

#### Exercise 9.4

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#pragma once
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namespace Ex9_4 {

    using namespace System;
    using namespace System::ComponentModel;
    using namespace System::Collections;
    using namespace System::Windows::Forms;
    using namespace System::Data;
    using namespace System::Drawing;

    /// <summary>
    /// Summary for Form1
    ///
    /// WARNING: If you change the name of this class, you will need to change the
    ///           'Resource File Name' property for the managed resource compiler tool
    ///           associated with all .resx files this class depends on. Otherwise,
    ///           the designers will not be able to interact properly with localized
    ///           resources associated with this form.
    /// </summary>
    public ref class Form1 : public System::Windows::Forms::Form
    {
    public:
        Form1(void)
        {
            InitializeComponent();
            X = 0; // Initialize the counter to 0
            Mul=1; //Initialize multiplier as 1; it controls the step of update
            this->SetStyle(static_cast<ControlStyles>
(ControlStyles::AllPaintingInWmPaint | ControlStyles::DoubleBuffer |
ControlStyles::UserPaint), true);
            this->UpdateStyles();
        }
        private: System::Windows::Forms::Button^ button1;
        public:
        private: System::Windows::Forms::Button^ button2;
        private: int X; // Serve as a counter of the position of the picture
        private: int Mul; //Serve as a multiplier for the X-coordinate

    protected:
        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        ~Form1()
        {
            if (components)
            {
                delete components;
            }
        }
        private: System::Windows::Forms::Label^ label1;
        protected:
        private: System::Windows::Forms::Timer^ timer1;
        private: System::ComponentModel::IContainer^ components;

    private:
        /// <summary>
        /// Required designer variable.
        /// </summary>

#pragma region Windows Form Designer generated code
        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        void InitializeComponent(void)
        {
            this->components = (gcnew System::ComponentModel::Container());

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this->label1 = (gcnew System::Windows::Forms::Label());
this->timer1 = (gcnew System::Windows::Forms::Timer(this->components));
this->button1 = (gcnew System::Windows::Forms::Button());
this->button2 = (gcnew System::Windows::Forms::Button());
this->SuspendLayout();
//
// label1
//
this->label1->AutoSize = true;
this->label1->Location = System::Drawing::Point(243, 215);
this->label1->Name = L"label1";
this->label1->Size = System::Drawing::Size(35, 13);
this->label1->TabIndex = 0;
this->label1->Text = L"label1";
this->label1->Click += gcnew System::EventHandler(this,
&Form1::label1_Click);
//
// timer1
//
this->timer1->Enabled = true;
this->timer1->Interval = 10;
this->timer1->Tick += gcnew System::EventHandler(this,
&Form1::timer1_Tick);
//
// button1
//
this->button1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 15.75F, System::Drawing::FontStyle::Regular,
System::Drawing::GraphicsUnit::Point,
    static_cast<System::Byte>(0)));
this->button1->Location = System::Drawing::Point(425, 204);
this->button1->Name = L"button1";
this->button1->Size = System::Drawing::Size(75, 37);
this->button1->TabIndex = 1;
this->button1->Text = L"+";
this->button1->TextAlign =
System::Drawing::ContentAlignment::TopCenter;
this->button1->UseVisualStyleBackColor = true;
this->button1->Click += gcnew System::EventHandler(this,
&Form1::button1_Click);
//
// button2
//
this->button2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 15.75F, System::Drawing::FontStyle::Regular,
System::Drawing::GraphicsUnit::Point,
    static_cast<System::Byte>(0)));
this->button2->Location = System::Drawing::Point(331, 204);
this->button2->Name = L"button2";
this->button2->Size = System::Drawing::Size(75, 37);
this->button2->TabIndex = 2;
this->button2->Text = L"-";
this->button2->TextAlign =
System::Drawing::ContentAlignment::TopCenter;
this->button2->UseVisualStyleBackColor = true;
this->button2->Click += gcnew System::EventHandler(this,
&Form1::button2_Click);
//
// Form1
//
this->AutoScaleDimensions = System::Drawing::SizeF(6, 13);
this->AutoScaleMode = System::Windows::Forms::AutoScaleMode::Font;
this->ClientSize = System::Drawing::Size(529, 273);
this->Controls->Add(this->button2);
this->Controls->Add(this->button1);
this->Controls->Add(this->label1);
this->Name = L"Form1";
this->Text = L"Form1";
this->Paint += gcnew System::Windows::Forms::PaintEventHandler(this,
&Form1::Form1_Paint);
this->ResumeLayout(false);

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        this->PerformLayout();
    }
#pragma endregion
private: System::Void timer1_Tick(System::Object^ sender, System::EventArgs^ e)
{
    if (X%10 == 0) // If X is a multiple of 10,
        labell->Text = ""+X; // show its value on labell
    Invalidate(); // Generate a Paint message to Form1
}

private: System::Void Form1_Paint(System::Object^ sender,
System::Windows::Forms::PaintEventArgs^ e) {
    Graphics ^g = e->Graphics;
    if(X*Mul < this->Size.Width)
        X += 1;
    else
        X = 0;
    Bitmap ^bp = gcnew Bitmap("e:\\temp\\cards\\h1.gif");
    g->DrawImage(bp, X*Mul, 25);
    Drawing::Rectangle Head = Drawing::Rectangle(this->Size.Width-X*Mul, 25,
70, 70);
    g->FillEllipse(Brushes::Yellow, Head);
    Pen ^b4pen = gcnew Pen(Color::Black, 4);
    g->DrawEllipse(b4pen, Head);
}

private: System::Void labell_Click(System::Object^ sender, System::EventArgs^
e)
{
    timer1->Enabled = !(timer1->Enabled);
}

private: System::Void button1_Click(System::Object^ sender, System::EventArgs^ e) {
    Mul=Mul*2; //doubling speed
}

private: System::Void button2_Click(System::Object^ sender, System::EventArgs^ e) {
    if (Mul>1)
        Mul=Mul/2; //Mul<1 will make Mul=0
}
};
}

```