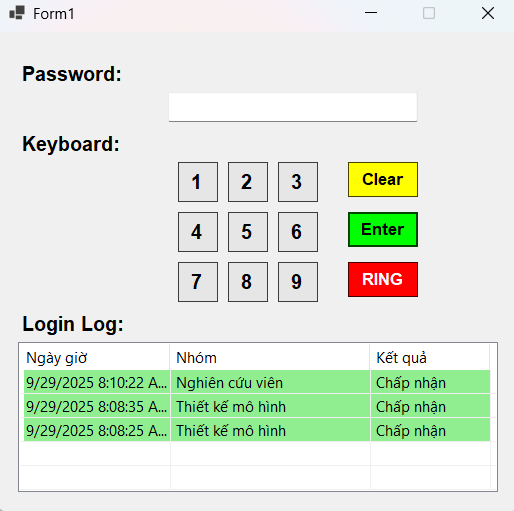
2673,1496: Phát triển công nghệ

7462: Nghiên cứu viên

8884, 3842, 3383: Thiết kế mô hình

sẽ hiển thị





Code ApDung2.cs:  
using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public class Form3 : Form

    {

        private Label lblPassword;

        private TextBox txtPassword;

        private Label lblKeyboard;

        private Button btn1, btn2, btn3, btn4, btn5, btn6, btn7, btn8, btn9;

        private Button btnClear, btnEnter, btnRing;

        private Label lblLoginLog;

        private ListView listViewLog;

        // Dictionary chứa password và tên nhóm

        private Dictionary<string, string> validPasswords;

        public Form3()

        {

            InitializeComponent();

            InitializePasswords();

        }

        private void InitializePasswords()

        {

            validPasswords = new Dictionary<string, string>

            {

                {"1496", "Phát triển công nghệ"},

                {"2673", "Phát triển công nghệ"},

                {"7462", "Nghiên cứu viên"},

                {"8884", "Thiết kế mô hình"},

                {"3842", "Thiết kế mô hình"},

                {"3383", "Thiết kế mô hình"}

            };

        }

        private void InitializeComponent()

        {

            // Khởi tạo controls

            this.lblPassword = new Label();

            this.txtPassword = new TextBox();

            this.lblKeyboard = new Label();

            this.btn1 = new Button();

            this.btn2 = new Button();

            this.btn3 = new Button();

            this.btn4 = new Button();

            this.btn5 = new Button();

            this.btn6 = new Button();

            this.btn7 = new Button();

            this.btn8 = new Button();

            this.btn9 = new Button();

            this.btnClear = new Button();

            this.btnEnter = new Button();

            this.btnRing = new Button();

            this.lblLoginLog = new Label();

            this.listViewLog = new ListView();

            this.SuspendLayout();

            // Thiết lập Form

            this.Text = "Form1";

            this.ClientSize = new Size(520, 480);

            this.StartPosition = FormStartPosition.CenterScreen;

            this.FormBorderStyle = FormBorderStyle.FixedSingle;

            this.MaximizeBox = false;

            this.BackColor = Color.FromArgb(240, 240, 240);

            // Label Password

            this.lblPassword.Text = "Password:";

            this.lblPassword.Font = new Font("Arial", 12F, FontStyle.Bold);

            this.lblPassword.Location = new Point(20, 30);

            this.lblPassword.AutoSize = true;

            // TextBox Password

            this.txtPassword.Location = new Point(170, 60);

            this.txtPassword.Size = new Size(250, 23);

            this.txtPassword.Font = new Font("Arial", 12F);

            this.txtPassword.BorderStyle = BorderStyle.Fixed3D;

            this.txtPassword.ReadOnly = true;

            this.txtPassword.BackColor = Color.White;

            // Label Keyboard

            this.lblKeyboard.Text = "Keyboard:";

            this.lblKeyboard.Font = new Font("Arial", 12F, FontStyle.Bold);

            this.lblKeyboard.Location = new Point(20, 100);

            this.lblKeyboard.AutoSize = true;

            // Tạo bàn phím số (3x3)

            int startX = 180;

            int startY = 130;

            int buttonSize = 40;

            int spacing = 10;

            // Hàng 1: 1, 2, 3

            this.btn1.Text = "1";

            this.btn1.Size = new Size(buttonSize, buttonSize);

            this.btn1.Location = new Point(startX, startY);

            this.btn1.Click += (s, e) => AddDigit("1");

            this.btn2.Text = "2";

            this.btn2.Size = new Size(buttonSize, buttonSize);

            this.btn2.Location = new Point(startX + buttonSize + spacing, startY);

            this.btn2.Click += (s, e) => AddDigit("2");

            this.btn3.Text = "3";

            this.btn3.Size = new Size(buttonSize, buttonSize);

            this.btn3.Location = new Point(startX + 2 \* (buttonSize + spacing), startY);

            this.btn3.Click += (s, e) => AddDigit("3");

            // Hàng 2: 4, 5, 6

            this.btn4.Text = "4";

            this.btn4.Size = new Size(buttonSize, buttonSize);

            this.btn4.Location = new Point(startX, startY + buttonSize + spacing);

            this.btn4.Click += (s, e) => AddDigit("4");

            this.btn5.Text = "5";

            this.btn5.Size = new Size(buttonSize, buttonSize);

            this.btn5.Location = new Point(startX + buttonSize + spacing, startY + buttonSize + spacing);

            this.btn5.Click += (s, e) => AddDigit("5");

            this.btn6.Text = "6";

            this.btn6.Size = new Size(buttonSize, buttonSize);

            this.btn6.Location = new Point(startX + 2 \* (buttonSize + spacing), startY + buttonSize + spacing);

            this.btn6.Click += (s, e) => AddDigit("6");

            // Hàng 3: 7, 8, 9

            this.btn7.Text = "7";

            this.btn7.Size = new Size(buttonSize, buttonSize);

            this.btn7.Location = new Point(startX, startY + 2 \* (buttonSize + spacing));

            this.btn7.Click += (s, e) => AddDigit("7");

            this.btn8.Text = "8";

            this.btn8.Size = new Size(buttonSize, buttonSize);

            this.btn8.Location = new Point(startX + buttonSize + spacing, startY + 2 \* (buttonSize + spacing));

            this.btn8.Click += (s, e) => AddDigit("8");

            this.btn9.Text = "9";

            this.btn9.Size = new Size(buttonSize, buttonSize);

            this.btn9.Location = new Point(startX + 2 \* (buttonSize + spacing), startY + 2 \* (buttonSize + spacing));

            this.btn9.Click += (s, e) => AddDigit("9");

            // Các button chức năng bên phải

            int funcButtonX = startX + 3 \* (buttonSize + spacing) + 20;

            // Button Clear (màu vàng)

            this.btnClear.Text = "Clear";

            this.btnClear.Size = new Size(70, 35);

            this.btnClear.Location = new Point(funcButtonX, startY);

            this.btnClear.BackColor = Color.Yellow;

            this.btnClear.Font = new Font("Arial", 10F, FontStyle.Bold);

            this.btnClear.FlatStyle = FlatStyle.Popup;

            this.btnClear.Click += new EventHandler(this.btnClear\_Click);

            // Button Enter (màu xanh lá)

            this.btnEnter.Text = "Enter";

            this.btnEnter.Size = new Size(70, 35);

            this.btnEnter.Location = new Point(funcButtonX, startY + 50);

            this.btnEnter.BackColor = Color.Lime;

            this.btnEnter.Font = new Font("Arial", 10F, FontStyle.Bold);

            this.btnEnter.FlatStyle = FlatStyle.Popup;

            this.btnEnter.Click += new EventHandler(this.btnEnter\_Click);

            // Button Ring (màu đỏ)

            this.btnRing.Text = "RING";

            this.btnRing.Size = new Size(70, 35);

            this.btnRing.Location = new Point(funcButtonX, startY + 100);

            this.btnRing.BackColor = Color.Red;

            this.btnRing.ForeColor = Color.White;

            this.btnRing.Font = new Font("Arial", 10F, FontStyle.Bold);

            this.btnRing.FlatStyle = FlatStyle.Popup;

            this.btnRing.Click += new EventHandler(this.btnRing\_Click);

            // Thiết lập style chung cho tất cả button số

            Button[] numberButtons = { btn1, btn2, btn3, btn4, btn5, btn6, btn7, btn8, btn9 };

            foreach (Button btn in numberButtons)

            {

                btn.Font = new Font("Arial", 12F, FontStyle.Bold);

                btn.BackColor = Color.FromArgb(230, 230, 230);

                btn.FlatStyle = FlatStyle.Popup;

                btn.Cursor = Cursors.Hand;

            }

            // Label Login Log

            this.lblLoginLog.Text = "Login Log:";

            this.lblLoginLog.Font = new Font("Arial", 12F, FontStyle.Bold);

            this.lblLoginLog.Location = new Point(20, 280);

            this.lblLoginLog.AutoSize = true;

            // ListView cho log

            this.listViewLog.Location = new Point(20, 310);

            this.listViewLog.Size = new Size(480, 150);

            this.listViewLog.View = View.Details;

            this.listViewLog.FullRowSelect = true;

            this.listViewLog.GridLines = true;

            this.listViewLog.HeaderStyle = ColumnHeaderStyle.Nonclickable;

            // Thêm columns cho ListView

            this.listViewLog.Columns.Add("Ngày giờ", 150);

            this.listViewLog.Columns.Add("Nhóm", 200);

            this.listViewLog.Columns.Add("Kết quả", 120);

            // Thêm tất cả controls vào form

            this.Controls.Add(this.lblPassword);

            this.Controls.Add(this.txtPassword);

            this.Controls.Add(this.lblKeyboard);

            this.Controls.Add(this.btn1);

            this.Controls.Add(this.btn2);

            this.Controls.Add(this.btn3);

            this.Controls.Add(this.btn4);

            this.Controls.Add(this.btn5);

            this.Controls.Add(this.btn6);

            this.Controls.Add(this.btn7);

            this.Controls.Add(this.btn8);

            this.Controls.Add(this.btn9);

            this.Controls.Add(this.btnClear);

            this.Controls.Add(this.btnEnter);

            this.Controls.Add(this.btnRing);

            this.Controls.Add(this.lblLoginLog);

            this.Controls.Add(this.listViewLog);

            this.ResumeLayout(false);

            this.PerformLayout();

        }

        // Thêm số vào password

        private void AddDigit(string digit)

        {

            if (txtPassword.Text.Length < 10) // Giới hạn độ dài password

            {

                txtPassword.Text += digit;

            }

        }

        // Xóa password

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

        {

            txtPassword.Clear();

        }

        // Kiểm tra password và thêm log

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

        {

            string password = txtPassword.Text.Trim();

            string currentTime = DateTime.Now.ToString("M/d/yyyy h:mm:ss tt");

            if (string.IsNullOrEmpty(password))

            {

                MessageBox.Show("Vui lòng nhập password!", "Thông báo",

                               MessageBoxButtons.OK, MessageBoxIcon.Warning);

                return;

            }

            ListViewItem item = new ListViewItem(currentTime);

            if (validPasswords.ContainsKey(password))

            {

                // Password đúng

                string groupName = validPasswords[password];

                item.SubItems.Add(groupName);

                item.SubItems.Add("Chấp nhận");

                item.BackColor = Color.LightGreen;

                MessageBox.Show($"Chào mừng {groupName}!\nTruy cập được chấp nhận.", "Truy cập thành công",

                               MessageBoxButtons.OK, MessageBoxIcon.Information);

            }

            else

            {

                // Password sai

                item.SubItems.Add("Không có");

                item.SubItems.Add("Từ chối!");

                item.BackColor = Color.LightPink;

                MessageBox.Show("Password không đúng!\nTruy cập bị từ chối.", "Truy cập thất bại",

                               MessageBoxButtons.OK, MessageBoxIcon.Error);

            }

            // Thêm vào đầu danh sách (mới nhất ở trên)

            listViewLog.Items.Insert(0, item);

            // Xóa password sau khi kiểm tra

            txtPassword.Clear();

        }

        // Button Ring - có thể dùng để gọi chuông hoặc báo động

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

        {

            MessageBox.Show("CHUÔNG BÁO ĐỘNG!\nĐã gửi tín hiệu báo động đến bảo vệ.", "Ring Alert",

                           MessageBoxButtons.OK, MessageBoxIcon.Exclamation);

            // Thêm log cho việc nhấn Ring

            string currentTime = DateTime.Now.ToString("M/d/yyyy h:mm:ss tt");

            ListViewItem item = new ListViewItem(currentTime);

            item.SubItems.Add("Thiết kế mô hình!");

            item.SubItems.Add("Chấp nhận...");

            item.BackColor = Color.LightYellow;

            listViewLog.Items.Insert(0, item);

        }

        private void Form3\_Load(object sender, EventArgs e)

        {

            // Focus vào form khi load

            this.Focus();

        }

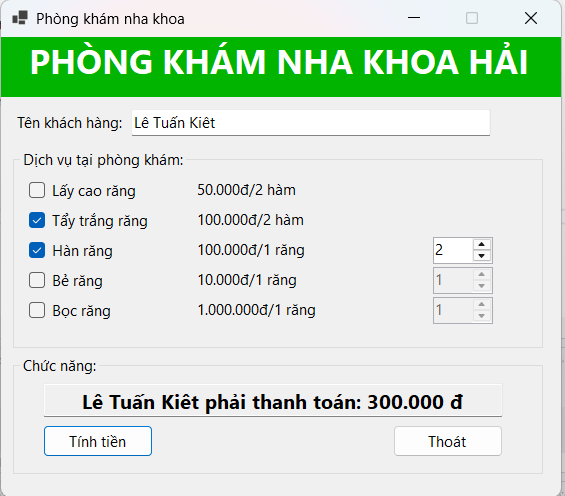
    }

}

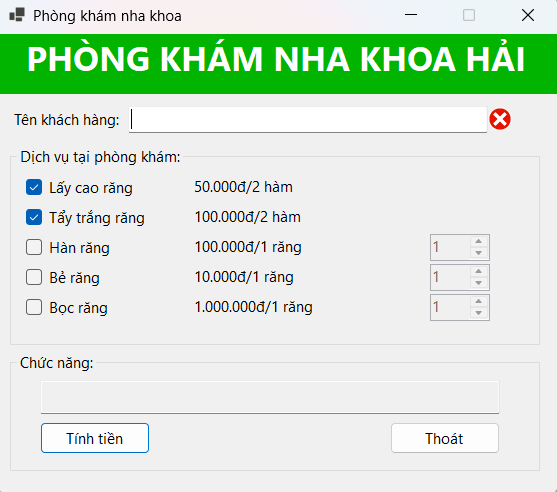
**Nhớ đổi Program.cs qua Form3**

**Thực hành 2:**

Tạo thêm một project tên “ThucHanh2”, comment tất cả code “ThucHanh2.Designer.cs”



Khi không nhập tên sẽ có cảnh báo



Code ThucHanh2.cs:

using System;

using System.Drawing;

using System.Globalization;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public class Form4 : Form

    {

        // ==== Constants (đơn giá) ====

        const int GIA\_LAY\_CAO\_RANG = 50\_000;     // 2 hàm

        const int GIA\_TAY\_TRANG   = 100\_000;     // 2 hàm

        const int GIA\_HAN\_RANG    = 100\_000;     // /1 răng

        const int GIA\_BE\_RANG     = 10\_000;      // /1 răng

        const int GIA\_BOC\_RANG    = 1\_000\_000;   // /1 răng

        // ==== Controls ====

        private Label lblTitle;

        private Label lblTenKh;

        private TextBox txtTenKh;

        private ErrorProvider err;

        private GroupBox grpDichVu;

        private CheckBox chkLayCaoRang, chkTayTrang, chkHanRang, chkBeRang, chkBocRang;

        private Label lblGiaLCR, lblGiaTTR, lblGiaHR, lblGiaBR, lblGiaBoc;

        private NumericUpDown nupHanRang, nupBeRang, nupBocRang;

        private GroupBox grpChucNang;

        private Button btnTinhTien, btnThoat;

        private TextBox txtThanhTien;

        public Form4()

        {

            InitializeComponent();

        }

        private void InitializeComponent()

        {

            // ===== Form =====

            Text = "Phòng khám nha khoa";

            StartPosition = FormStartPosition.CenterScreen;

            ClientSize = new Size(560, 460);

            FormBorderStyle = FormBorderStyle.FixedSingle;

            MaximizeBox = false;

            // ===== Title =====

            lblTitle = new Label

            {

                Dock = DockStyle.Top,

                Height = 60,

                Text = "PHÒNG KHÁM NHA KHOA HẢI ÂU",

                TextAlign = ContentAlignment.MiddleCenter,

                ForeColor = Color.White,

                BackColor = Color.FromArgb(0, 180, 0),

                Font = new Font("Segoe UI", 20, FontStyle.Bold)

            };

            Controls.Add(lblTitle);

            // ===== Tên khách hàng =====

            lblTenKh = new Label { Text = "Tên khách hàng:", Location = new Point(12, 75), AutoSize = true };

            txtTenKh = new TextBox { Location = new Point(130, 72), Width = 360 };

            txtTenKh.Validating += txtTenKh\_Validating;

            err = new ErrorProvider();

            err.BlinkStyle = ErrorBlinkStyle.NeverBlink;

            err.ContainerControl = this;

            Controls.Add(lblTenKh);

            Controls.Add(txtTenKh);

            // ===== Group Dịch vụ =====

            grpDichVu = new GroupBox

            {

                Text = "Dịch vụ tại phòng khám:",

                Location = new Point(12, 112),

                Size = new Size(530, 200)

            };

            Controls.Add(grpDichVu);

            // Checkboxes

            chkLayCaoRang = new CheckBox { Text = "Lấy cao răng", Location = new Point(16, 30), AutoSize = true, Checked = true };

            chkTayTrang   = new CheckBox { Text = "Tẩy trắng răng", Location = new Point(16, 60), AutoSize = true, Checked = true };

            chkHanRang    = new CheckBox { Text = "Hàn răng", Location = new Point(16, 90), AutoSize = true };

            chkBeRang     = new CheckBox { Text = "Bẻ răng", Location = new Point(16, 120), AutoSize = true };

            chkBocRang    = new CheckBox { Text = "Bọc răng", Location = new Point(16, 150), AutoSize = true };

            // Labels giá

            lblGiaLCR = new Label { Text = "50.000đ/2 hàm", Location = new Point(180, 30), AutoSize = true };

            lblGiaTTR = new Label { Text = "100.000đ/2 hàm", Location = new Point(180, 60), AutoSize = true };

            lblGiaHR  = new Label { Text = "100.000đ/1 răng", Location = new Point(180, 90), AutoSize = true };

            lblGiaBR  = new Label { Text = "10.000đ/1 răng", Location = new Point(180, 120), AutoSize = true };

            lblGiaBoc = new Label { Text = "1.000.000đ/1 răng", Location = new Point(180, 150), AutoSize = true };

            // NumericUpDown (số răng)

            nupHanRang = MakeNup(new Point(420, 88));

            nupBeRang  = MakeNup(new Point(420, 118));

            nupBocRang = MakeNup(new Point(420, 148));

            // Mặc định disable nếu chưa tick

            ToggleNupWithCheckbox(chkHanRang, nupHanRang);

            ToggleNupWithCheckbox(chkBeRang,  nupBeRang);

            ToggleNupWithCheckbox(chkBocRang, nupBocRang);

            // Sự kiện bật/tắt

            chkHanRang.CheckedChanged += (s, e) => ToggleNupWithCheckbox(chkHanRang, nupHanRang);

            chkBeRang.CheckedChanged  += (s, e) => ToggleNupWithCheckbox(chkBeRang,  nupBeRang);

            chkBocRang.CheckedChanged += (s, e) => ToggleNupWithCheckbox(chkBocRang, nupBocRang);

            grpDichVu.Controls.AddRange(new Control[]

            {

                chkLayCaoRang, chkTayTrang, chkHanRang, chkBeRang, chkBocRang,

                lblGiaLCR, lblGiaTTR, lblGiaHR, lblGiaBR, lblGiaBoc,

                nupHanRang, nupBeRang, nupBocRang

            });

            // ===== Group Chức năng =====

            grpChucNang = new GroupBox { Text = "Chức năng:", Location = new Point(12, 318), Size = new Size(530, 120) };

            Controls.Add(grpChucNang);

            btnTinhTien = new Button { Text = "Tính tiền", Location = new Point(30, 70), Size = new Size(110, 32) };

            btnThoat    = new Button { Text = "Thoát", Location = new Point(380, 70), Size = new Size(110, 32) };

            btnTinhTien.Click += btnTinhTien\_Click;

            btnThoat.Click += (s, e) => Close();

            txtThanhTien = new TextBox

            {

                Location = new Point(30, 28),

                Size = new Size(460, 30),

                ReadOnly = true,

                Font = new Font("Segoe UI", 12, FontStyle.Bold),

                TextAlign = HorizontalAlignment.Center

            };

            grpChucNang.Controls.AddRange(new Control[] { txtThanhTien, btnTinhTien, btnThoat });

            // Phím tắt

            AcceptButton = btnTinhTien;

            CancelButton = btnThoat;

        }

        private NumericUpDown MakeNup(Point p) =>

            new NumericUpDown { Location = p, Size = new Size(60, 27), Minimum = 1, Maximum = 32, Value = 1 };

        private void ToggleNupWithCheckbox(CheckBox chk, NumericUpDown nup)

        {

            nup.Enabled = chk.Checked;

            if (!chk.Checked) nup.Value = 1;

        }

        private void txtTenKh\_Validating(object? sender, System.ComponentModel.CancelEventArgs e)

        {

            if (string.IsNullOrWhiteSpace(txtTenKh.Text))

            {

                e.Cancel = true;

                err.SetError(txtTenKh, "Tên khách hàng không được để trống!");

            }

            else err.SetError(txtTenKh, null);

        }

        private void btnTinhTien\_Click(object? sender, EventArgs e)

        {

            if (!ValidateChildren(ValidationConstraints.Enabled))

            {

                txtTenKh.Focus();

                return;

            }

            long thanhTien = 0;

            if (chkLayCaoRang.Checked) thanhTien += GIA\_LAY\_CAO\_RANG;

            if (chkTayTrang.Checked)   thanhTien += GIA\_TAY\_TRANG;

            if (chkHanRang.Checked)    thanhTien += (long)nupHanRang.Value \* GIA\_HAN\_RANG;

            if (chkBeRang.Checked)     thanhTien += (long)nupBeRang.Value  \* GIA\_BE\_RANG;

            if (chkBocRang.Checked)    thanhTien += (long)nupBocRang.Value \* GIA\_BOC\_RANG;

            txtThanhTien.Text =

                $"{txtTenKh.Text.Trim()} phải thanh toán: {thanhTien.ToString("N0", new CultureInfo("vi-VN"))} đ";

        }

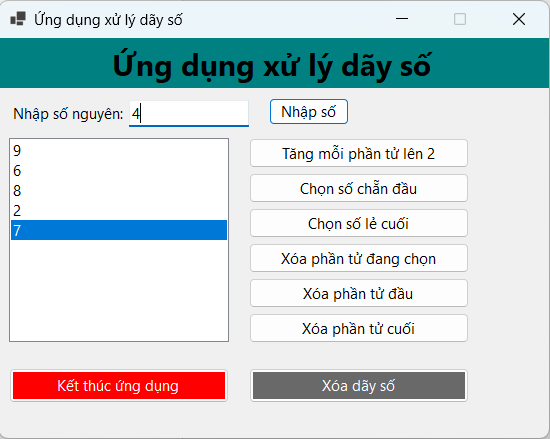
    }

}

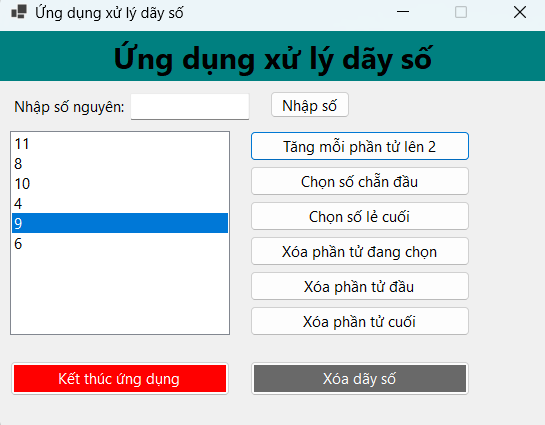
**Nhớ đổi Program.cs qua Form4**

**Áp dụng 3:**

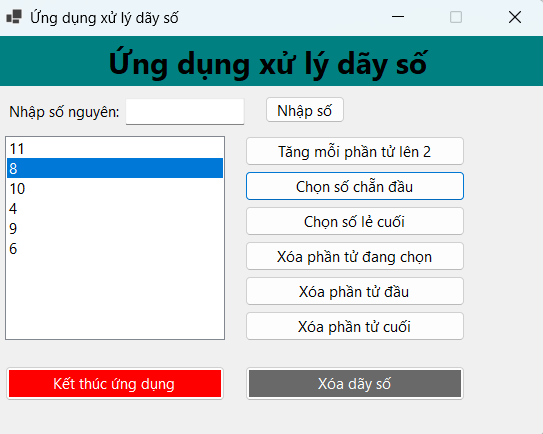
Tạo project tên “ApDung3”, comment tất cả code “ApDung3.Designer.cs”



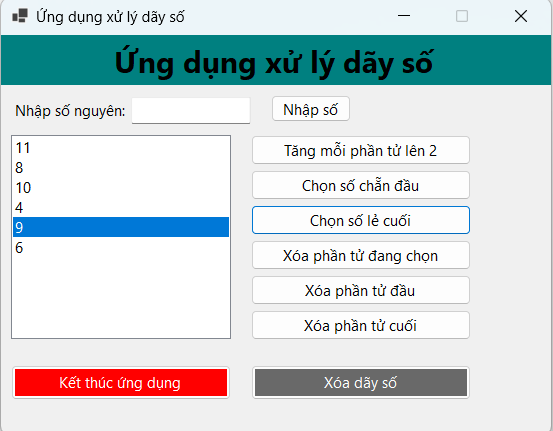
Tăng mỗi phần tử lên 2



Chọn số chẵn đầu



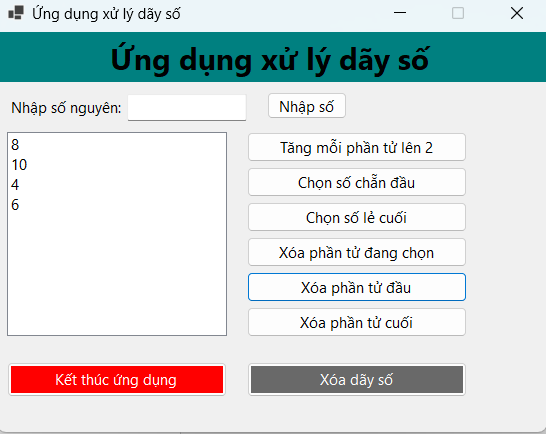
Chọn số lẻ cuối



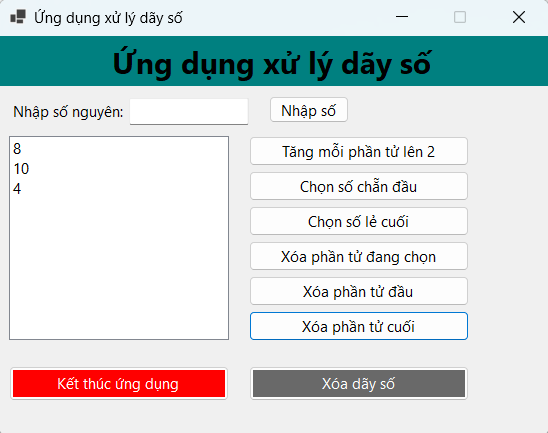
Xóa phần tử đang chọn



Xóa phần tử đầu



Xóa phần tử cuối



Xóa dãy số



Code ApDung3.cs:

using System;

using System.Drawing;

using System.Linq;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public class Form5 : Form

    {

        private Label lblTitle;

        private Label lblNhapSo;

        private TextBox txtNhapSo;

        private Button btnNhapSo;

        private ListBox lstDaySo;

        private Button btnTang2, btnChonSoChanDau, btnChonSoLeCuoi;

        private Button btnXoaDangChon, btnXoaPhanTuDau, btnXoaPhanTuCuoi;

        private Button btnKetThuc, btnXoaDaySo;

        public Form5()

        {

            InitializeComponent();

        }

        private void InitializeComponent()

        {

            // ===== Form =====

            Text = "Ứng dụng xử lý dãy số";

            StartPosition = FormStartPosition.CenterScreen;

            ClientSize = new Size(550, 400);

            FormBorderStyle = FormBorderStyle.FixedSingle;

            MaximizeBox = false;

            // ===== Title =====

            lblTitle = new Label

            {

                Dock = DockStyle.Top,

                Height = 50,

                Text = "Ứng dụng xử lý dãy số",

                TextAlign = ContentAlignment.MiddleCenter,

                ForeColor = Color.Black,

                BackColor = Color.Teal,

                Font = new Font("Segoe UI", 18, FontStyle.Bold)

            };

            Controls.Add(lblTitle);

            // ===== Nhập số =====

            lblNhapSo = new Label { Text = "Nhập số nguyên:", Location = new Point(10, 65), AutoSize = true };

            txtNhapSo = new TextBox { Location = new Point(130, 62), Width = 120 };

            // chỉ cho nhập số

            txtNhapSo.KeyPress += (s, e) =>

            {

                // chỉ cho số và phím điều khiển

                if (!char.IsControl(e.KeyChar) && !char.IsDigit(e.KeyChar))

                    e.Handled = true;

                // nếu Enter thì thêm số

                if (e.KeyChar == (char)Keys.Enter)

                {

                    e.Handled = true;

                    NhapSo();

                }

            };

            btnNhapSo = new Button { Text = "Nhập số", Location = new Point(270, 60), Size = new Size(80, 27) };

            btnNhapSo.Click += (s, e) => NhapSo();

            Controls.Add(lblNhapSo);

            Controls.Add(txtNhapSo);

            Controls.Add(btnNhapSo);

            // ===== ListBox =====

            lstDaySo = new ListBox { Location = new Point(10, 100), Size = new Size(220, 220) };

            Controls.Add(lstDaySo);

            // ===== Các nút chức năng =====

            int x = 250, y = 100, w = 220, h = 30, pad = 35;

            btnTang2 = new Button { Text = "Tăng mỗi phần tử lên 2", Location = new Point(x, y), Size = new Size(w, h) };

            btnTang2.Click += (s, e) =>

            {

                for (int i = 0; i < lstDaySo.Items.Count; i++)

                {

                    int val = int.Parse(lstDaySo.Items[i].ToString());

                    lstDaySo.Items[i] = (val + 2).ToString();

                }

            };

            btnChonSoChanDau = new Button { Text = "Chọn số chẵn đầu", Location = new Point(x, y += pad), Size = new Size(w, h) };

            btnChonSoChanDau.Click += (s, e) =>

            {

                lstDaySo.ClearSelected();

                for (int i = 0; i < lstDaySo.Items.Count; i++)

                {

                    if (int.Parse(lstDaySo.Items[i].ToString()) % 2 == 0)

                    {

                        lstDaySo.SelectedIndex = i;

                        break;

                    }

                }

            };

            btnChonSoLeCuoi = new Button { Text = "Chọn số lẻ cuối", Location = new Point(x, y += pad), Size = new Size(w, h) };

            btnChonSoLeCuoi.Click += (s, e) =>

            {

                lstDaySo.ClearSelected();

                for (int i = lstDaySo.Items.Count - 1; i >= 0; i--)

                {

                    if (int.Parse(lstDaySo.Items[i].ToString()) % 2 != 0)

                    {

                        lstDaySo.SelectedIndex = i;

                        break;

                    }

                }

            };

            btnXoaDangChon = new Button { Text = "Xóa phần tử đang chọn", Location = new Point(x, y += pad), Size = new Size(w, h) };

            btnXoaDangChon.Click += (s, e) =>

            {

                while (lstDaySo.SelectedItems.Count > 0)

                    lstDaySo.Items.Remove(lstDaySo.SelectedItems[0]);

            };

            btnXoaPhanTuDau = new Button { Text = "Xóa phần tử đầu", Location = new Point(x, y += pad), Size = new Size(w, h) };

            btnXoaPhanTuDau.Click += (s, e) =>

            {

                if (lstDaySo.Items.Count > 0)

                    lstDaySo.Items.RemoveAt(0);

            };

            btnXoaPhanTuCuoi = new Button { Text = "Xóa phần tử cuối", Location = new Point(x, y += pad), Size = new Size(w, h) };

            btnXoaPhanTuCuoi.Click += (s, e) =>

            {

                if (lstDaySo.Items.Count > 0)

                    lstDaySo.Items.RemoveAt(lstDaySo.Items.Count - 1);

            };

            // Nút dưới cùng

            btnKetThuc = new Button

            {

                Text = "Kết thúc ứng dụng",

                Location = new Point(10, 330),

                Size = new Size(220, 35),

                BackColor = Color.Red,

                ForeColor = Color.White

            };

            btnKetThuc.Click += (s, e) => Close();

            btnXoaDaySo = new Button

            {

                Text = "Xóa dãy số",

                Location = new Point(250, 330),

                Size = new Size(220, 35),

                BackColor = Color.DimGray,

                ForeColor = Color.White

            };

            btnXoaDaySo.Click += (s, e) => lstDaySo.Items.Clear();

            Controls.AddRange(new Control[]

            {

                btnTang2, btnChonSoChanDau, btnChonSoLeCuoi,

                btnXoaDangChon, btnXoaPhanTuDau, btnXoaPhanTuCuoi,

                btnKetThuc, btnXoaDaySo

            });

            AcceptButton = btnNhapSo;

            CancelButton = btnKetThuc;

        }

        // Thêm số mới vào ListBox

        private void NhapSo()

        {

            if (string.IsNullOrWhiteSpace(txtNhapSo.Text))

            {

                MessageBox.Show("Vui lòng nhập số nguyên!", "Thông báo",

                    MessageBoxButtons.OK, MessageBoxIcon.Warning);

                txtNhapSo.Focus();

                return;

            }

            lstDaySo.Items.Add(txtNhapSo.Text.Trim());

            txtNhapSo.Clear();

            txtNhapSo.Focus();

        }

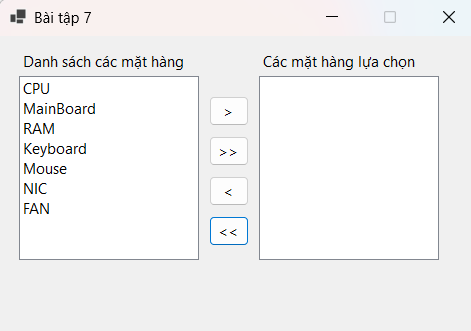
    }

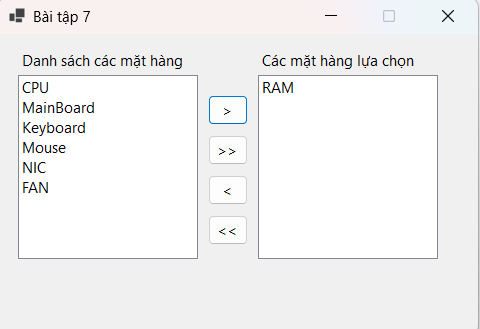
}

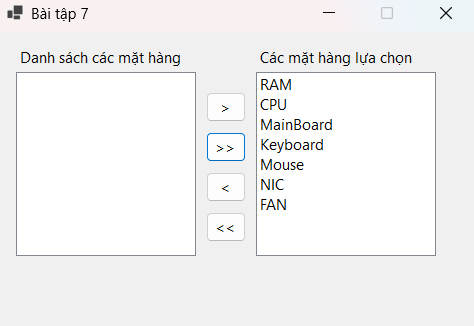
**Nhớ đổi Program.cs qua Form5**

**Áp dụng 4:**

Tạo project tên “ApDung4”, comment tất cả code “ApDung4.Designer.cs”







Code ApDung4.cs:

using System;

using System.Drawing;

using System.Windows.Forms;

namespace LeTuanKiet\_1150080022\_BTtuan5

{

    public class Form6 : Form

    {

        private Label lblMatHang, lblDaChon;

        private ListBox lstMatHang, lstDaChon;

        private Button btnChuyen1, btnChuyenAll, btnTra1, btnTraAll;

        public Form6()

        {

            InitializeComponent();

        }

        private void InitializeComponent()

        {

            // ===== Form =====

            Text = "Bài tập 7";

            StartPosition = FormStartPosition.CenterScreen;

            ClientSize = new Size(480, 300);

            FormBorderStyle = FormBorderStyle.FixedSingle;

            MaximizeBox = false;

            // ===== Labels =====

            lblMatHang = new Label

            {

                Text = "Danh sách các mặt hàng",

                Location = new Point(20, 15),

                AutoSize = true

            };

            lblDaChon = new Label

            {

                Text = "Các mặt hàng lựa chọn",

                Location = new Point(260, 15),

                AutoSize = true

            };

            Controls.Add(lblMatHang);

            Controls.Add(lblDaChon);

            // ===== ListBoxes =====

            lstMatHang = new ListBox

            {

                Location = new Point(20, 40),

                Size = new Size(180, 200),

                SelectionMode = SelectionMode.MultiExtended

            };

            lstMatHang.Items.AddRange(new object[]

            {

                "CPU","MainBoard","RAM","Keyboard","Mouse","NIC","FAN"

            });

            lstDaChon = new ListBox

            {

                Location = new Point(260, 40),

                Size = new Size(180, 200),

                SelectionMode = SelectionMode.MultiExtended

            };

            Controls.Add(lstMatHang);

            Controls.Add(lstDaChon);

            // ===== Buttons =====

            int bx = 210, by = 60, bw = 40, bh = 30, pad = 40;

            btnChuyen1 = new Button { Text = ">", Location = new Point(bx, by), Size = new Size(bw, bh) };

            btnChuyen1.Click += (s, e) => ChuyenSelected(lstMatHang, lstDaChon);

            btnChuyenAll = new Button { Text = ">>", Location = new Point(bx, by + pad), Size = new Size(bw, bh) };

            btnChuyenAll.Click += (s, e) => ChuyenAll(lstMatHang, lstDaChon);

            btnTra1 = new Button { Text = "<", Location = new Point(bx, by + 2 \* pad), Size = new Size(bw, bh) };

            btnTra1.Click += (s, e) => ChuyenSelected(lstDaChon, lstMatHang);

            btnTraAll = new Button { Text = "<<", Location = new Point(bx, by + 3 \* pad), Size = new Size(bw, bh) };

            btnTraAll.Click += (s, e) => ChuyenAll(lstDaChon, lstMatHang);

            Controls.AddRange(new Control[] { btnChuyen1, btnChuyenAll, btnTra1, btnTraAll });

        }

        // Chuyển các item được chọn từ src sang dest

        private void ChuyenSelected(ListBox src, ListBox dest)

        {

            var selected = src.SelectedItems;

            // copy ra mảng để tránh lỗi modify khi foreach

            object[] arr = new object[selected.Count];

            selected.CopyTo(arr, 0);

            foreach (var item in arr)

            {

                dest.Items.Add(item);

                src.Items.Remove(item);

            }

        }

        // Chuyển toàn bộ

        private void ChuyenAll(ListBox src, ListBox dest)

        {

            object[] arr = new object[src.Items.Count];

            src.Items.CopyTo(arr, 0);

            dest.Items.AddRange(arr);

            src.Items.Clear();

        }

    }

}

**Nhớ đổi Program.cs qua Form6**