Colegiul Naţional „Ion C. Bratianu ”
Pitesti

Atestat la informatică

GRAPHMASTER

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Introducere

Cel mai bun exemplu de aplicatie practica in viata reala a grafurilor neorientate sunt hartile rutiere. Putem afla astfel cel mai scurt drum pana intr-un anumit punct sau care puncte de pe harta sunt cel mai usor accesibil.Nodurile pot fi considerate orase, iar muchiile drumuri; grafurile orientate pot reprezente drumuri cu sens unic intre cladiri.

De asemenea, ne putem reprezenta traiectoria unei calatorii cu ajutorul unui lant al unui graf neorientat.

Grafurile mai pot arata legaturile dintre anuminte grupuri sau oameni; grafuri orientate pot arata transferul de informatii sau a unor bunuri.Un arbore genealogic este de asemena un graf neorientat.

Cablurile de inalta tensiune care pornesc dintr-o centrala pot fi si ele reprezentate cu usurinta cu ajutorul unui graf orientat, indicand si directia de deplasare a curentului. In acest caz centrala este un nod sursa. La fel se poate reprezenta si un sistem de canalizare, de incalzire sau reteaua de apa curenta.

Multitudinea cailor aeriene reprezinta grafuri. Nodurile sunt intersectiile (imaginare) si muchiile sunt rutele (imaginare). Noduri pot fi si aeroporturile.

Teoria grafurilor are numeroase apeluri in chimie, contribuind in mare masura la rezolvarea problemelor de numarare a grafurilor apartinand unor clase speciale. Teoria grafurilor este folosita in domenii variate: de la chimie la economie, de la studiul retelelor electrice la critica textelor de politica, devenind o disciplina majora.

Asadar, eu am creat aceasta aplicatie pentru a le deschide calea elevilor de gimnaziu, dar si de liceu, in lumea grafurilor, dar si a informaticii si pentru a-i ajuta sa invete,sa isi dezvolte gandirea introducandu-i intr-o ramura a informaticii foarte utilizata in problemele algoritmice cotidiene.

Generalitati despre limbajul c# şi platforma .net

Numele limbajului C# a fost inspirat din notaţia ♯ (diez) din muzică, care indică faptul că nota muzicală urmată de ♯ este mai înaltă cu un semiton. Este o similitudine cu numele limbajului C++, unde ++ reprezintă atât incrementarea unei variabile cu valoarea 1, dar şi faptul că C++ este mai mult decât limbajul C. Limbajul C# a fost dezvoltat în cadrul Microsoft. Principalii creatori ai limbajului sunt Anders Hejlsberg, Scott Wiltamuth şi Peter Golde. Prima implementare C# larg distribuită a fost lansată de către Microsoft ca parte a iniţiativei .NET în iulie 2000. Din acel moment, se poate vorbi despre o evoluţie spectaculoasă. Mii de programatori de C, C++ şi Java, au migrat cu uşurinţă spre C#, graţie asemănării acestor limbaje, dar mai ales calităţilor noului limbaj. La acest moment, C# şi-a câştigat şi atrage în continuare numeroşi adepţi, devenind unul dintre cele mai utilizate limbaje din lume. Creatorii C# au intenţionat să înzestreze limbajul cu mai multe facilităţi. Succesul de care se bucură în prezent, confirmă calităţile sale:

- Este un limbaj de programare simplu, modern, de utilitate generală, cu productivitate mare în programare.
- Este un limbaj orientat pe obiecte.
- Permite dezvoltarea de aplicaţii industriale robuste, durabile.
- Oferă suport complet pentru dezvoltarea de componente software, foarte necesare de pildă în medii distribuite. De altfel, se poate caracteriza C# ca fiind nu numai orientat obiect, ci şi orientat spre componente. La aceste caracteristici generale se adaugă şi alte trăsături, cum este de pildă suportul pentru internaţionalizare, adică posibilitatea de a scrie aplicaţii care pot fi adaptate cu uşurinţă pentru a fi utilizate în diferite regiuni ale lumii unde se vorbesc limbi diferite, fără să fie necesare pentru aceasta schimbări în arhitectura software. În strânsă legatură cu Arhitectura .NET (.NET Framework) pe care funcţionează, C# gestionează în mod automat memoria utilizată. Eliberarea memoriei ocupate (garbage collection) de către obiectele care nu mai sunt necesare aplicaţiei, este o facilitate importantă a limbajului. Programatorii nu mai trebuie să decidă singuri, aşa cum o fac de pildă în C++, care este locul şi momentul în care obiectele trebuie distruse. În C# se scriu de asemenea aplicaţii pentru sisteme complexe care funcţionează sub o mare varietate de sisteme de operare, cât şi pentru sisteme dedicate (embeded systems). Acestea din urmă se întind pe o arie largă, de la dispozitive portabile cum ar fi ceasuri digitale, telefoane mobile, MP3 playere, până la dispozitive staţionare ca semafoare de trafic, sau controlere pentru automatizarea producţiei. Din punct de vedere sintactic C# derivă din limbajul C++, dar include şi influenţe din alte limbaje, mai ales Java.

Arhitectura .NET este o componentă software care oferă un mediu de programare şi de execuţie a aplicaţiilor pentru sistemele de operare Microsoft. Este inclusă în sistemele de operare Windows Server 2008 şi Windows Vista şi poate fi instalată pe Windows XP şi Windows Server 2003.

.NET Framework este un mediu care permite dezvoltarea şi rularea aplicaţiilor şi a serviciilor Web,independente de platformă.

Limbajul C# se află într-o strânsă legatură cu arhitectura .NET. Iniţial, C# a fost dezvoltat de către Microsoft pentru crearea codului platformei .Net, la fel cum destinaţia iniţială a limbajului C a fost aceea de a implementa sistemul de operare UNIX. .NET pune

la dispoziţie o colecţie impresionantă de clase organizate în biblioteci, pe care C# le utilizează.

Este momentul să precizăm că C# funcţionează având .NET ca infrastructură, dar .NET suportă şi alte limbaje, cum este C++, Visual Basic sau Java. În oricare dintre aceste limbaje programaţi, aveţi la dispoziţie aceleaşi biblioteci de clase. .NET se realizează în acest fel interoperabilitatea limbajelor.

.NET este constituit din două entităţi importante:

- Common Language Runtime (CLR)

Acesta este mediul de execuţie al programelor. Este modulul care se ocupă cu managementul şi execuţia codului scris în limbaje specifice .NET. CLR furnizează de asemenea servicii importante,cum sunt securitatea aplicaţiilor, portabilitatea acestora, managementul memoriei şi tratarea excepţiilor.

- Base Class Library

Este vorba despre Biblioteca de Clase .NET. Această bibliotecă acoperă o arie largă a necesităţilor de programare, incluzând interfaţa cu utilizatorul, conectarea cu bazele de date şi accesarea datelor, dezvoltarea aplicaţiilor web, comunicarea în reţele şi altele. Codul bibliotecii este precompilat, fiind încapsulat de regulă în funcţii, numite metode, pe care programatorul le poate apela din propriul program. La rândul lor, metodele aparţin claselor, iar clasele sunt organizate şi separate între ele cu ajutorul spaţiilor de nume (namespaces). Despre toate aceste noţiuni vom vorbi pe larg în capitolele următoare. Ceea ce trebuie reţinut pentru moment, este că programatorii combină propriul cod cu codul Bibliotecii de Clase .NET pentru producerea de aplicaţii.

Generalitati despre JSON

JSON (JavaScript Object Notation) este un mod de interschimbare a datelor, precum si un format de reprezentare a acestora.

Pe scurt, un format text utilizat pentru reprezentarea obiectelor si a altor structuri, este folosit pentru a schimba date structurate in retea, procesul purtând numele de serializare. JSON este un subset al limbajului JavaScript , fiind utilizat alături de acest limbaj, este nativ, deci nu avem nevoie de alte 'mijloace externe' pentru al folosi. Este o alternativa avantajoasa la XML fiind mai compact, si neavand nevoie de biblioteci externe pentru manipulare, pastrand in acelasi timp un inalt grad de 'human readibility'.

Pentru a intelege mai bine ce inseamna reprezentarea JSON iata doua implementari ale aceluiasi obiect, sa zicem MASINA in versiune XML si JSON:

```
<masina>
<marca> Citroen </marca>
<culoare> alb </culoare>
<tractiune> pe spate </tractiune>
<motor> 180CP,  DIESEL </motor>
</masina>
```

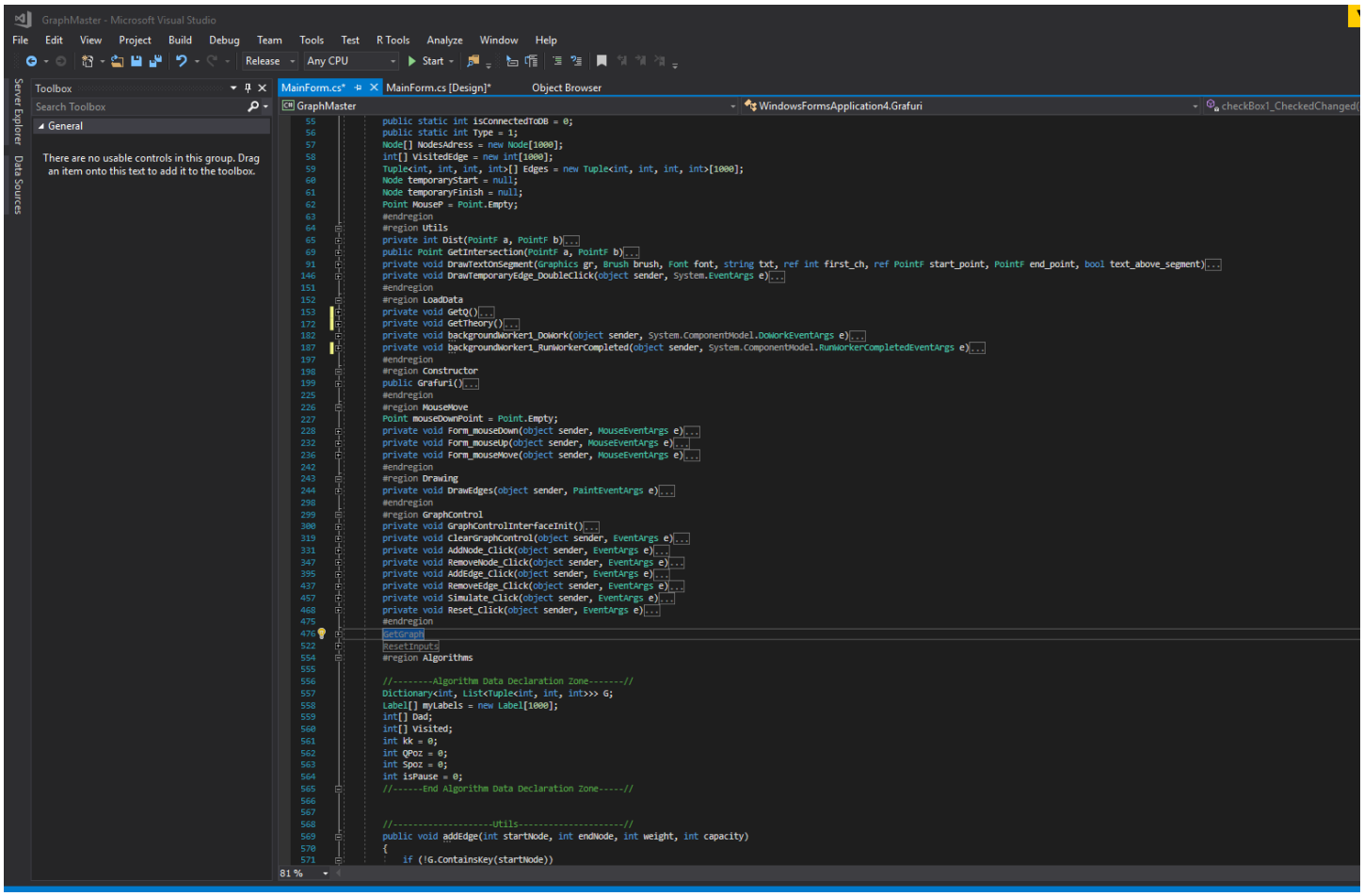
În JSON, reprezentarea este următoarea:

```
{
  “marca”: “Citroen”,
  “culoare”: “rosie”,
  “tractiune”: “pe spate”,
  “motor”: “180CP, DIESEL”
}
```

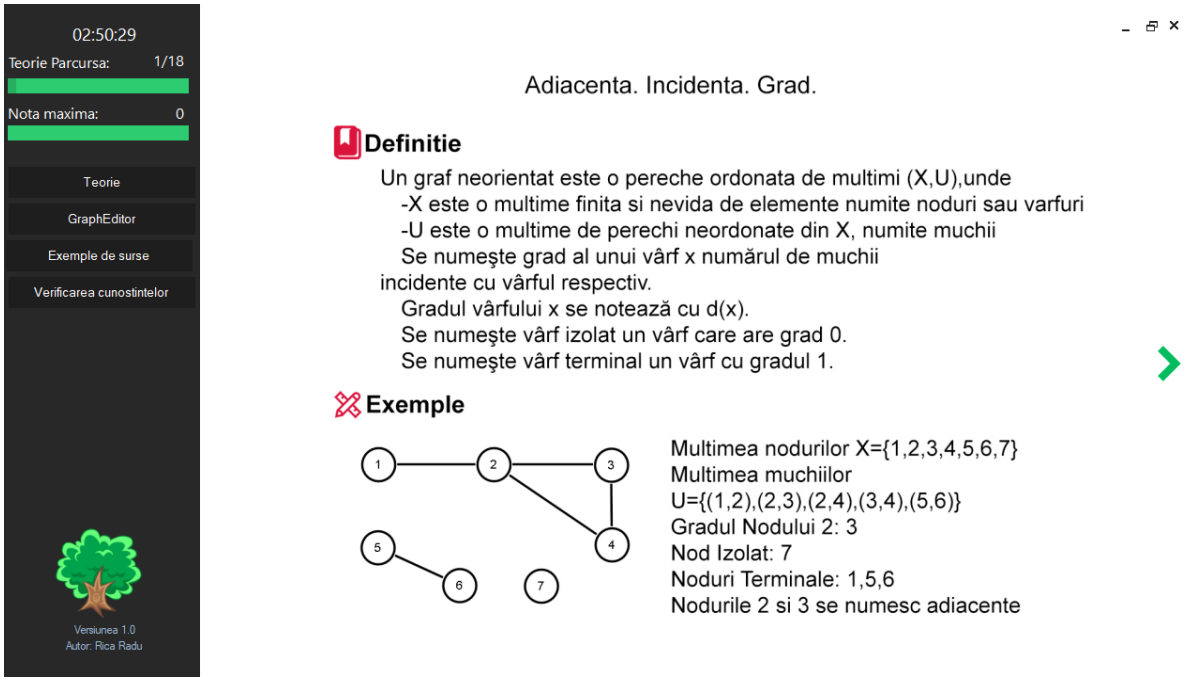
Si XML si JSON folosesc formatul text, codare Unicode, si permit reprezentarea 'incuibarita (nested) a datelor, dar este clar ca reprezentarea JSON este mult mai putin redundanta. In plus reprezentarea JSON in Javascript este aproape identica cu notarea unui obiect nativ Javascript ceea ce il face ideal pentru utilizarea impreuna cu acest limbaj.
Popularitatea câștigată într-un timp scurt, datorită avantajelor sale, a făcut să se construiască implementări de analizoare JSON în aproape toate limbajele de programare existente, de la C++, C#, Java. Din acest motiv, JSON a devenit un foarte util instrument de transfer de date între limbaje diferite, cel mai bun exemplu fiind AJAX.
Transmiterea de informații asincron între limbajul de pe server (de regula PHP) și cel de pe partea de client (JAVASCRIPT) este acum mai facilă ca în cazul folosirii XML.
Practic un obiect JSON este o structura de perechi cheie(nume) - valoare. Valorile pot fi stringuri, numere, array-uri, alte obiecte JSON(efectul de incuibarire sau imbricare) complexe. Seamana perfect cu un obiect nativ JAVASCRIPT, nu ? Singura deosebire este in reprezentera interna, practic un obiect JSON este plastic vorbind, reprezentarea pe hartie a unui obiect JAVASCRIPT nativ.
Conversia de la unul la celalalt se face cu functii native de tipul encode / decode, sau cu arhicunoscuta functie eval(), folosita doar pentru obiectele JSON de provenienta sigura.
Un alt avantaj JSON în competiția cu XML este viteza. Fiind un format mai simplu, functiile encode / decode native sunt evident mai rapide.
Viteza este deosebit de importantă în aplicațiile AJAX, iar deoarece JSON se pretează foarte bine pentru interschimbarea de date prin XMLHttpRequest, acest format devine din ce în ce mai popular în dezvoltarea aplicațiilor Web 2.0.

Prezentarea aplicaţiei

Aplicatia a fost realizata cu ajutorul mediului de dezvoltare Microsoft Visual Studio 2017.Toate functiile au fost organizate pe regiune pentru o mai buna intelegere si vizibilitate a codului.Rezolutia de baza a aplicatiei este 1280x720px.Aplicatia este capabila sa ruleze si pe rezolutii mai mari.

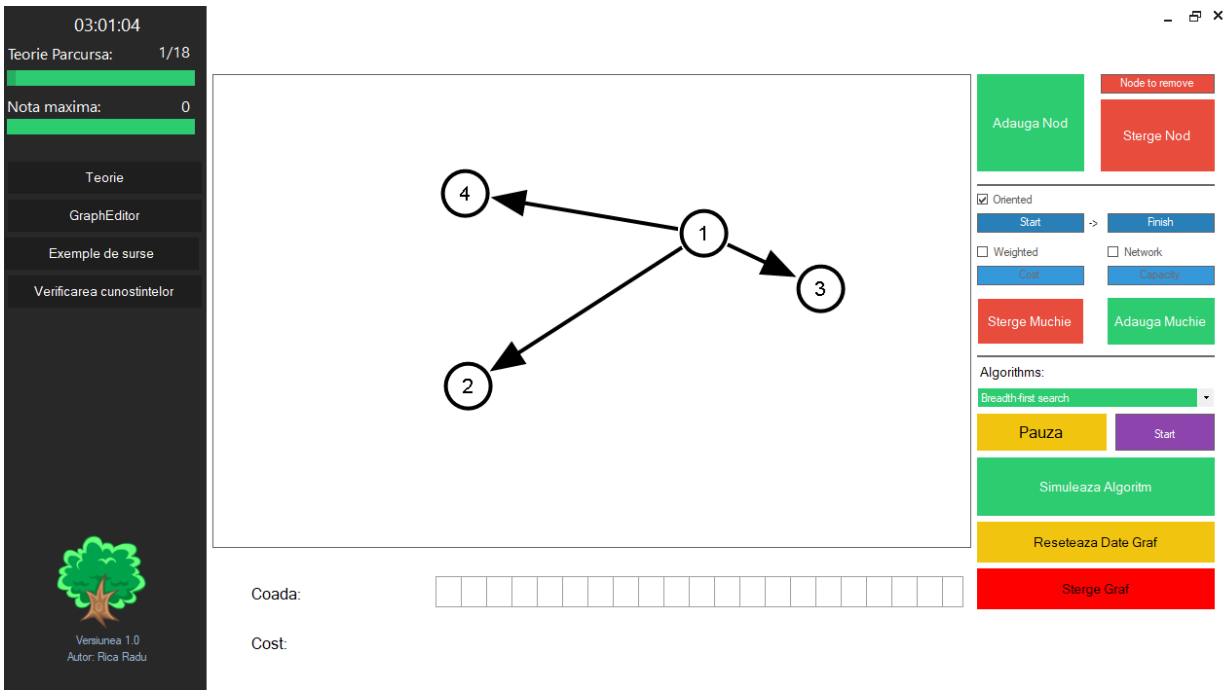


Interfata este una intuitiva fiind formata din 2 zone: Bara laterala (sidebarul) si zona de lucru.Pe bara laterala avem 4 butoane (Teorie,GraphEditor,Exemple de surse,Verificarea Cunostintelor) din care putem sa selectam ce meniu vrem sa deschidem.

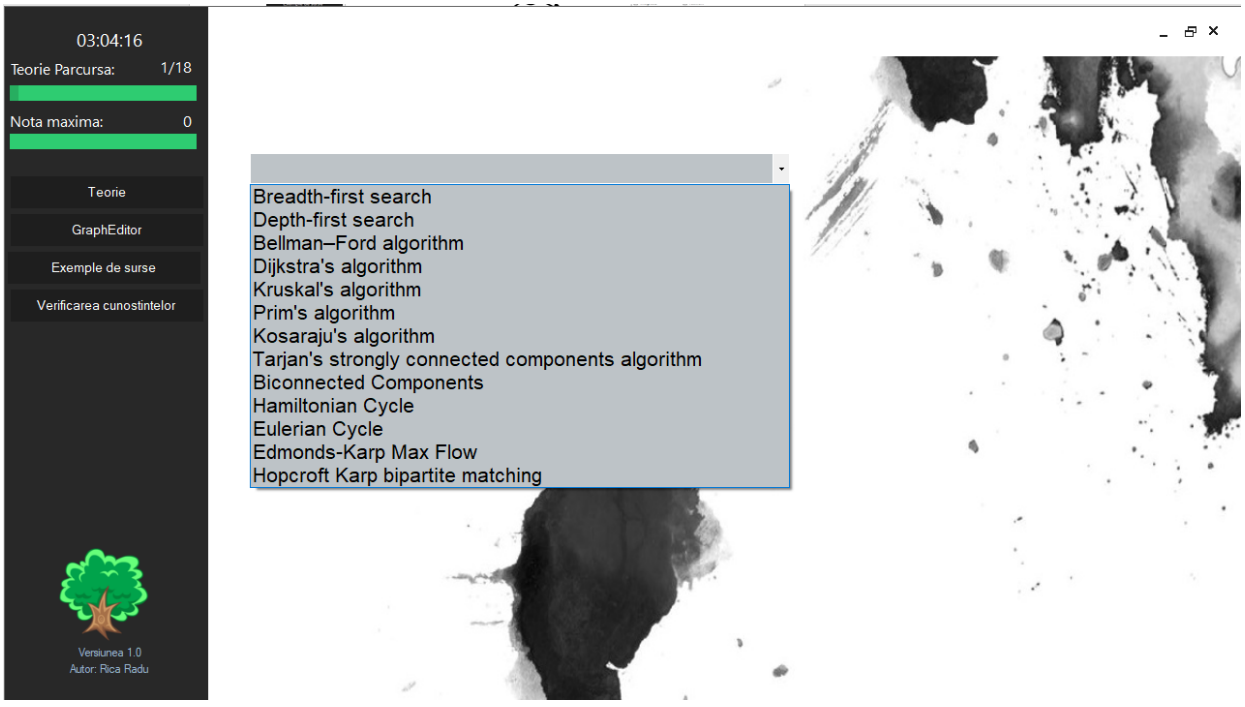


Implicit,aplicatia se deschide cu meniul teorie.Acest meniu isi incarca datele din folderul Data/Theory.Paginile din acest meniu sunt controlate de cele 2 butoane din stanga si dreapta.In partea de sus a sidebarului ne este afisat numarul paginilor de teorie parcursa.

Urmatoarea pagina este GraphEditor. Aceasta are in partea din dreapta butoane care actioneaza editorul de graf.Graful creat va fi reprezentat in chenarul din centrul ecranului.

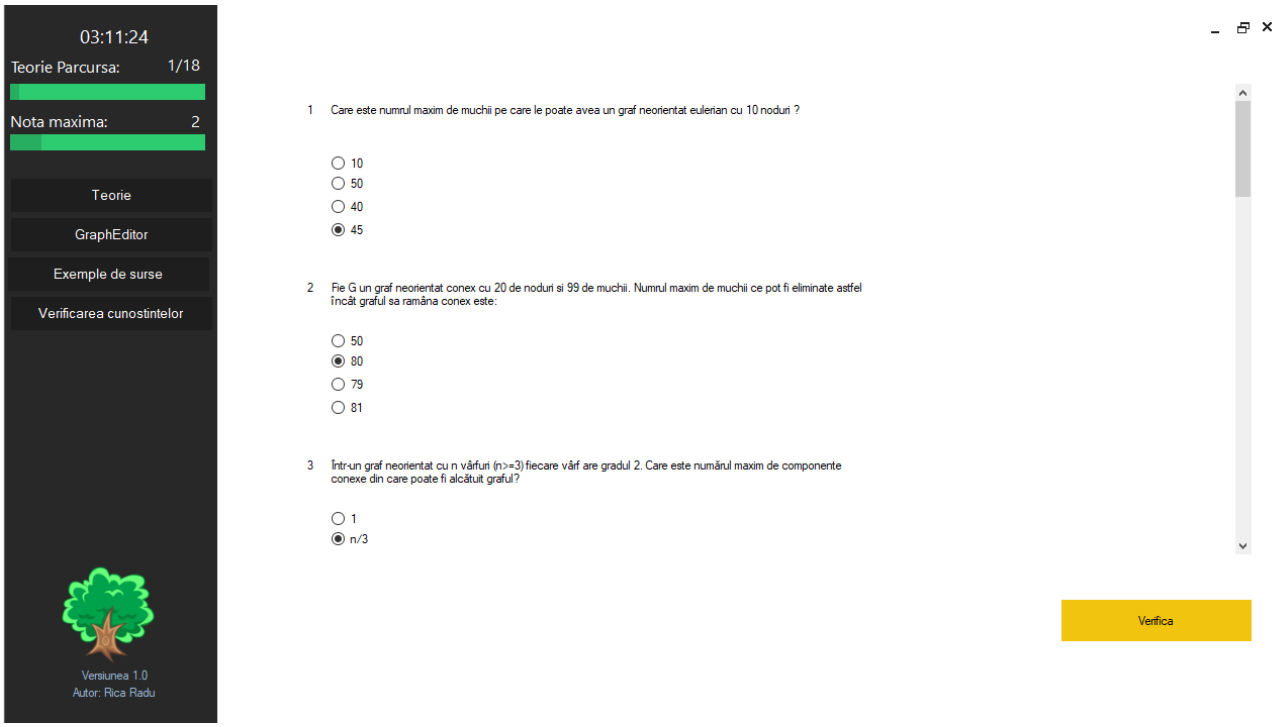


A treia pagina este “Exemple de surse”.Aceasta ne permite sa salvam o multitudine de



algoritmi implementati intr-un stil ordonat si simplu.

Ultima pagina contine un set de teste grila pentru verificarea cunostintelor.Cel mai bun rezultat obtinut este memorat in partea de sus a sidebarului.Intrebarile sunt incarcate din fisierul Data/Questions.json.



Cerinte hardware si software

Aplicația folosește puține resurse hardware: aproximativ 150 MB RAM, 12MB pe disc și poate fi rulată pe orice platformă Windows 7 sau mai nouă care suporta .NET 4.7 si are o rezolutie de minimum 1280x720.

Conditii de testare: proiectul a fost facut si testat pe un PC Intel Xeon 1231v3, la 16GB DDR3, sistem de operare MS Windows 10.

Configurație minimă recomandata:

- Procesor : Intel Pentium 4 CPU
- Memorie RAM 2 GB
- SO: Windows: 7, 8, 8.1, 10
- Necesită .NET versiunea 4.7 sau mai recentă să fie instalată.

Cod sursă

Program.cs:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace WindowsFormsApplication4
{
    static class Program
    {
        /// <summary>
        /// The main entry point for the application.
        /// </summary>
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
            Application.SetCompatibleTextRenderingDefault(false);
            Application.Run(new Grafuri());

        }
    }
}
```

MainForm.cs:

```
using System;
using System.Collections.Generic;
using System.Drawing;
using System.Windows.Forms;
using System.Drawing.Drawing2D;
using System.Diagnostics;
using System.Management.Instrumentation;
using System.ComponentModel;
using System.Reflection;
using System.Threading.Tasks;
using System.Collections;
using System.Linq;
using System.Data;
using System.IO;
using System.Security.Cryptography;
using System.Text;
using Newtonsoft.Json.Linq;
using Newtonsoft.Json;

namespace WindowsFormsApplication4
{
   public partial class Grafuri : Form
   {
      #region Shadow
      protected override CreateParams CreateParams
      {
         get
         {
            const int CS_DROPSHADOW = 0x20000;
            CreateParams cp = base.CreateParams;
            cp.ClassStyle |= CS_DROPSHADOW;
            return cp;
         }
      }
      #endregion
      #region MyData
      int EdgeNumber = 0;
      int autoNodeName = 0;
      int index = 0;
      int isWeighted = 0;
      int isOriented = 0;
      int isNetwork = 0;
      int current = 1;
      int LastProg = 1;
      public static int MaxTProgress = 0;
      int Score = 0;
      int QNumber = 0;
```

```
        Intrebare[] QBackup = new Intrebare[1000];
        Bitmap[] Theory = new Bitmap[100];
        public static string User = null;
        public static int TheoryProgress = 0;
        public static int ProblemsMaxScore = 0;
        public static string Clasa = null;
        public static int isConnectedToDB = 0;
        public static int Type = 1;
        Node[] NodesAdress = new Node[1000];
        int[] VisitedEdge = new int[1000];
        Tuple<int, int, int, int>[] Edges = new Tuple<int, int, int, int>[1000];
        Node temporaryStart = null;
        Node temporaryFinish = null;
        Point MouseP = Point.Empty;
        #endregion
        #region Utils
        private int Dist(PointF a, PointF b)
        {
            return (int)((a.X - b.X) * (a.X - b.X) + (a.Y - b.Y) * (a.Y - b.Y));
        }
        public Point GetIntersection(PointF a, PointF b)
        {
            Point intersection1;
            Point intersection2;
            float A, B, C;

            A = (b.X - a.X) * (b.X - a.X) + (b.Y - a.Y) * (b.Y - a.Y);
            B = 2 * ((b.X - a.X) * (a.X - b.X) + (b.Y - a.Y) * (a.Y - b.Y));
            C = (a.X - b.X) * (a.X - b.X) + (a.Y - b.Y) * (a.Y - b.Y) - 27 * 27;

            intersection1 = new Point((int)(a.X + ((-B + Math.Sqrt(B * B - 4 * A * C)) / (2 * A)) * (b.X - a.X)), (int)(a.Y + ((-B + Math.Sqrt(B * B - 4 * A * C)) / (2 * A)) * (b.Y - a.Y)));
            intersection2 = new Point((int)(a.X + ((-B - Math.Sqrt(B * B - 4 * A * C)) / (2 * A)) * (b.X - a.X)), (int)(a.Y + ((-B - Math.Sqrt(B * B - 4 * A * C)) / (2 * A)) * (b.Y - a.Y)));



            double dist1 = Dist(intersection1, a);
            double dist2 = Dist(intersection2, b);

            if (dist1 < dist2)
                return intersection1;
            else
                return intersection2;
        }
        private void DrawTextOnSegment(Graphics gr, Brush brush, Font font, string txt, ref int first_ch, ref PointF start_point, PointF end_point, bool text_above_segment)
        {

            float dx = end_point.X - start_point.X;
```

```
float dy = end_point.Y - start_point.Y;
float dist = (float)Math.Sqrt(dx * dx + dy * dy);
dx /= dist;
dy /= dist;

// See how many characters will fit.
int last_ch = first_ch;
while (last_ch < txt.Length)
{
    string test_string =
        txt.Substring(first_ch, last_ch - first_ch + 1);
    if (gr.MeasureString(test_string, font).Width > dist)
    {
        // This is one too many characters.
        last_ch--;
        break;
    }
    last_ch++;
}
if (last_ch < first_ch) return;
if (last_ch >= txt.Length) last_ch = txt.Length - 1;
string chars_that_fit =
    txt.Substring(first_ch, last_ch - first_ch + 1);

// Rotate and translate to position the characters.
GraphicsState state = gr.Save();
if (text_above_segment)
{
    gr.TranslateTransform(0,
        -gr.MeasureString(chars_that_fit, font).Height,
        MatrixOrder.Append);
}
float angle = (float)(180 * Math.Atan2(dy, dx) / Math.PI);
gr.RotateTransform(angle, MatrixOrder.Append);
gr.TranslateTransform(start_point.X, start_point.Y,
    MatrixOrder.Append);

// Draw the characters that fit.
gr.DrawString(chars_that_fit, font, brush, 0, 0);

// Restore the saved state.
gr.Restore(state);

// Update first_ch and start_point.
first_ch = last_ch + 1;
float text_width =
    gr.MeasureString(chars_that_fit, font).Width;
start_point = new PointF(
    start_point.X + dx * text_width,
```

```
        start_point.Y + dy * text_width);
}
private void DrawTemporaryEdge_DoubleClick(object sender, System.EventArgs e)
{
    temporaryStart = (Node)sender;

}
#endregion
#region LoadData
private void GetQ()
{
    JObject jResults = JObject.Parse(File.ReadAllText(@"Data/Questions.json"));
    JToken jarray = jResults["Q"];

    foreach (JObject it in jarray)
    {
        Intrebare newAns = new Intrebare();
        newAns.ID_Query = it["ID"].ToString();
        newAns.EN_Query = it["Q"].ToString();
        newAns.R1_Query = it["A1"].ToString();
        newAns.R2_Query = it["A2"].ToString();
        newAns.R3_Query = it["A3"].ToString();
        newAns.R4_Query = it["A4"].ToString();
        newAns.RS_Query = it["AC"].ToString();
        QBackup[++QNumber] = newAns;
    }
    Scorebar.MaximumValue = QNumber;
}

private void GetTheory()
{
    MaxTProgress = 0;
    for (int i = 1; i <= 18; i++)
    {
        String adress = @"Data/Theory" + "/" + i.ToString() + ".jpg";
        Theory[++MaxTProgress] = new Bitmap(adress);
    }
    TProg.MaximumValue = MaxTProgress;
}

private void backgroundWorker1_DoWork(object sender, System.ComponentModel.DoWorkEventArgs e)
{
    GetQ();
    GetTheory();
}
```

```
    private void backgroundWorker1_RunWorkerCompleted(object sender, System.ComponentModel.RunWorkerCompletedEventArgs
e)
    {
        flowLayoutPanel1.Controls.Clear();
        for (int i = 1; i <= QNumber; i++) flowLayoutPanel1.Controls.Add(QBackup[i]);
        TProg.MaximumValue = MaxTProgress;
        TProg.Value = 1;
        ProgresT.Text = "1/" + MaxTProgress.ToString();
        Scorebar.MaximumValue = QNumber;
        Loading.Hide();
    }
    #endregion
    #region Constructor
    public Grafuri()
    {
        InitializeComponent();
        this.CenterToScreen();
        button10.Hide();
        meniu1.BringToFront();
        Ceas.Text = DateTime.Now.ToString("HH:mm:ss");
        FormBorderStyle = FormBorderStyle.None;
        AlgoList.SelectedIndex = 0;
        backgroundWorker1.DoWork += backgroundWorker1_DoWork;
        backgroundWorker1.RunWorkerCompleted += backgroundWorker1_RunWorkerCompleted;
        backgroundWorker1.RunWorkerAsync();
    }
    #endregion
    #region MouseMove
    Point mouseDownPoint = Point.Empty;
    private void Form_mouseDown(object sender, MouseEventArgs e)
    {
        mouseDownPoint = new Point(e.X, e.Y);
    }
    private void Form_mouseUp(object sender, MouseEventArgs e)
    {
        mouseDownPoint = Point.Empty;
    }
    private void Form_mouseMove(object sender, MouseEventArgs e)
    {
        if (mouseDownPoint == Point.Empty) return;
        Form Form1 = this as Form;
        Form1.Location = new Point(Form1.Location.X + (e.X - mouseDownPoint.X), Form1.Location.Y + (e.Y - mouseDownPoint.Y));
    }
    #endregion
    #region Drawing
    private void DrawEdges(object sender, PaintEventArgs e)
    {
        Pen myPen = new Pen(Color.Black, 4);
        Font df = new Font("Times New Roman", 16, FontStyle.Bold);
```

```
            Brush myBrush = new SolidBrush(Color.Black);
            Brush visitedBrush = new SolidBrush(Color.Red);
            Pen visitedPen = new Pen(Color.Red, 4);

            e.Graphics.TextRenderingHint = System.Drawing.Text.TextRenderingHint.AntiAliasGridFit;
            e.Graphics.SmoothingMode = SmoothingMode.AntiAlias;
            e.Graphics.InterpolationMode = InterpolationMode.High;

            //--Draw Edges--//
            if (isOriented == 1)
            {
                AdjustableArrowCap bigArrow = new AdjustableArrowCap(7, 9);
                myPen.CustomEndCap = bigArrow;
            }
            PointF intersectionPoint;
            if (temporaryStart != null)
                if (temporaryFinish != null && temporaryFinish != temporaryStart)
                {
                    intersectionPoint = GetIntersection(temporaryStart.GetCenter(), temporaryFinish.GetCenter());
                    e.Graphics.DrawLine(myPen, temporaryStart.GetCenter(), intersectionPoint);
                }
                else
                    e.Graphics.DrawLine(myPen, temporaryStart.GetCenter(), MouseP);
            for (int i = 1; i <= EdgeNumber; i++)
            {
                intersectionPoint = GetIntersection(NodesAdress[Edges[i].Item1].GetCenter(), NodesAdress[Edges[i].Item2].GetCenter());
                if (VisitedEdge[i] == 0)
                    e.Graphics.DrawLine(myPen, NodesAdress[Edges[i].Item1].GetCenter(), intersectionPoint);
                else
                    e.Graphics.DrawLine(visitedPen, NodesAdress[Edges[i].Item1].GetCenter(), intersectionPoint);
                int ch1 = 0, ch2 = 0;
                PointF pf = new PointF(((NodesAdress[Edges[i].Item1].GetCenter().X + intersectionPoint.X) / 2),
((NodesAdress[Edges[i].Item1].GetCenter().Y + intersectionPoint.Y) / 2));

                if (isWeighted == 1)
                    DrawTextOnSegment(e.Graphics, Brushes.Blue, df, Edges[i].Item3.ToString(), ref ch1, ref pf, intersectionPoint, true);
                if (isNetwork == 1)
                    DrawTextOnSegment(e.Graphics, Brushes.Blue, df, Edges[i].Item3.ToString(), ref ch2, ref pf, intersectionPoint, false);
            }
            //--End Draw Edges--//
            myPen.Dispose();
        }
        #endregion
        #region GraphControl
        private void GraphControlInterfaceInit()
        {
            checkBox1.Checked = false;
            checkBox2.Checked = false;
            checkBox2.Checked = false;
```

```
    checkBox1.Enabled = true;
    checkBox2.Enabled = true;
    checkBox3.Enabled = true;
    isWeighted = 0;
    isOriented = 0;
    isNetwork = 0;
    label3.Text = "<->";
    textBox5.Enabled = false;
    textBox1.Enabled = false;
    textBox1.Text = "Capacity";
    textBox3.Text = "Start";
    textBox4.Text = "Finish";
    textBox5.Text = "Cost";
}
private void ClearGraphControl(object sender, EventArgs e)
{
    GraphControlInterfaceInit();
    for (int i = 1; i <= kk; i++)
        QueuePanel.Controls.Remove(myLabels[i]);
    for (int i = 1; i <= autoNodeName; i++) panel2.Controls.Remove(NodesAdress[i]);
    autoNodeName = 0;
    index = 0;
    EdgeNumber = 0;
    panel2.Invalidate();

}
private void AddNode_Click(object sender, EventArgs e)
{
    Random random = new Random();
    Node node1 = new Node();
    node1.MouseMove += Edge_MouseMove;
    node1.DoubleClick += DrawTemporaryEdge_DoubleClick;

    int tmpx = random.Next(0, panel2.Width - node1.DiameterRk + node1.BorderSz - 1);
    int tmpy = random.Next(0, panel2.Height - node1.DiameterRk + node1.BorderSz - 1);
    node1.Location = new Point(tmpx, tmpy);
    node1.Indexx = ++index;
    node1.Textx = (++autoNodeName).ToString();
    node1.Click += AddEdgeOnClick;
    panel2.Controls.Add(node1);
    NodesAdress[autoNodeName] = node1;
}
private void RemoveNode_Click(object sender, EventArgs e)
{

    if (textBox2.Text != "")
    {

        int NodeIndex;
```

```
        if (Int32.TryParse(textBox2.Text, out NodeIndex))
        {
            for (int i = 1; i <= EdgeNumber; i++)
            {

                if (Edges[i].Item1 == NodeIndex || Edges[i].Item2 == NodeIndex)
                {
                    EdgeNumber--;
                    for (int j = i; j <= EdgeNumber; j++) Edges[j] = Edges[j + 1];
                    i--;
                }

            }

            for (int i = 1; i <= EdgeNumber; i++)
            {

                int StartNode = Edges[i].Item1; if (StartNode > NodeIndex) StartNode--;
                int FinishNode = Edges[i].Item2; if (FinishNode > NodeIndex) FinishNode--;
                int Cost = Edges[i].Item3;
                int Capacity = Edges[i].Item4;
                Edges[i] = new Tuple<int, int, int, int>(StartNode, FinishNode, Cost, Capacity);
            }

            panel2.Controls.Remove(NodesAdress[NodeIndex]);



            autoNodeName--;
            for (int i = NodeIndex; i <= autoNodeName; i++) NodesAdress[i] = NodesAdress[i + 1];
            for (int i = NodeIndex; i <= autoNodeName; i++) NodesAdress[i].Textx = i.ToString();
            panel2.Invalidate();
        }
    }
    textBox2.Text = "Node to remove";
}
private void AddEdge_Click(object sender, EventArgs e)
{
    if (textBox3.Text != "" && textBox4.Text != "")
    {
        int node1, node2;
        if (Int32.TryParse(textBox3.Text, out node1) && Int32.TryParse(textBox4.Text, out node2))
        {
            int weight = 0, capacity = 0;
            if (isWeighted == 1)
                Int32.TryParse(textBox5.Text, out weight);
            else
                weight = 0;
            if (isNetwork == 1)
```

```
                Int32.TryParse(textBox1.Text, out capacity);
            else
                capacity = 0;
            textBox1.Text = "Capacity";
            textBox3.Text = "Start";
            textBox4.Text = "Finish";
            textBox5.Text = "Cost";
            checkBox1.Enabled = false;
            checkBox2.Enabled = false;
            checkBox3.Enabled = false;
            if (node1 > autoNodeName && node2 > autoNodeName) return;
            Edges[++EdgeNumber] = new Tuple<int, int, int, int>(node1, node2, weight, capacity);
            panel2.Invalidate();
        }


    }
    textBox1.Text = "Capacity";
    textBox3.Text = "Start";
    textBox4.Text = "Finish";
    textBox5.Text = "Cost";
}
private void RemoveEdge_Click(object sender, EventArgs e)
{
    int Node1Index;
    int Node2Index;
    if (Int32.TryParse(textBox3.Text, out Node1Index) && Int32.TryParse(textBox4.Text, out Node2Index))
    {
        for (int i = 1; i <= EdgeNumber; i++)
        {

            if ((Edges[i].Item1 == Node1Index && Edges[i].Item2 == Node2Index) || (isOriented == 0 && Edges[i].Item2 == Node1Index
&& Edges[i].Item1 == Node2Index))
            {
                EdgeNumber--;
                for (int j = i; j <= EdgeNumber; j++) Edges[j] = Edges[j + 1];
                break;
            }

        }
        panel2.Invalidate();
    }
}
private void Simulate_Click(object sender, EventArgs e)
{
    int Start;
    if (AlgoList.SelectedIndex == 0 && Int32.TryParse(StartingPoint.Text, out Start)) BFS(Start);
    if (AlgoList.SelectedIndex == 1 && Int32.TryParse(StartingPoint.Text, out Start)) DFS(Start);
    if (AlgoList.SelectedIndex == 4) Kruskal();
```

```
}
 private void Reset_Click(object sender, EventArgs e)
 {
    for (int i = 1; i <= kk; i++) QueuePanel.Controls.Remove(myLabels[i]);
    for (int i = 1; i <= autoNodeName; i++) NodesAdress[i].setVisited(0);
    for (int i = 1; i <= EdgeNumber; i++) VisitedEdge[i] = 0;
    panel2.Invalidate();
 }
 #endregion
 #region GetGraph
 private void checkBox1_CheckedChanged(object sender, EventArgs e)
 {

    if (checkBox1.Checked)
    {
       isOriented = 1;
       label3.Text = "->";
    }
    else
    {
       isOriented = 0;
       label3.Text = "<->";

    }
 }
 private void checkBox2_CheckedChanged(object sender, EventArgs e)
 {
    textBox5.Text = "Cost";
    if (checkBox2.Checked)
    {
       isWeighted = 1;
       textBox5.Enabled = true;
    }
    else
    {
       isWeighted = 0;
       textBox5.Enabled = false;
    }
 }
 private void checkBox3_CheckedChanged(object sender, EventArgs e)
 {
    textBox1.Text = "Cost";
    if (checkBox3.Checked)
    {
       isNetwork = 1;
       textBox1.Enabled = true;
    }
    else
    {
```

```
        isNetwork = 0;
        textBox1.Enabled = false;
    }
}
#endregion
#region ResetInputs
private void textBox2_Click(object sender, EventArgs e)
{
    textBox2.Clear();
}
private void textBox3_Click(object sender, EventArgs e)
{
    textBox3.Clear();
}
private void textBox4_Click(object sender, EventArgs e)
{
    textBox4.Clear();
}
private void panel1_Click(object sender, EventArgs e)
{
    Clear.Focus();
}
private void textBox1_Click(object sender, EventArgs e)
{
    textBox1.Clear();
}
private void textBox5_Click(object sender, EventArgs e)
{
    textBox5.Clear();

}
private void AlgoList_DropDownClosed(object sender, EventArgs e)
{
    flatMini1.Focus();
    label9.Text = "";
}
#endregion
#region Algorithms

//--------Algorithm Data Declaration Zone-------//
Dictionary<int, List<Tuple<int, int, int>>> G;
Label[] myLabels = new Label[1000];
int[] Dad;
int[] Visited;
int kk = 0;
int QPoz = 0;
int Spoz = 0;
int isPause = 0;
//------End Algorithm Data Declaration Zone-----//
```

```
//--------------------Utils---------------------//
public void addEdge(int startNode, int endNode, int weight, int capacity)
{
    if (!G.ContainsKey(startNode))
    {
        G[startNode] = new List<Tuple<int, int, int>>();
    }

    G[startNode].Add(new Tuple<int, int, int>(endNode, weight, capacity));
}
private void GenerateGraph()
{
    G = new Dictionary<int, List<Tuple<int, int, int>>>();
    for (int i = 1; i <= EdgeNumber; i++)
        if (isOriented == 0)
        {
            addEdge(Edges[i].Item1, Edges[i].Item2, 0, 0);
            addEdge(Edges[i].Item2, Edges[i].Item1, 0, 0);
        }
        else
            addEdge(Edges[i].Item1, Edges[i].Item2, 0, 0);
}
private int Father(int node)
{
    if (Dad[node] != node)
    {
        Dad[node] = Father(Dad[node]);
    }

    return Dad[node];
}
private void Unite(int node1, int node2)
{
    Dad[Father(node1)] = Father(node2);
}
private void SortEdges()
{
    Tuple<int, int, int, int>[] tmparray = new Tuple<int, int, int, int>[EdgeNumber];
    for (int i = 0; i < EdgeNumber; i++) tmparray[i] = Edges[i + 1];
    Array.Sort(tmparray, (a, b) => a.Item3.CompareTo(b.Item3));
    for (int i = 1; i <= EdgeNumber; i++) Edges[i] = tmparray[i - 1];
}
private void AddToQueueAnim(int Node)
{
    Label myItem = new Label();
    myItem.AutoSize = false;
    myItem.Size = new Size(36, 36);
```

```
    myItem.Text = Node.ToString();
    myItem.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
    myLabels[++kk] = myItem;
    QueuePanel.Controls.Add(myItem);
}

private void AddToStackAnim(int Node)
{
    Label myItem = new Label();
    myItem.AutoSize = false;
    myItem.Size = new Size(36, 36);

    myItem.Text = Node.ToString();
    myItem.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
    myLabels[++kk] = myItem;
    QueuePanel.Controls.Add(myItem);
}
//------------------End Utils-------------------//

//------------Breadth-first Search--------------//
private async Task BFS(int StartingNode)
{
    label6.Text = "Coada";
    if (StartingNode > autoNodeName) return;
    Visited = new int[1000];
    GenerateGraph();
    Queue<int> Q = new Queue<int>(0);
    Q.Enqueue(StartingNode);
    Visited[StartingNode] = 1;
    AddToQueueAnim(StartingNode);




    while (Q.Count != 0)
    {

        int current = Q.Dequeue();
        myLabels[++QPoz].BackColor = Color.Red;
        NodesAdress[current].setVisited(1);
        Visited[current] = 1;
        await Task.Delay(430);
        while (isPause == 1) await Task.Delay(1);



        if (G.ContainsKey(current))
            foreach (var next in G[current])
```

```
            if (Visited[next.Item1] == 0)
            {
                await Task.Delay(430);
                Q.Enqueue(next.Item1);
                AddToQueueAnim(next.Item1);
            }

        myLabels[QPoz].BackColor = Color.White;

    }

}
//------------Breadth-first Search----------//

//------------Depth-first Search----------------//
private async Task DFS(int StartingNode)
{
    label6.Text = "Stiva";
    if (StartingNode > autoNodeName) return;
    Visited = new int[1000];
    GenerateGraph();
    Stack<int> St = new Stack<int>(0);
    St.Push(StartingNode);
    Visited[StartingNode] = 1;
    AddToStackAnim(StartingNode);
    Spoz = 1;

    while (St.Count != 0)
    {
        while (isPause == 1)
            await Task.Delay(1);
        myLabels[Spoz].BackColor = Color.Red;
        await Task.Delay(500);

        int current = St.Pop();




        NodesAdress[current].setVisited(1);
        Visited[current] = 1;

        if (G.ContainsKey(current))
            foreach (var next in G[current])
                if (Visited[next.Item1] == 0)
                {
                    St.Push(next.Item1);
                    AddToStackAnim(next.Item1);
                    Spoz++;
```

```
            }
        QueuePanel.Controls.Remove(myLabels[Spoz]);
        Spoz--;

    }

}
//------------Deepth-first Search----------//

//------------Kruskal's Algorithm----------//
private async Task Kruskal()
{
    Dad = new int[1000];
    int totalCost = 0;
    for (int i = 1; i <= autoNodeName; i++) Dad[i] = i;
    SortEdges();
    for (int i = 1; i <= EdgeNumber; i++)
    {
        while (isPause == 1)
            await Task.Delay(1);
        if (Father(Edges[i].Item1) != Father(Edges[i].Item2))
        {
            Unite(Edges[i].Item1, Edges[i].Item2);
            totalCost += Edges[i].Item3;
            await Task.Delay(600);
            VisitedEdge[i] = 1;
            panel2.Invalidate();

        }
    }
    label9.Text = "Max Cost: " + totalCost.ToString();
}
//------------Kruskal's Algorithm----------//

//------------Dijkstra's Algorithm----------//
//------------Dijkstra's Algorithm----------//

#endregion
#region MeniuControl
private async void button11_Click(object sender, EventArgs e)
{

    current++;

    meniu1.BackgroundImage = Theory[current];
    meniu1.BackgroundImageLayout = ImageLayout.Zoom;
    if (current > 1)
        button10.Show();
    if (current > LastProg)
```

```
    {
        LastProg = current;

    }

    TProg.Value = LastProg;
    ProgresT.Text = LastProg.ToString() + "/" + MaxTProgress.ToString();

    if (current == MaxTProgress)
    {
        button11.Hide();
        if (LastProg != MaxTProgress)
            MessageBox.Show("Ai terminat teoria!", "Bravo", MessageBoxButtons.OK, MessageBoxIcon.Information);
    }

}
private async void button10_Click(object sender, EventArgs e)
{

    current--;
    meniu1.BackgroundImage = Theory[current];
    meniu1.BackgroundImageLayout = ImageLayout.Zoom;

    if (current < MaxTProgress)
        button11.Show();
    if (current == 1)
        button10.Hide();


    ProgresT.Text = LastProg.ToString() + "/" + MaxTProgress.ToString();
    TProg.Value = LastProg;

}



private async void button3_Click(object sender, EventArgs e)
{

    ExPanel.Hide();
    Examples.Hide();
    GraphEditorPanel.Hide();
    meniu1.Hide();
    RankPanel.BringToFront();
    RankPanel.Show();
    Sidebar.Show();


}
```

```
private void button2_Click(object sender, EventArgs e)
{
    ExPanel.Hide();
    GraphEditorPanel.Hide();
    meniu1.Hide();
    Examples.Show();
    Examples.BringToFront();
    Sidebar.Show();
}
private void SaveTo_Click(object sender, EventArgs e)
{
    SaveFileDialog saveFileDialog1 = new SaveFileDialog();
    saveFileDialog1.Filter = "C++ File|*.cpp";
    saveFileDialog1.Title = "Save an Source File";
    saveFileDialog1.FileName = AlgoSel.Text;
    if (saveFileDialog1.ShowDialog() == DialogResult.OK)
    {
        using (StreamWriter sw = new StreamWriter(saveFileDialog1.FileName))
            if (AlgoSel.SelectedIndex == 0)
                sw.WriteLine(Properties.Resources.bfs);
            else if (AlgoSel.SelectedIndex == 1)
                sw.WriteLine(Properties.Resources.dfs);
            else if (AlgoSel.SelectedIndex == 2)
                sw.WriteLine(Properties.Resources.bellman);
            else if (AlgoSel.SelectedIndex == 3)
                sw.WriteLine(Properties.Resources.dijkstra);
            else if (AlgoSel.SelectedIndex == 4)
                sw.WriteLine(Properties.Resources.kruskal);
            else if (AlgoSel.SelectedIndex == 5)
                sw.WriteLine(Properties.Resources.prim);
            else if (AlgoSel.SelectedIndex == 6)
                sw.WriteLine(Properties.Resources.kosaraju);
            else if (AlgoSel.SelectedIndex == 7)
                sw.WriteLine(Properties.Resources.tarjan);
            else if (AlgoSel.SelectedIndex == 8)
                sw.WriteLine(Properties.Resources.biconexe);
            else if (AlgoSel.SelectedIndex == 9)
                sw.WriteLine(Properties.Resources.hamiltonian);
            else if (AlgoSel.SelectedIndex == 10)
                sw.WriteLine(Properties.Resources.eulerian);
            else if (AlgoSel.SelectedIndex == 11)
                sw.WriteLine(Properties.Resources.flux);
            else if (AlgoSel.SelectedIndex == 12)
                sw.WriteLine(Properties.Resources.cuplaj);

        MessageBox.Show("Salvarea a avut loc cu succes", "Succes", MessageBoxButtons.OK, MessageBoxIcon.Information);
    }
}
```

```
private async void button17_Click(object sender, EventArgs e)
{

    Score = 0;
    for (int i = 1; i <= QNumber; i++)
    {
        if (QBackup[i].Ck() == 1) Score++;
        QBackup[i].Dck();
    }
    MessageBox.Show("Scorul tau este:" + Score.ToString(), "Score", MessageBoxButtons.OK, MessageBoxIcon.Information);
    if (Score > ProblemsMaxScore)
    {
        ProblemsMaxScore = Score;
        label13.Text = Score.ToString();
        Scorebar.Value = Score;
    }
}
private void button1_Click(object sender, EventArgs e)
{
    ;
    GraphEditorPanel.Hide();
    meniu1.Hide();
    Examples.Hide();

    ExPanel.BringToFront();
    ExPanel.Show();
    Sidebar.Show();
}


private void button6_Click(object sender, EventArgs e)
{
    ExPanel.Hide();
    Examples.Hide();
    RankPanel.Hide();

    meniu1.Hide();
    GraphEditorPanel.Show();
}
private void button4_Click(object sender, EventArgs e)
{
    ExPanel.Hide();
    Examples.Hide();
    RankPanel.Hide();
    GraphEditorPanel.Hide();
    Sidebar.Show();
    meniu1.BringToFront();
    meniu1.Show();
}
```

```
private void Edge_MouseMove(object sender, MouseEventArgs e)
{
    temporaryFinish = (Node)sender;
    MouseP = temporaryFinish.GetCenter();
    panel2.Invalidate();
}
private void AddEdgeOnClick(object sender, EventArgs e)
{

    if (temporaryFinish != null && temporaryStart != null && temporaryFinish != temporaryStart)
    {
        int weight = 0;
        int capa = 0;

        Int32.TryParse(textBox5.Text, out weight);
        Int32.TryParse(textBox1.Text, out capa);
        Edges[++EdgeNumber] = new Tuple<int, int, int, int>(temporaryStart.Indexx, temporaryFinish.Indexx, weight, capa);
        temporaryStart = null;
        temporaryFinish = null;
        checkBox1.Enabled = false;
        checkBox2.Enabled = false;
        checkBox3.Enabled = false;
    }
    MouseP = Point.Empty;
    panel2.Invalidate();
}
private void panel2_MouseMove(object sender, MouseEventArgs e)
{
    temporaryFinish = null;
    MouseP = new Point(e.X, e.Y);
    panel2.Invalidate();
}
private void Pause_Click(object sender, EventArgs e)
{
    isPause = 1 - isPause;
}
private void StartingPoint_Click(object sender, EventArgs e)
{
    StartingPoint.Clear();
}
private void timer1_Tick(object sender, EventArgs e)
{
    Ceas.Text = DateTime.Now.ToString("HH:mm:ss");
}

private void AlgoList_SelectionChangeCommitted(object sender, EventArgs e)
{
    if (AlgoList.SelectedIndex == 4)
    {
```

```
            StartingPoint.Hide();
            panel4.Hide();
        }
        else
        {
            StartingPoint.Show();
            panel4.Show();
        }
    }



    private void flatClose1_Click(object sender, EventArgs e)
    {


    }

    #endregion
  }
}
```

MainForm.Designer.cs:

```
namespace WindowsFormsApplication4
{
    partial class Grafuri
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #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>
        private void InitializeComponent()
        {
            this.components = new System.ComponentModel.Container();
            System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(Grafuri));
            System.Windows.Forms.DataGridViewCellStyle dataGridViewCellStyle1 = new System.Windows.Forms.DataGridViewCellStyle();
            System.Windows.Forms.DataGridViewCellStyle dataGridViewCellStyle2 = new System.Windows.Forms.DataGridViewCellStyle();
            System.Windows.Forms.DataGridViewCellStyle dataGridViewCellStyle3 = new System.Windows.Forms.DataGridViewCellStyle();
            this.button14 = new System.Windows.Forms.Button();
            this.button1 = new System.Windows.Forms.Button();
            this.button6 = new System.Windows.Forms.Button();
            this.button4 = new System.Windows.Forms.Button();
            this.AddNode = new System.Windows.Forms.Button();
            this.textBox2 = new System.Windows.Forms.TextBox();
            this.RemoveNode = new System.Windows.Forms.Button();
            this.checkBox1 = new System.Windows.Forms.CheckBox();
            this.textBox3 = new System.Windows.Forms.TextBox();
            this.textBox4 = new System.Windows.Forms.TextBox();
            this.label3 = new System.Windows.Forms.Label();
```

```
this.label4 = new System.Windows.Forms.Label();
this.Simulate = new System.Windows.Forms.Button();
this.checkBox2 = new System.Windows.Forms.CheckBox();
this.textBox5 = new System.Windows.Forms.TextBox();
this.RemoveEdge = new System.Windows.Forms.Button();
this.textBox1 = new System.Windows.Forms.TextBox();
this.checkBox3 = new System.Windows.Forms.CheckBox();
this.Pause = new System.Windows.Forms.Button();
this.Reset = new System.Windows.Forms.Button();
this.AlgoList = new System.Windows.Forms.ComboBox();
this.panel4 = new System.Windows.Forms.Panel();
this.StartingPoint = new System.Windows.Forms.TextBox();
this.Clear = new System.Windows.Forms.Button();
this.AddEdgeButton = new System.Windows.Forms.Button();
this.GraphEditorPanel = new System.Windows.Forms.Panel();
this.label9 = new System.Windows.Forms.Label();
this.label6 = new System.Windows.Forms.Label();
this.mySeparator3 = new WindowsFormsApplication4.MySeparator();
this.mySeparator2 = new WindowsFormsApplication4.MySeparator();
this.QueuePanel = new System.Windows.Forms.TableLayoutPanel();
this.panel2 = new WindowsFormsApplication4.Canvas2();
this.Sidebar = new System.Windows.Forms.Panel();
this.panel3 = new System.Windows.Forms.Panel();
this.label11 = new System.Windows.Forms.Label();
this.label5 = new System.Windows.Forms.Label();
this.pictureBox1 = new System.Windows.Forms.PictureBox();
this.Logo = new System.Windows.Forms.Panel();
this.Scorebar = new WindowsFormsApplication4.MyProgressBar2();
this.TProg = new WindowsFormsApplication4.MyProgressBar2();
this.ProgresT = new System.Windows.Forms.Label();
this.label13 = new System.Windows.Forms.Label();
this.Ceas = new System.Windows.Forms.Label();
this.label12 = new System.Windows.Forms.Label();
this.label1 = new System.Windows.Forms.Label();
this.timer1 = new System.Windows.Forms.Timer(this.components);
this.RankPanel = new System.Windows.Forms.DataGridView();
this.Examples = new WindowsFormsApplication4.Canvas2();
this.SaveTo = new System.Windows.Forms.Button();
this.AlgoSel = new System.Windows.Forms.ComboBox();
this.ExPanel = new WindowsFormsApplication4.Canvas2();
this.button17 = new System.Windows.Forms.Button();
this.flowLayoutPanel1 = new System.Windows.Forms.FlowLayoutPanel();
this.meniu1 = new WindowsFormsApplication4.Canvas2();
this.button11 = new System.Windows.Forms.Button();
this.button10 = new System.Windows.Forms.Button();
this.Base = new WindowsFormsApplication4.Canvas2();
this.Header = new System.Windows.Forms.Panel();
this.flatMini1 = new FlatUI.FlatMini();
this.flatClose1 = new FlatUI.FlatClose();
```

```
            this.flatMax1 = new FlatUI.FlatMax();
            this.backgroundWorker1 = new System.ComponentModel.BackgroundWorker();
            this.Loading = new WindowsFormsApplication4.Canvas2();
            this.label8 = new System.Windows.Forms.Label();
            this.pictureBox5 = new System.Windows.Forms.PictureBox();
            this.flatMini3 = new FlatUI.FlatMini();
            this.flatClose3 = new FlatUI.FlatClose();
            this.flatMax3 = new FlatUI.FlatMax();
            this.panel4.SuspendLayout();
            this.GraphEditorPanel.SuspendLayout();
            this.Sidebar.SuspendLayout();
            this.panel3.SuspendLayout();
            ((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).BeginInit();
            this.Logo.SuspendLayout();
            ((System.ComponentModel.ISupportInitialize)(this.RankPanel)).BeginInit();
            this.Examples.SuspendLayout();
            this.ExPanel.SuspendLayout();
            this.meniu1.SuspendLayout();
            this.Base.SuspendLayout();
            this.Header.SuspendLayout();
            this.Loading.SuspendLayout();
            ((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).BeginInit();
            this.SuspendLayout();
            //
            // button14
            //
            this.button14.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            this.button14.FlatAppearance.BorderSize = 0;
            this.button14.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.button14.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.button14.ForeColor = System.Drawing.Color.White;
            this.button14.Location = new System.Drawing.Point(3, 84);
            this.button14.Name = "button14";
            this.button14.Size = new System.Drawing.Size(199, 33);
            this.button14.TabIndex = 16;
            this.button14.Text = "Exemple de surse";
            this.button14.UseVisualStyleBackColor = false;
            this.button14.Click += new System.EventHandler(this.button2_Click);
            this.button14.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
            this.button14.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
            this.button14.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
            //
            // button1
            //
            this.button1.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            this.button1.FlatAppearance.BorderSize = 0;
            this.button1.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
```

```
        this.button1.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.button1.ForeColor = System.Drawing.Color.White;
        this.button1.Location = new System.Drawing.Point(6, 123);
        this.button1.Name = "button1";
        this.button1.Size = new System.Drawing.Size(199, 33);
        this.button1.TabIndex = 15;
        this.button1.Text = "Verificarea cunostintelor";
        this.button1.UseVisualStyleBackColor = false;
        this.button1.Click += new System.EventHandler(this.button1_Click);
        this.button1.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
        this.button1.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
        this.button1.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
        //
        // button6
        //
        this.button6.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
        this.button6.FlatAppearance.BorderSize = 0;
        this.button6.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.button6.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.button6.ForeColor = System.Drawing.Color.White;
        this.button6.Location = new System.Drawing.Point(6, 45);
        this.button6.Name = "button6";
        this.button6.Size = new System.Drawing.Size(199, 33);
        this.button6.TabIndex = 10;
        this.button6.Text = "GraphEditor";
        this.button6.UseVisualStyleBackColor = false;
        this.button6.Click += new System.EventHandler(this.button6_Click);
        this.button6.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
        this.button6.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
        this.button6.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
        //
        // button4
        //
        this.button4.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
        this.button4.FlatAppearance.BorderSize = 0;
        this.button4.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.button4.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.button4.ForeColor = System.Drawing.Color.White;
        this.button4.Location = new System.Drawing.Point(6, 6);
        this.button4.Name = "button4";
        this.button4.Size = new System.Drawing.Size(199, 33);
        this.button4.TabIndex = 14;
        this.button4.Text = "Teorie";
        this.button4.UseVisualStyleBackColor = false;
        this.button4.Click += new System.EventHandler(this.button4_Click);
        this.button4.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
```

```
            this.button4.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
            this.button4.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
            //
            // AddNode
            //
            this.AddNode.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.AddNode.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
            this.AddNode.FlatAppearance.BorderSize = 0;
            this.AddNode.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(39)))), ((int)(((byte)(174)))),
((int)(((byte)(96)))));
            this.AddNode.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.AddNode.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.AddNode.ForeColor = System.Drawing.Color.White;
            this.AddNode.Location = new System.Drawing.Point(1001, 85);
            this.AddNode.Name = "AddNode";
            this.AddNode.Size = new System.Drawing.Size(110, 100);
            this.AddNode.TabIndex = 15;
            this.AddNode.Text = "Adauga Nod";
            this.AddNode.UseVisualStyleBackColor = false;
            this.AddNode.Click += new System.EventHandler(this.AddNode_Click);
            //
            // textBox2
            //
            this.textBox2.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.textBox2.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(231)))), ((int)(((byte)(76)))), ((int)(((byte)(60)))));
            this.textBox2.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.textBox2.ForeColor = System.Drawing.Color.White;
            this.textBox2.Location = new System.Drawing.Point(1128, 85);
            this.textBox2.Name = "textBox2";
            this.textBox2.Size = new System.Drawing.Size(117, 20);
            this.textBox2.TabIndex = 16;
            this.textBox2.Text = "Node to remove";
            this.textBox2.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
            this.textBox2.Click += new System.EventHandler(this.textBox2_Click);
            //
            // RemoveNode
            //
            this.RemoveNode.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.RemoveNode.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(231)))), ((int)(((byte)(76)))), ((int)(((byte)(60)))));
            this.RemoveNode.FlatAppearance.BorderSize = 0;
            this.RemoveNode.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(192)))),
((int)(((byte)(57)))), ((int)(((byte)(43)))));
            this.RemoveNode.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.RemoveNode.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
```

```
            this.RemoveNode.ForeColor = System.Drawing.Color.White;
            this.RemoveNode.Location = new System.Drawing.Point(1128, 111);
            this.RemoveNode.Name = "RemoveNode";
            this.RemoveNode.Size = new System.Drawing.Size(117, 74);
            this.RemoveNode.TabIndex = 17;
            this.RemoveNode.Text = "Sterge Nod";
            this.RemoveNode.UseVisualStyleBackColor = false;
            this.RemoveNode.Click += new System.EventHandler(this.RemoveNode_Click);
            //
            // checkBox1
            //
            this.checkBox1.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.checkBox1.AutoSize = true;
            this.checkBox1.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.checkBox1.Font = new System.Drawing.Font("Microsoft Sans Serif", 8.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.checkBox1.ImageAlign = System.Drawing.ContentAlignment.TopCenter;
            this.checkBox1.Location = new System.Drawing.Point(1001, 205);
            this.checkBox1.Name = "checkBox1";
            this.checkBox1.Size = new System.Drawing.Size(63, 17);
            this.checkBox1.TabIndex = 21;
            this.checkBox1.Text = "Oriented";
            this.checkBox1.TextAlign = System.Drawing.ContentAlignment.TopCenter;
            this.checkBox1.UseVisualStyleBackColor = true;
            this.checkBox1.CheckedChanged += new System.EventHandler(this.checkBox1_CheckedChanged);
            //
            // textBox3
            //
            this.textBox3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.textBox3.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(41)))), ((int)(((byte)(128)))), ((int)(((byte)(185)))));
            this.textBox3.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.textBox3.ForeColor = System.Drawing.Color.White;
            this.textBox3.Location = new System.Drawing.Point(1001, 228);
            this.textBox3.Name = "textBox3";
            this.textBox3.Size = new System.Drawing.Size(110, 20);
            this.textBox3.TabIndex = 22;
            this.textBox3.Text = "Start";
            this.textBox3.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
            this.textBox3.Click += new System.EventHandler(this.textBox3_Click);
            //
            // textBox4
            //
            this.textBox4.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.textBox4.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(41)))), ((int)(((byte)(128)))), ((int)(((byte)(185)))));
            this.textBox4.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.textBox4.ForeColor = System.Drawing.Color.White;
```

```
            this.textBox4.Location = new System.Drawing.Point(1135, 228);
            this.textBox4.Name = "textBox4";
            this.textBox4.Size = new System.Drawing.Size(110, 20);
            this.textBox4.TabIndex = 23;
            this.textBox4.Text = "Finish";
            this.textBox4.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
            this.textBox4.Click += new System.EventHandler(this.textBox4_Click);
            //
            // label3
            //
            this.label3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.label3.AutoSize = true;
            this.label3.Location = new System.Drawing.Point(1113, 231);
            this.label3.Name = "label3";
            this.label3.Size = new System.Drawing.Size(22, 13);
            this.label3.TabIndex = 24;
            this.label3.Text = "<->";
            //
            // label4
            //
            this.label4.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.label4.AutoSize = true;
            this.label4.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.label4.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label4.Location = new System.Drawing.Point(1001, 383);
            this.label4.Name = "label4";
            this.label4.Size = new System.Drawing.Size(74, 16);
            this.label4.TabIndex = 25;
            this.label4.Text = "Algorithms:";
            //
            // Simulate
            //
            this.Simulate.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.Simulate.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
            this.Simulate.FlatAppearance.BorderSize = 0;
            this.Simulate.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(39)))), ((int)(((byte)(174)))),
((int)(((byte)(96)))));
            this.Simulate.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.Simulate.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.Simulate.ForeColor = System.Drawing.Color.White;
            this.Simulate.Location = new System.Drawing.Point(1001, 479);
            this.Simulate.Name = "Simulate";
            this.Simulate.Size = new System.Drawing.Size(244, 60);
            this.Simulate.TabIndex = 26;
```

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            this.Simulate.Text = "Simuleaza Algoritm";
            this.Simulate.UseVisualStyleBackColor = false;
            this.Simulate.Click += new System.EventHandler(this.Simulate_Click);
            //
            // checkBox2
            //
            this.checkBox2.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.checkBox2.AutoSize = true;
            this.checkBox2.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.checkBox2.Font = new System.Drawing.Font("Microsoft Sans Serif", 8.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.checkBox2.ImageAlign = System.Drawing.ContentAlignment.TopCenter;
            this.checkBox2.Location = new System.Drawing.Point(1001, 259);
            this.checkBox2.Name = "checkBox2";
            this.checkBox2.Size = new System.Drawing.Size(69, 17);
            this.checkBox2.TabIndex = 28;
            this.checkBox2.Text = "Weighted";
            this.checkBox2.TextAlign = System.Drawing.ContentAlignment.TopCenter;
            this.checkBox2.UseVisualStyleBackColor = true;
            this.checkBox2.CheckedChanged += new System.EventHandler(this.checkBox2_CheckedChanged);
            //
            // textBox5
            //
            this.textBox5.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.textBox5.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(52)))), ((int)(((byte)(152)))), ((int)(((byte)(219)))));
            this.textBox5.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.textBox5.Enabled = false;
            this.textBox5.ForeColor = System.Drawing.Color.White;
            this.textBox5.Location = new System.Drawing.Point(1001, 282);
            this.textBox5.Name = "textBox5";
            this.textBox5.Size = new System.Drawing.Size(110, 20);
            this.textBox5.TabIndex = 29;
            this.textBox5.Text = "Cost";
            this.textBox5.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
            this.textBox5.Click += new System.EventHandler(this.textBox5_Click);
            //
            // RemoveEdge
            //
            this.RemoveEdge.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.RemoveEdge.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(231)))), ((int)(((byte)(76)))), ((int)(((byte)(60)))));
            this.RemoveEdge.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.RemoveEdge.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.RemoveEdge.ForeColor = System.Drawing.Color.White;
            this.RemoveEdge.Location = new System.Drawing.Point(1001, 315);
            this.RemoveEdge.Name = "RemoveEdge";
```

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        this.RemoveEdge.Size = new System.Drawing.Size(110, 48);
        this.RemoveEdge.TabIndex = 34;
        this.RemoveEdge.Text = "Sterge Muchie";
        this.RemoveEdge.UseVisualStyleBackColor = false;
        this.RemoveEdge.Click += new System.EventHandler(this.RemoveEdge_Click);
        //
        // textBox1
        //
        this.textBox1.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.textBox1.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(52)))), ((int)(((byte)(152)))), ((int)(((byte)(219)))));
        this.textBox1.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
        this.textBox1.Enabled = false;
        this.textBox1.ForeColor = System.Drawing.Color.White;
        this.textBox1.Location = new System.Drawing.Point(1135, 282);
        this.textBox1.Name = "textBox1";
        this.textBox1.Size = new System.Drawing.Size(110, 20);
        this.textBox1.TabIndex = 35;
        this.textBox1.Text = "Capacity";
        this.textBox1.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
        this.textBox1.Click += new System.EventHandler(this.button6_Click);
        //
        // checkBox3
        //
        this.checkBox3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.checkBox3.AutoSize = true;
        this.checkBox3.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.checkBox3.Font = new System.Drawing.Font("Microsoft Sans Serif", 8.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.checkBox3.ImageAlign = System.Drawing.ContentAlignment.TopCenter;
        this.checkBox3.Location = new System.Drawing.Point(1135, 259);
        this.checkBox3.Name = "checkBox3";
        this.checkBox3.Size = new System.Drawing.Size(63, 17);
        this.checkBox3.TabIndex = 36;
        this.checkBox3.Text = "Network";
        this.checkBox3.TextAlign = System.Drawing.ContentAlignment.TopCenter;
        this.checkBox3.UseVisualStyleBackColor = true;
        this.checkBox3.CheckedChanged += new System.EventHandler(this.checkBox3_CheckedChanged);
        //
        // Pause
        //
        this.Pause.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.Pause.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(241)))), ((int)(((byte)(196)))), ((int)(((byte)(15)))));
        this.Pause.FlatAppearance.BorderSize = 0;
        this.Pause.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(231)))), ((int)(((byte)(76)))),
((int)(((byte)(60)))));
        this.Pause.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
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            this.Pause.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.Pause.ForeColor = System.Drawing.Color.Black;
            this.Pause.Location = new System.Drawing.Point(1001, 434);
            this.Pause.Name = "Pause";
            this.Pause.Size = new System.Drawing.Size(133, 38);
            this.Pause.TabIndex = 38;
            this.Pause.Text = "Pauza";
            this.Pause.UseVisualStyleBackColor = false;
            this.Pause.Click += new System.EventHandler(this.Pause_Click);
            //
            // Reset
            //
            this.Reset.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.Reset.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(241)))), ((int)(((byte)(196)))), ((int)(((byte)(15)))));
            this.Reset.DialogResult = System.Windows.Forms.DialogResult.No;
            this.Reset.FlatAppearance.BorderSize = 0;
            this.Reset.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(231)))), ((int)(((byte)(76)))),
((int)(((byte)(60)))));
            this.Reset.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.Reset.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.Reset.ForeColor = System.Drawing.Color.Black;
            this.Reset.Location = new System.Drawing.Point(1001, 545);
            this.Reset.Name = "Reset";
            this.Reset.Size = new System.Drawing.Size(244, 42);
            this.Reset.TabIndex = 42;
            this.Reset.Text = "Reseteaza Date Graf";
            this.Reset.UseVisualStyleBackColor = false;
            this.Reset.Click += new System.EventHandler(this.Reset_Click);
            //
            // AlgoList
            //
            this.AlgoList.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.AlgoList.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
            this.AlgoList.DropDownStyle = System.Windows.Forms.ComboBoxStyle.DropDownList;
            this.AlgoList.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.AlgoList.ForeColor = System.Drawing.Color.White;
            this.AlgoList.FormattingEnabled = true;
            this.AlgoList.Items.AddRange(new object[] {
            "Breadth-first search",
            "Depth-first search",
            "[WIP]Bellman–Ford algorithm",
            "[WIP]Dijkstra\'s algorithm",
            "Kruskal\'s algorithm",
            "[WIP]Prim\'s algorithm",
            "[WIP]Kosaraju\'s algorithm",
```

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        "[WIP]Tarjan\'s strongly connected components algorithm",
        "[WIP]Biconnected Components",
        "[WIP]Eulerian Cycle",
        "[WIP]Hamiltonian Cycle",
        "[WIP]Edmonds-Karp Max Flow",
        "[WIP]Hopcroft Karp bipartite matching"});
        this.AlgoList.Location = new System.Drawing.Point(1001, 407);
        this.AlgoList.Name = "AlgoList";
        this.AlgoList.Size = new System.Drawing.Size(244, 21);
        this.AlgoList.TabIndex = 43;
        this.AlgoList.SelectionChangeCommitted += new System.EventHandler(this.AlgoList_SelectionChangeCommitted);
        this.AlgoList.DropDownClosed += new System.EventHandler(this.AlgoList_DropDownClosed);
        //
        // panel4
        //
        this.panel4.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.panel4.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(142)))), ((int)(((byte)(68)))), ((int)(((byte)(173)))));
        this.panel4.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
        this.panel4.Controls.Add(this.StartingPoint);
        this.panel4.Location = new System.Drawing.Point(1143, 434);
        this.panel4.Name = "panel4";
        this.panel4.Size = new System.Drawing.Size(102, 38);
        this.panel4.TabIndex = 50;
        //
        // StartingPoint
        //
        this.StartingPoint.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.StartingPoint.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(142)))), ((int)(((byte)(68)))), ((int)(((byte)(173)))));
        this.StartingPoint.BorderStyle = System.Windows.Forms.BorderStyle.None;
        this.StartingPoint.ForeColor = System.Drawing.Color.White;
        this.StartingPoint.Location = new System.Drawing.Point(19, 13);
        this.StartingPoint.Name = "StartingPoint";
        this.StartingPoint.Size = new System.Drawing.Size(63, 13);
        this.StartingPoint.TabIndex = 37;
        this.StartingPoint.Text = "Start";
        this.StartingPoint.TextAlign = System.Windows.Forms.HorizontalAlignment.Center;
        this.StartingPoint.Click += new System.EventHandler(this.StartingPoint_Click);
        //
        // Clear
        //
        this.Clear.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
        this.Clear.BackColor = System.Drawing.Color.Red;
        this.Clear.DialogResult = System.Windows.Forms.DialogResult.No;
        this.Clear.FlatAppearance.BorderSize = 0;
        this.Clear.FlatAppearance.MouseOverBackColor = System.Drawing.Color.Red;
        this.Clear.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
```

```
            this.Clear.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.Clear.ForeColor = System.Drawing.Color.Black;
            this.Clear.Location = new System.Drawing.Point(1001, 593);
            this.Clear.Name = "Clear";
            this.Clear.Size = new System.Drawing.Size(244, 42);
            this.Clear.TabIndex = 55;
            this.Clear.Text = "Sterge Graf";
            this.Clear.UseVisualStyleBackColor = false;
            this.Clear.Click += new System.EventHandler(this.ClearGraphControl);
            //
            // AddEdgeButton
            //
            this.AddEdgeButton.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.AddEdgeButton.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
            this.AddEdgeButton.FlatAppearance.BorderSize = 0;
            this.AddEdgeButton.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(39)))),
((int)(((byte)(174)))), ((int)(((byte)(96)))));
            this.AddEdgeButton.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.AddEdgeButton.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.AddEdgeButton.ForeColor = System.Drawing.Color.White;
            this.AddEdgeButton.Location = new System.Drawing.Point(1135, 315);
            this.AddEdgeButton.Name = "AddEdgeButton";
            this.AddEdgeButton.Size = new System.Drawing.Size(110, 48);
            this.AddEdgeButton.TabIndex = 56;
            this.AddEdgeButton.Text = "Adauga Muchie";
            this.AddEdgeButton.UseVisualStyleBackColor = false;
            this.AddEdgeButton.Click += new System.EventHandler(this.AddEdge_Click);
            //
            // GraphEditorPanel
            //
            this.GraphEditorPanel.BackColor = System.Drawing.Color.White;
            this.GraphEditorPanel.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Stretch;
            this.GraphEditorPanel.Controls.Add(this.label9);
            this.GraphEditorPanel.Controls.Add(this.label6);
            this.GraphEditorPanel.Controls.Add(this.mySeparator3);
            this.GraphEditorPanel.Controls.Add(this.mySeparator2);
            this.GraphEditorPanel.Controls.Add(this.AddEdgeButton);
            this.GraphEditorPanel.Controls.Add(this.Clear);
            this.GraphEditorPanel.Controls.Add(this.QueuePanel);
            this.GraphEditorPanel.Controls.Add(this.panel4);
            this.GraphEditorPanel.Controls.Add(this.AlgoList);
            this.GraphEditorPanel.Controls.Add(this.Reset);
            this.GraphEditorPanel.Controls.Add(this.panel2);
            this.GraphEditorPanel.Controls.Add(this.Pause);
            this.GraphEditorPanel.Controls.Add(this.checkBox3);
            this.GraphEditorPanel.Controls.Add(this.textBox1);
```

```
            this.GraphEditorPanel.Controls.Add(this.RemoveEdge);
            this.GraphEditorPanel.Controls.Add(this.textBox5);
            this.GraphEditorPanel.Controls.Add(this.checkBox2);
            this.GraphEditorPanel.Controls.Add(this.Simulate);
            this.GraphEditorPanel.Controls.Add(this.label4);
            this.GraphEditorPanel.Controls.Add(this.label3);
            this.GraphEditorPanel.Controls.Add(this.textBox4);
            this.GraphEditorPanel.Controls.Add(this.textBox3);
            this.GraphEditorPanel.Controls.Add(this.checkBox1);
            this.GraphEditorPanel.Controls.Add(this.RemoveNode);
            this.GraphEditorPanel.Controls.Add(this.textBox2);
            this.GraphEditorPanel.Controls.Add(this.AddNode);
            this.GraphEditorPanel.Dock = System.Windows.Forms.DockStyle.Fill;
            this.GraphEditorPanel.Location = new System.Drawing.Point(0, 0);
            this.GraphEditorPanel.Margin = new System.Windows.Forms.Padding(0);
            this.GraphEditorPanel.Name = "GraphEditorPanel";
            this.GraphEditorPanel.Size = new System.Drawing.Size(1278, 718);
            this.GraphEditorPanel.TabIndex = 50;
            //
            // label9
            //
            this.label9.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Bottom |
System.Windows.Forms.AnchorStyles.Left)));
            this.label9.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label9.Location = new System.Drawing.Point(252, 660);
            this.label9.Name = "label9";
            this.label9.Size = new System.Drawing.Size(67, 26);
            this.label9.TabIndex = 61;
            this.label9.Text = "Cost:";
            //
            // label6
            //
            this.label6.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Bottom |
System.Windows.Forms.AnchorStyles.Left)));
            this.label6.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label6.Location = new System.Drawing.Point(252, 609);
            this.label6.Name = "label6";
            this.label6.Size = new System.Drawing.Size(67, 26);
            this.label6.TabIndex = 60;
            this.label6.Text = "Coada:";
            //
            // mySeparator3
            //
            this.mySeparator3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.mySeparator3.BackColor = System.Drawing.Color.Transparent;
            this.mySeparator3.LineColor = System.Drawing.Color.FromArgb(((int)(((byte)(105)))), ((int)(((byte)(105)))), ((int)(((byte)(105)))));
```

```
this.mySeparator3.LineThickness = 2;
this.mySeparator3.Location = new System.Drawing.Point(1001, 367);
this.mySeparator3.Name = "mySeparator3";
this.mySeparator3.Size = new System.Drawing.Size(244, 17);
this.mySeparator3.TabIndex = 59;
this.mySeparator3.Transparency = 255;
this.mySeparator3.Vertical = false;
//
// mySeparator2
//
this.mySeparator2.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
this.mySeparator2.BackColor = System.Drawing.Color.Transparent;
this.mySeparator2.LineColor = System.Drawing.Color.FromArgb(((int)(((byte)(105)))), ((int)(((byte)(105)))), ((int)(((byte)(105)))));
this.mySeparator2.LineThickness = 2;
this.mySeparator2.Location = new System.Drawing.Point(1001, 191);
this.mySeparator2.Name = "mySeparator2";
this.mySeparator2.Size = new System.Drawing.Size(244, 17);
this.mySeparator2.TabIndex = 58;
this.mySeparator2.Transparency = 255;
this.mySeparator2.Vertical = false;
//
// QueuePanel
//
this.QueuePanel.Anchor = ((System.Windows.Forms.AnchorStyles)(((System.Windows.Forms.AnchorStyles.Bottom |
System.Windows.Forms.AnchorStyles.Left)
| System.Windows.Forms.AnchorStyles.Right)));
this.QueuePanel.CellBorderStyle = System.Windows.Forms.TableLayoutPanelCellBorderStyle.Single;
this.QueuePanel.ColumnCount = 68;
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
```

```
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
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        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
```

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this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 25F));
```

```
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
25F));
        this.QueuePanel.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute,
377F));
        this.QueuePanel.GrowStyle = System.Windows.Forms.TableLayoutPanelGrowStyle.FixedSize;
        this.QueuePanel.Location = new System.Drawing.Point(445, 601);
        this.QueuePanel.Margin = new System.Windows.Forms.Padding(0);
        this.QueuePanel.Name = "QueuePanel";
        this.QueuePanel.RowCount = 1;
        this.QueuePanel.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 100F));
        this.QueuePanel.Size = new System.Drawing.Size(542, 32);
        this.QueuePanel.TabIndex = 54;
        //
        // panel2
        //
        this.panel2.Anchor = ((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Bottom)
        | System.Windows.Forms.AnchorStyles.Left)
        | System.Windows.Forms.AnchorStyles.Right)));
        this.panel2.BackColor = System.Drawing.Color.White;
        this.panel2.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
        this.panel2.Location = new System.Drawing.Point(216, 85);
        this.panel2.Name = "panel2";
        this.panel2.Size = new System.Drawing.Size(779, 487);
        this.panel2.TabIndex = 39;
        this.panel2.Paint += new System.Windows.Forms.PaintEventHandler(this.DrawEdges);
        this.panel2.MouseMove += new System.Windows.Forms.MouseEventHandler(this.panel2_MouseMove);
        //
        // Sidebar
        //
        this.Sidebar.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(40)))), ((int)(((byte)(40)))), ((int)(((byte)(40)))));
        this.Sidebar.Controls.Add(this.panel3);
        this.Sidebar.Controls.Add(this.Logo);
```

```
this.Sidebar.Dock = System.Windows.Forms.DockStyle.Left;
this.Sidebar.Location = new System.Drawing.Point(0, 0);
this.Sidebar.Name = "Sidebar";
this.Sidebar.Size = new System.Drawing.Size(210, 718);
this.Sidebar.TabIndex = 62;
//
// panel3
//
this.panel3.Controls.Add(this.label11);
this.panel3.Controls.Add(this.label5);
this.panel3.Controls.Add(this.button14);
this.panel3.Controls.Add(this.pictureBox1);
this.panel3.Controls.Add(this.button4);
this.panel3.Controls.Add(this.button1);
this.panel3.Controls.Add(this.button6);
this.panel3.Dock = System.Windows.Forms.DockStyle.Fill;
this.panel3.Location = new System.Drawing.Point(0, 169);
this.panel3.Name = "panel3";
this.panel3.Size = new System.Drawing.Size(210, 549);
this.panel3.TabIndex = 69;
//
// label11
//
this.label11.Anchor = System.Windows.Forms.AnchorStyles.Bottom;
this.label11.AutoSize = true;
this.label11.ForeColor = System.Drawing.SystemColors.ActiveCaption;
this.label11.Location = new System.Drawing.Point(64, 508);
this.label11.Name = "label11";
this.label11.Size = new System.Drawing.Size(89, 13);
this.label11.TabIndex = 45;
this.label11.Text = "Autor: Rica Radu";
//
// label5
//
this.label5.Anchor = System.Windows.Forms.AnchorStyles.Bottom;
this.label5.AutoSize = true;
this.label5.ForeColor = System.Drawing.SystemColors.ActiveCaption;
this.label5.Location = new System.Drawing.Point(73, 491);
this.label5.Name = "label5";
this.label5.Size = new System.Drawing.Size(72, 13);
this.label5.TabIndex = 44;
this.label5.Text = "Versiunea 1.0";
//
// pictureBox1
//
this.pictureBox1.Anchor = System.Windows.Forms.AnchorStyles.Bottom;
this.pictureBox1.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("pictureBox1.BackgroundImage")));
this.pictureBox1.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Stretch;
this.pictureBox1.Location = new System.Drawing.Point(52, 388);
```

```
this.pictureBox1.Name = "pictureBox1";
this.pictureBox1.Size = new System.Drawing.Size(100, 100);
this.pictureBox1.TabIndex = 43;
this.pictureBox1.TabStop = false;
//
// Logo
//
this.Logo.Controls.Add(this.Scorebar);
this.Logo.Controls.Add(this.TProg);
this.Logo.Controls.Add(this.ProgresT);
this.Logo.Controls.Add(this.label13);
this.Logo.Controls.Add(this.Ceas);
this.Logo.Controls.Add(this.label12);
this.Logo.Controls.Add(this.label1);
this.Logo.Dock = System.Windows.Forms.DockStyle.Top;
this.Logo.Location = new System.Drawing.Point(0, 0);
this.Logo.Name = "Logo";
this.Logo.Size = new System.Drawing.Size(210, 169);
this.Logo.TabIndex = 63;
this.Logo.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
this.Logo.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
this.Logo.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
//
// Scorebar
//
this.Scorebar.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
this.Scorebar.BorderRadius = 0;
this.Scorebar.Location = new System.Drawing.Point(5, 131);
this.Scorebar.MaximumValue = 100;
this.Scorebar.Name = "Scorebar";
this.Scorebar.ProgressColor = System.Drawing.Color.FromArgb(((int)(((byte)(39)))), ((int)(((byte)(174)))), ((int)(((byte)(96)))));
this.Scorebar.Size = new System.Drawing.Size(194, 17);
this.Scorebar.TabIndex = 26;
this.Scorebar.Value = 0;
//
// TProg
//
this.TProg.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(46)))), ((int)(((byte)(204)))), ((int)(((byte)(113)))));
this.TProg.BorderRadius = 0;
this.TProg.Location = new System.Drawing.Point(5, 81);
this.TProg.MaximumValue = 5;
this.TProg.Name = "TProg";
this.TProg.ProgressColor = System.Drawing.Color.FromArgb(((int)(((byte)(39)))), ((int)(((byte)(174)))), ((int)(((byte)(96)))));
this.TProg.Size = new System.Drawing.Size(194, 17);
this.TProg.TabIndex = 8;
this.TProg.Value = 1;
//
// ProgresT
//
```

```
            this.ProgresT.Font = new System.Drawing.Font("Segoe UI", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.ProgresT.ForeColor = System.Drawing.Color.White;
            this.ProgresT.Location = new System.Drawing.Point(128, 51);
            this.ProgresT.Name = "ProgresT";
            this.ProgresT.Size = new System.Drawing.Size(71, 21);
            this.ProgresT.TabIndex = 25;
            this.ProgresT.Text = "0";
            this.ProgresT.TextAlign = System.Drawing.ContentAlignment.MiddleRight;
            //
            // label13
            //
            this.label13.Font = new System.Drawing.Font("Segoe UI", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label13.ForeColor = System.Drawing.Color.White;
            this.label13.Location = new System.Drawing.Point(132, 107);
            this.label13.Name = "label13";
            this.label13.Size = new System.Drawing.Size(67, 21);
            this.label13.TabIndex = 24;
            this.label13.Text = "0";
            this.label13.TextAlign = System.Drawing.ContentAlignment.MiddleRight;
            //
            // Ceas
            //
            this.Ceas.Font = new System.Drawing.Font("Segoe UI", 14.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.Ceas.ForeColor = System.Drawing.Color.White;
            this.Ceas.Location = new System.Drawing.Point(68, 19);
            this.Ceas.Name = "Ceas";
            this.Ceas.Size = new System.Drawing.Size(83, 28);
            this.Ceas.TabIndex = 18;
            this.Ceas.Text = "Clock";
            this.Ceas.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
            //
            // label12
            //
            this.label12.AutoSize = true;
            this.label12.Font = new System.Drawing.Font("Segoe UI", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label12.ForeColor = System.Drawing.Color.White;
            this.label12.Location = new System.Drawing.Point(1, 107);
            this.label12.Name = "label12";
            this.label12.Size = new System.Drawing.Size(106, 21);
            this.label12.TabIndex = 16;
            this.label12.Text = "Nota maxima:";
            this.label12.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
            //
            // label1
            //
```

```
            this.label1.AutoSize = true;
            this.label1.Font = new System.Drawing.Font("Segoe UI", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label1.ForeColor = System.Drawing.Color.White;
            this.label1.Location = new System.Drawing.Point(2, 53);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(117, 21);
            this.label1.TabIndex = 10;
            this.label1.Text = "Teorie Parcursa:";
            this.label1.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
            //
            // timer1
            //
            this.timer1.Enabled = true;
            this.timer1.Interval = 1000;
            this.timer1.Tick += new System.EventHandler(this.timer1_Tick);
            //
            // RankPanel
            //
            this.RankPanel.AllowUserToAddRows = false;
            this.RankPanel.AllowUserToDeleteRows = false;
            this.RankPanel.AllowUserToOrderColumns = true;
            dataGridViewCellStyle1.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(234)))), ((int)(((byte)(234)))),
((int)(((byte)(234)))));
            dataGridViewCellStyle1.ForeColor = System.Drawing.Color.Black;
            dataGridViewCellStyle1.SelectionBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(234)))), ((int)(((byte)(234)))),
((int)(((byte)(234)))));
            dataGridViewCellStyle1.SelectionForeColor = System.Drawing.Color.Black;
            this.RankPanel.AlternatingRowsDefaultCellStyle = dataGridViewCellStyle1;
            this.RankPanel.AutoSizeColumnsMode = System.Windows.Forms.DataGridViewAutoSizeColumnsMode.Fill;
            this.RankPanel.AutoSizeRowsMode = System.Windows.Forms.DataGridViewAutoSizeRowsMode.AllCells;
            this.RankPanel.BackgroundColor = System.Drawing.Color.White;
            this.RankPanel.ColumnHeadersBorderStyle = System.Windows.Forms.DataGridViewHeaderBorderStyle.Single;
            dataGridViewCellStyle2.Alignment = System.Windows.Forms.DataGridViewContentAlignment.MiddleCenter;
            dataGridViewCellStyle2.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(234)))), ((int)(((byte)(234)))),
((int)(((byte)(234)))));
            dataGridViewCellStyle2.Font = new System.Drawing.Font("Arial", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            dataGridViewCellStyle2.ForeColor = System.Drawing.Color.Black;
            dataGridViewCellStyle2.SelectionBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(234)))), ((int)(((byte)(234)))),
((int)(((byte)(234)))));
            dataGridViewCellStyle2.SelectionForeColor = System.Drawing.Color.Black;
            dataGridViewCellStyle2.WrapMode = System.Windows.Forms.DataGridViewTriState.True;
            this.RankPanel.ColumnHeadersDefaultCellStyle = dataGridViewCellStyle2;
            this.RankPanel.ColumnHeadersHeight = 45;
            this.RankPanel.ColumnHeadersHeightSizeMode =
System.Windows.Forms.DataGridViewColumnHeadersHeightSizeMode.DisableResizing;
            dataGridViewCellStyle3.Alignment = System.Windows.Forms.DataGridViewContentAlignment.MiddleCenter;
            dataGridViewCellStyle3.BackColor = System.Drawing.Color.White;
```

```
        dataGridViewCellStyle3.Font = new System.Drawing.Font("Arial", 15.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        dataGridViewCellStyle3.ForeColor = System.Drawing.Color.Black;
        dataGridViewCellStyle3.SelectionBackColor = System.Drawing.Color.White;
        dataGridViewCellStyle3.SelectionForeColor = System.Drawing.Color.Black;
        dataGridViewCellStyle3.WrapMode = System.Windows.Forms.DataGridViewTriState.True;
        this.RankPanel.DefaultCellStyle = dataGridViewCellStyle3;
        this.RankPanel.Dock = System.Windows.Forms.DockStyle.Fill;
        this.RankPanel.EditMode = System.Windows.Forms.DataGridViewEditMode.EditProgrammatically;
        this.RankPanel.EnableHeadersVisualStyles = false;
        this.RankPanel.Location = new System.Drawing.Point(0, 0);
        this.RankPanel.MultiSelect = false;
        this.RankPanel.Name = "RankPanel";
        this.RankPanel.ReadOnly = true;
        this.RankPanel.RowHeadersBorderStyle = System.Windows.Forms.DataGridViewHeaderBorderStyle.None;
        this.RankPanel.RowHeadersVisible = false;
        this.RankPanel.RowHeadersWidth = 44;
        this.RankPanel.Size = new System.Drawing.Size(1278, 718);
        this.RankPanel.TabIndex = 65;
        //
        // Examples
        //
        this.Examples.BackColor = System.Drawing.Color.White;
        this.Examples.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("Examples.BackgroundImage")));
        this.Examples.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Stretch;
        this.Examples.Controls.Add(this.SaveTo);
        this.Examples.Controls.Add(this.AlgoSel);
        this.Examples.Dock = System.Windows.Forms.DockStyle.Fill;
        this.Examples.Location = new System.Drawing.Point(0, 0);
        this.Examples.Name = "Examples";
        this.Examples.Size = new System.Drawing.Size(1278, 718);
        this.Examples.TabIndex = 7;
        //
        // SaveTo
        //
        this.SaveTo.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(189)))), ((int)(((byte)(195)))), ((int)(((byte)(199)))));
        this.SaveTo.FlatAppearance.BorderSize = 0;
        this.SaveTo.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.SaveTo.Font = new System.Drawing.Font("Arial", 12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.SaveTo.ForeColor = System.Drawing.Color.Black;
        this.SaveTo.Location = new System.Drawing.Point(43, 146);
        this.SaveTo.Name = "SaveTo";
        this.SaveTo.Size = new System.Drawing.Size(339, 40);
        this.SaveTo.TabIndex = 45;
        this.SaveTo.Text = "Salveaza sursa";
        this.SaveTo.UseVisualStyleBackColor = false;
        this.SaveTo.Click += new System.EventHandler(this.SaveTo_Click);
        //
```

```
            // AlgoSel
            //
            this.AlgoSel.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(189)))), ((int)(((byte)(195)))), ((int)(((byte)(199)))));
            this.AlgoSel.CausesValidation = false;
            this.AlgoSel.DropDownStyle = System.Windows.Forms.ComboBoxStyle.DropDownList;
            this.AlgoSel.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.AlgoSel.Font = new System.Drawing.Font("Arial", 15.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.AlgoSel.ForeColor = System.Drawing.Color.Black;
            this.AlgoSel.FormattingEnabled = true;
            this.AlgoSel.ItemHeight = 24;
            this.AlgoSel.Items.AddRange(new object[] {
            "Breadth-first search",
            "Depth-first search",
            "Bellman–Ford algorithm",
            "Dijkstra\'s algorithm",
            "Kruskal\'s algorithm",
            "Prim\'s algorithm",
            "Kosaraju\'s algorithm",
            "Tarjan\'s strongly connected components algorithm",
            "Biconnected Components",
            "Hamiltonian Cycle",
            "Eulerian Cycle",
            "Edmonds-Karp Max Flow",
            "Hopcroft Karp bipartite matching"});
            this.AlgoSel.Location = new System.Drawing.Point(43, 100);
            this.AlgoSel.Name = "AlgoSel";
            this.AlgoSel.Size = new System.Drawing.Size(558, 32);
            this.AlgoSel.TabIndex = 44;
            this.AlgoSel.DropDownClosed += new System.EventHandler(this.AlgoList_DropDownClosed);
            //
            // ExPanel
            //
            this.ExPanel.BackColor = System.Drawing.Color.White;
            this.ExPanel.Controls.Add(this.button17);
            this.ExPanel.Controls.Add(this.flowLayoutPanel1);
            this.ExPanel.Dock = System.Windows.Forms.DockStyle.Fill;
            this.ExPanel.Location = new System.Drawing.Point(0, 0);
            this.ExPanel.Name = "ExPanel";
            this.ExPanel.Size = new System.Drawing.Size(1278, 718);
            this.ExPanel.TabIndex = 7;
            //
            // button17
            //
            this.button17.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Bottom |
System.Windows.Forms.AnchorStyles.Right)));
            this.button17.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(241)))), ((int)(((byte)(196)))), ((int)(((byte)(15)))));
            this.button17.FlatAppearance.BorderSize = 0;
            this.button17.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
```

```
            this.button17.Location = new System.Drawing.Point(1045, 592);
            this.button17.Name = "button17";
            this.button17.Size = new System.Drawing.Size(188, 41);
            this.button17.TabIndex = 1;
            this.button17.Text = "Verifica";
            this.button17.UseVisualStyleBackColor = false;
            this.button17.Click += new System.EventHandler(this.button17_Click);
            //
            // flowLayoutPanel1
            //
            this.flowLayoutPanel1.Anchor = ((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Bottom)
            | System.Windows.Forms.AnchorStyles.Left)
            | System.Windows.Forms.AnchorStyles.Right)));
            this.flowLayoutPanel1.AutoScroll = true;
            this.flowLayoutPanel1.BackColor = System.Drawing.Color.White;
            this.flowLayoutPanel1.FlowDirection = System.Windows.Forms.FlowDirection.TopDown;
            this.flowLayoutPanel1.Location = new System.Drawing.Point(43, 30);
            this.flowLayoutPanel1.Name = "flowLayoutPanel1";
            this.flowLayoutPanel1.Size = new System.Drawing.Size(1190, 517);
            this.flowLayoutPanel1.TabIndex = 0;
            this.flowLayoutPanel1.WrapContents = false;
            //
            // meniu1
            //
            this.meniu1.BackColor = System.Drawing.Color.White;
            this.meniu1.BackgroundImage = global::WindowsFormsApplication4.Properties.Resources._1;
            this.meniu1.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Zoom;
            this.meniu1.Controls.Add(this.button11);
            this.meniu1.Controls.Add(this.button10);
            this.meniu1.Dock = System.Windows.Forms.DockStyle.Fill;
            this.meniu1.Location = new System.Drawing.Point(0, 0);
            this.meniu1.Name = "meniu1";
            this.meniu1.Size = new System.Drawing.Size(1278, 718);
            this.meniu1.TabIndex = 64;
            //
            // button11
            //
            this.button11.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("button11.BackgroundImage")));
            this.button11.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Center;
            this.button11.Dock = System.Windows.Forms.DockStyle.Right;
            this.button11.FlatAppearance.BorderSize = 0;
            this.button11.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(224)))), ((int)(((byte)(224)))),
((int)(((byte)(224)))));
            this.button11.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.button11.Location = new System.Drawing.Point(1203, 0);
            this.button11.Name = "button11";
            this.button11.Size = new System.Drawing.Size(75, 718);
            this.button11.TabIndex = 6;
```

```
            this.button11.UseVisualStyleBackColor = true;
            this.button11.Click += new System.EventHandler(this.button11_Click);
            //
            // button10
            //
            this.button10.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("button10.BackgroundImage")));
            this.button10.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Center;
            this.button10.Dock = System.Windows.Forms.DockStyle.Left;
            this.button10.FlatAppearance.BorderSize = 0;
            this.button10.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(224)))), ((int)(((byte)(224)))),
((int)(((byte)(224)))));
            this.button10.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
            this.button10.Location = new System.Drawing.Point(0, 0);
            this.button10.Name = "button10";
            this.button10.Size = new System.Drawing.Size(75, 718);
            this.button10.TabIndex = 5;
            this.button10.UseVisualStyleBackColor = true;
            this.button10.Click += new System.EventHandler(this.button10_Click);
            //
            // Base
            //
            this.Base.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.Base.Controls.Add(this.Header);
            this.Base.Controls.Add(this.Sidebar);
            this.Base.Controls.Add(this.meniu1);
            this.Base.Controls.Add(this.GraphEditorPanel);
            this.Base.Controls.Add(this.ExPanel);
            this.Base.Controls.Add(this.RankPanel);
            this.Base.Controls.Add(this.Examples);
            this.Base.Dock = System.Windows.Forms.DockStyle.Fill;
            this.Base.Location = new System.Drawing.Point(0, 0);
            this.Base.Name = "Base";
            this.Base.Size = new System.Drawing.Size(1280, 720);
            this.Base.TabIndex = 66;
            //
            // Header
            //
            this.Header.BackColor = System.Drawing.Color.White;
            this.Header.Controls.Add(this.flatMini1);
            this.Header.Controls.Add(this.flatClose1);
            this.Header.Controls.Add(this.flatMax1);
            this.Header.Dock = System.Windows.Forms.DockStyle.Top;
            this.Header.Location = new System.Drawing.Point(210, 0);
            this.Header.Name = "Header";
            this.Header.Size = new System.Drawing.Size(1068, 51);
            this.Header.TabIndex = 57;
            this.Header.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
            this.Header.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
            this.Header.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
```

```
            //
            // flatMini1
            //
            this.flatMini1.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatMini1.BackColor = System.Drawing.Color.Blue;
            this.flatMini1.BaseColor = System.Drawing.Color.White;
            this.flatMini1.Font = new System.Drawing.Font("Marlett", 12F);
            this.flatMini1.Location = new System.Drawing.Point(978, 16);
            this.flatMini1.Name = "flatMini1";
            this.flatMini1.Size = new System.Drawing.Size(18, 18);
            this.flatMini1.TabIndex = 13;
            this.flatMini1.Text = "flatMini1";
            this.flatMini1.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            //
            // flatClose1
            //
            this.flatClose1.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatClose1.BackColor = System.Drawing.Color.White;
            this.flatClose1.BaseColor = System.Drawing.Color.White;
            this.flatClose1.Font = new System.Drawing.Font("Marlett", 10F);
            this.flatClose1.Location = new System.Drawing.Point(1030, 16);
            this.flatClose1.Name = "flatClose1";
            this.flatClose1.Size = new System.Drawing.Size(18, 18);
            this.flatClose1.TabIndex = 12;
            this.flatClose1.Text = "flatClose1";
            this.flatClose1.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            this.flatClose1.Click += new System.EventHandler(this.flatClose1_Click);
            //
            // flatMax1
            //
            this.flatMax1.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatMax1.BackColor = System.Drawing.Color.White;
            this.flatMax1.BaseColor = System.Drawing.Color.White;
            this.flatMax1.Font = new System.Drawing.Font("Marlett", 12F);
            this.flatMax1.Location = new System.Drawing.Point(1006, 16);
            this.flatMax1.Name = "flatMax1";
            this.flatMax1.Size = new System.Drawing.Size(18, 18);
            this.flatMax1.TabIndex = 11;
            this.flatMax1.Text = "flatMax1";
            this.flatMax1.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            //
            // Loading
            //
            this.Loading.BackColor = System.Drawing.Color.White;
            this.Loading.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Stretch;
            this.Loading.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
```

```
            this.Loading.Controls.Add(this.label8);
            this.Loading.Controls.Add(this.pictureBox5);
            this.Loading.Controls.Add(this.flatMini3);
            this.Loading.Controls.Add(this.flatClose3);
            this.Loading.Controls.Add(this.flatMax3);
            this.Loading.Dock = System.Windows.Forms.DockStyle.Fill;
            this.Loading.Location = new System.Drawing.Point(0, 0);
            this.Loading.Name = "Loading";
            this.Loading.Size = new System.Drawing.Size(1280, 720);
            this.Loading.TabIndex = 33;
            this.Loading.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
            this.Loading.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
            this.Loading.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
            //
            // label8
            //
            this.label8.AutoSize = true;
            this.label8.Font = new System.Drawing.Font("Microsoft Sans Serif", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.label8.Location = new System.Drawing.Point(616, 485);
            this.label8.Name = "label8";
            this.label8.Size = new System.Drawing.Size(66, 16);
            this.label8.TabIndex = 21;
            this.label8.Text = "Loading...";
            //
            // pictureBox5
            //
            this.pictureBox5.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Zoom;
            this.pictureBox5.ImageLocation = "Data/Loading.gif";
            this.pictureBox5.Location = new System.Drawing.Point(0, 60);
            this.pictureBox5.Name = "pictureBox5";
            this.pictureBox5.Size = new System.Drawing.Size(1280, 216);
            this.pictureBox5.SizeMode = System.Windows.Forms.PictureBoxSizeMode.Zoom;
            this.pictureBox5.TabIndex = 20;
            this.pictureBox5.TabStop = false;
            this.pictureBox5.MouseDown += new System.Windows.Forms.MouseEventHandler(this.Form_mouseDown);
            this.pictureBox5.MouseMove += new System.Windows.Forms.MouseEventHandler(this.Form_mouseMove);
            this.pictureBox5.MouseUp += new System.Windows.Forms.MouseEventHandler(this.Form_mouseUp);
            //
            // flatMini3
            //
            this.flatMini3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatMini3.BackColor = System.Drawing.Color.Blue;
            this.flatMini3.BaseColor = System.Drawing.Color.White;
            this.flatMini3.Font = new System.Drawing.Font("Marlett", 12F);
            this.flatMini3.Location = new System.Drawing.Point(1187, 13);
            this.flatMini3.Name = "flatMini3";
            this.flatMini3.Size = new System.Drawing.Size(18, 18);
```

```
            this.flatMini3.TabIndex = 19;
            this.flatMini3.Text = "flatMini3";
            this.flatMini3.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            //
            // flatClose3
            //
            this.flatClose3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatClose3.BackColor = System.Drawing.Color.White;
            this.flatClose3.BaseColor = System.Drawing.Color.White;
            this.flatClose3.Font = new System.Drawing.Font("Marlett", 10F);
            this.flatClose3.Location = new System.Drawing.Point(1239, 13);
            this.flatClose3.Name = "flatClose3";
            this.flatClose3.Size = new System.Drawing.Size(18, 18);
            this.flatClose3.TabIndex = 18;
            this.flatClose3.Text = "flatClose3";
            this.flatClose3.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            //
            // flatMax3
            //
            this.flatMax3.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Right)));
            this.flatMax3.BackColor = System.Drawing.Color.White;
            this.flatMax3.BaseColor = System.Drawing.Color.White;
            this.flatMax3.Font = new System.Drawing.Font("Marlett", 12F);
            this.flatMax3.Location = new System.Drawing.Point(1215, 13);
            this.flatMax3.Name = "flatMax3";
            this.flatMax3.Size = new System.Drawing.Size(18, 18);
            this.flatMax3.TabIndex = 17;
            this.flatMax3.Text = "flatMax3";
            this.flatMax3.TextColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            //
            // Grafuri
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(30)))), ((int)(((byte)(30)))), ((int)(((byte)(30)))));
            this.ClientSize = new System.Drawing.Size(1280, 720);
            this.Controls.Add(this.Base);
            this.Controls.Add(this.Loading);
            this.DoubleBuffered = true;
            this.ForeColor = System.Drawing.SystemColors.ControlText;
            this.FormBorderStyle = System.Windows.Forms.FormBorderStyle.FixedSingle;
            this.Icon = ((System.Drawing.Icon)(resources.GetObject("$this.Icon")));
            this.Name = "Grafuri";
            this.SizeGripStyle = System.Windows.Forms.SizeGripStyle.Show;
            this.StartPosition = System.Windows.Forms.FormStartPosition.CenterScreen;
            this.Text = "Grafuri";
            this.panel4.ResumeLayout(false);
```

```
    this.panel4.PerformLayout();
    this.GraphEditorPanel.ResumeLayout(false);
    this.GraphEditorPanel.PerformLayout();
    this.Sidebar.ResumeLayout(false);
    this.panel3.ResumeLayout(false);
    this.panel3.PerformLayout();
    ((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).EndInit();
    this.Logo.ResumeLayout(false);
    this.Logo.PerformLayout();
    ((System.ComponentModel.ISupportInitialize)(this.RankPanel)).EndInit();
    this.Examples.ResumeLayout(false);
    this.ExPanel.ResumeLayout(false);
    this.meniu1.ResumeLayout(false);
    this.Base.ResumeLayout(false);
    this.Header.ResumeLayout(false);
    this.Loading.ResumeLayout(false);
    this.Loading.PerformLayout();
    ((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).EndInit();
    this.ResumeLayout(false);

}

#endregion
private System.Windows.Forms.Button button6;
private System.Windows.Forms.Button button4;
private System.Windows.Forms.Button AddNode;
private System.Windows.Forms.TextBox textBox2;
private System.Windows.Forms.Button RemoveNode;
private System.Windows.Forms.CheckBox checkBox1;
private System.Windows.Forms.TextBox textBox3;
private System.Windows.Forms.TextBox textBox4;
private System.Windows.Forms.Label label3;
private System.Windows.Forms.Label label4;
private System.Windows.Forms.Button Simulate;
private System.Windows.Forms.CheckBox checkBox2;
private System.Windows.Forms.TextBox textBox5;
private System.Windows.Forms.Button RemoveEdge;
private System.Windows.Forms.TextBox textBox1;
private System.Windows.Forms.CheckBox checkBox3;
private System.Windows.Forms.Button Pause;
private Canvas2 panel2;
private System.Windows.Forms.Button Reset;
private System.Windows.Forms.ComboBox AlgoList;
private System.Windows.Forms.Panel panel4;
private System.Windows.Forms.TextBox StartingPoint;
private System.Windows.Forms.Button Clear;
private System.Windows.Forms.Button AddEdgeButton;
private System.Windows.Forms.Panel GraphEditorPanel;
private System.Windows.Forms.Panel Sidebar;
```

```
        private System.Windows.Forms.Button button1;
        private System.Windows.Forms.Panel Logo;
        private System.Windows.Forms.Label label12;
        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.Label Ceas;
        private System.Windows.Forms.Timer timer1;
        private System.Windows.Forms.Label label13;
        private System.Windows.Forms.Label ProgresT;
        private Canvas2 meniu1;
        private System.Windows.Forms.Button button11;
        private System.Windows.Forms.Button button10;
        private MyProgressBar2 Scorebar;
        private System.Windows.Forms.Panel panel3;
        private System.Windows.Forms.Label label11;
        private System.Windows.Forms.Label label5;
        private System.Windows.Forms.PictureBox pictureBox1;
        private MySeparator mySeparator3;
        private MySeparator mySeparator2;
        private Canvas2 Examples;
        private System.Windows.Forms.Button SaveTo;
        private System.Windows.Forms.ComboBox AlgoSel;
        private System.Windows.Forms.DataGridView RankPanel;
        private System.Windows.Forms.Button button14;
        private Canvas2 ExPanel;
        private System.Windows.Forms.FlowLayoutPanel flowLayoutPanel1;
        private System.Windows.Forms.Button button17;
        private System.Windows.Forms.TableLayoutPanel QueuePanel;
        private Canvas2 Base;
        private System.Windows.Forms.Panel Header;
        private FlatUI.FlatMini flatMini1;
        private FlatUI.FlatClose flatClose1;
        private FlatUI.FlatMax flatMax1;
        private System.Windows.Forms.Label label6;
        private System.Windows.Forms.Label label9;
        private System.ComponentModel.BackgroundWorker backgroundWorker1;
        private Canvas2 Loading;
        private FlatUI.FlatMini flatMini3;
        private FlatUI.FlatClose flatClose3;
        private FlatUI.FlatMax flatMax3;
        private System.Windows.Forms.PictureBox pictureBox5;
        private System.Windows.Forms.Label label8;
        private MyProgressBar2 TProg;
    }
}
```

Meniu.cs:

```
using System;
using System.Drawing;
using System.Drawing.Drawing2D;
using System.Resources;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace WindowsFormsApplication4
{

   public class Meniu : UserControl
   {
      int[] Hash = new int[100];
      int current=1;
      int size=5;
      private Canvas2 canvas21;
      private Button button2;
      private Button button1;
      private Label label1;

      public Meniu()
      {
         InitializeComponent();
         this.canvas21.BackgroundImage = (System.Drawing.Image)Properties.Resources.ResourceManager.GetObject("_1",
Properties.Resources.Culture);
         button1.Hide();
         label1.Text = current.ToString() + "/" + size.ToString();
      }

      public void InitializeComponent()
      {
         System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(Meniu));
         this.button2 = new System.Windows.Forms.Button();
         this.button1 = new System.Windows.Forms.Button();
         this.canvas21 = new WindowsFormsApplication4.Canvas2();
         this.label1 = new System.Windows.Forms.Label();
         this.canvas21.SuspendLayout();
         this.SuspendLayout();
         //
         // button2
         //
         this.button2.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("button2.BackgroundImage")));
         this.button2.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Center;
         this.button2.Dock = System.Windows.Forms.DockStyle.Right;
         this.button2.FlatAppearance.BorderSize = 0;
         this.button2.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(224)))), ((int)(((byte)(224)))),
((int)(((byte)(224)))));
```

```
        this.button2.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.button2.Location = new System.Drawing.Point(1015, 0);
        this.button2.Name = "button2";
        this.button2.Size = new System.Drawing.Size(75, 676);
        this.button2.TabIndex = 3;
        this.button2.UseVisualStyleBackColor = true;
        this.button2.Click += new System.EventHandler(this.button2_Click);
        //
        // button1
        //
        this.button1.BackgroundImage = ((System.Drawing.Image)(resources.GetObject("button1.BackgroundImage")));
        this.button1.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Center;
        this.button1.Dock = System.Windows.Forms.DockStyle.Left;
        this.button1.FlatAppearance.BorderSize = 0;
        this.button1.FlatAppearance.MouseOverBackColor = System.Drawing.Color.FromArgb(((int)(((byte)(224)))), ((int)(((byte)(224)))),
((int)(((byte)(224)))));
        this.button1.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.button1.Location = new System.Drawing.Point(0, 0);
        this.button1.Name = "button1";
        this.button1.Size = new System.Drawing.Size(75, 676);
        this.button1.TabIndex = 4;
        this.button1.UseVisualStyleBackColor = true;
        this.button1.Click += new System.EventHandler(this.button1_Click);
        //
        // canvas21
        //
        this.canvas21.BackColor = System.Drawing.Color.White;
        this.canvas21.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Zoom;
        this.canvas21.Controls.Add(this.label1);
        this.canvas21.Dock = System.Windows.Forms.DockStyle.Fill;
        this.canvas21.Location = new System.Drawing.Point(0, 0);
        this.canvas21.Name = "canvas21";
        this.canvas21.Size = new System.Drawing.Size(1090, 676);
        this.canvas21.TabIndex = 2;
        //
        // label1
        //
        this.label1.Anchor = ((System.Windows.Forms.AnchorStyles)(((System.Windows.Forms.AnchorStyles.Bottom |
System.Windows.Forms.AnchorStyles.Left)
        | System.Windows.Forms.AnchorStyles.Right)));
        this.label1.AutoSize = true;
        this.label1.FlatStyle = System.Windows.Forms.FlatStyle.Flat;
        this.label1.Font = new System.Drawing.Font("Arial", 9.75F, System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
        this.label1.Location = new System.Drawing.Point(496, 639);
        this.label1.Name = "label1";
        this.label1.Size = new System.Drawing.Size(47, 16);
        this.label1.TabIndex = 0;
        this.label1.Text = "label1";
```

```
            this.label1.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
            //
            // Meniu
            //
            this.BackColor = System.Drawing.Color.White;
            this.Controls.Add(this.button1);
            this.Controls.Add(this.button2);
            this.Controls.Add(this.canvas21);
            this.Name = "Meniu";
            this.Size = new System.Drawing.Size(1090, 676);
            this.canvas21.ResumeLayout(false);
            this.canvas21.PerformLayout();
            this.ResumeLayout(false);

        }

        private void button2_Click(object sender, EventArgs e)
        {
            current++;
            this.canvas21.BackgroundImage = (System.Drawing.Image)Properties.Resources.ResourceManager.GetObject("_" +
current.ToString(), Properties.Resources.Culture);
            if(current > 1)  button1.Show();
            if(current == size)  button2.Hide();
            label1.Text = current.ToString() + "/" + size.ToString();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            if(Hash[current] == 0)
            {
                Hash[current] = 1;
                Grafuri.TheoryProgress++;

            }
            current--;
            this.canvas21.BackgroundImage = (System.Drawing.Image)Properties.Resources.ResourceManager.GetObject("_" +
current.ToString(), Properties.Resources.Culture);
            if(current < size)
                  button2.Show();
                if(current == 1)
                  button1.Hide();

            label1.Text = current.ToString() + "/" + size.ToString();
        }
    }


}
```

Node.cs:

```
using System;
using System.Drawing;
using System.Windows.Forms;
using System.Drawing.Drawing2D;
using System.ComponentModel;

namespace WindowsFormsApplication4
{
    public class Node : UserControl
    {
        Point mouseDownPoint = Point.Empty;
        int Diameter =54;
        int BorderSize = 4;
        int Center =27;
        String myText = "1";
        int textSize = 16;
        int index = 1;
        int Visited = 0;
        Color VisitedColor = Color.Gray;


        public Point GetCenter()
        {
            return new Point(Location.X + Center, Location.Y + Center);
        }

        [Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
        public int Indexx
        {
            get
            {
                return index;
            }
            set
            {
                index = value;
            }
        }


        public void setVisited(int value)
        {
                Visited = value;
                Invalidate();
        }
```

```
[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public String Textx
{
   get
   {
      return myText;
   }
   set
   {
      myText = value;
      Invalidate();
   }
}

[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public int BorderSz
{
   get
   {
      return BorderSize;
   }
   set
   {
      BorderSize = value;
      Invalidate();
   }
}

[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public int DiameterRk
{
   get
   {
      return Diameter;
   }
   set
   {
      Diameter = value;
      if (Diameter % 2 == 1) Diameter -= 1;
      Center = Diameter / 2;
      this.Invalidate();
   }
}



private void NodeUp(object sender, MouseEventArgs e)
{
   mouseDownPoint = Point.Empty;
```

```
    }

    private void NodeDown(object sender, MouseEventArgs e)
    {
        mouseDownPoint = new Point(e.X, e.Y);
    }


    private void NodeMove(object sender, MouseEventArgs e)
    {
        if (mouseDownPoint == Point.Empty) return;

        int newx = Location.X;
        int newy = Location.Y;
        //Bordez
        if (this.Location.X + (e.X - mouseDownPoint.X) + BorderSize >= 0 && this.Location.X + (e.X - mouseDownPoint.X) + BorderSize
<= Parent.Width - Diameter + BorderSize) newx = this.Location.X + (e.X - mouseDownPoint.X);
        if (this.Location.Y + (e.Y - mouseDownPoint.Y) + BorderSize >= 0 && this.Location.Y + (e.Y - mouseDownPoint.Y) + BorderSize
<= Parent.Height - Diameter + BorderSize) newy = this.Location.Y + (e.Y - mouseDownPoint.Y);
        Location = new Point(newx, newy);
        Parent.Invalidate();
    }

    public Node()
    {
        this.Size = new Size(Diameter, Diameter);
        this.MouseMove += NodeMove;
        this.MouseUp += NodeUp;
        this.MouseDown += NodeDown;
    }

    protected override void OnPaint(PaintEventArgs e)
    {
        SetStyle(ControlStyles.OptimizedDoubleBuffer, true);
        GraphicsPath path = new GraphicsPath();
        path.AddEllipse(0, 0, Diameter, Diameter);
        this.Region = new Region(path);



        e.Graphics.SmoothingMode = SmoothingMode.AntiAlias;
        Pen myPen = new Pen(Color.Black, BorderSize);
        Brush myBrush = new SolidBrush(Color.Black);
        Brush myBrush2;
        if (Visited == 0) myBrush2 = new SolidBrush(Color.FromArgb(255, 255, 255));
        else myBrush2 = new SolidBrush(VisitedColor);

        Font df = new Font("Arial", textSize);
```

```
            e.Graphics.FillEllipse(myBrush2, 0 + BorderSize, 0 + BorderSize, Diameter - 2 * BorderSize, Diameter - 2 * BorderSize);
            e.Graphics.DrawEllipse(myPen, 0 + BorderSize, 0 + BorderSize, Diameter - 2 * BorderSize, Diameter - 2 * BorderSize);


            StringFormat sf = new StringFormat();
            sf.LineAlignment = StringAlignment.Center;
            sf.Alignment = StringAlignment.Center;

            e.Graphics.DrawString(myText, df, myBrush, Center, Center + BorderSize / 2, sf);
            myPen.Dispose();

        }
    }
}
```

Intrebare.cs:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Drawing;
using System.Data;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace WindowsFormsApplication4
{
   public partial class Intrebare :UserControl
   {

      string RS;
      public Intrebare()
      {
      InitializeComponent();
      }

      [Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
      public string RS_Query
      {
         get
         {
         return RS;
         }
         set
         {
            RS = value;
         }
      }

      [Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
      public string ID_Query
      {
         get
         {
            return IDBox.Text;
         }
         set
         {
            IDBox.Text = value;
         }
      }
```

```
[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public string R1_Query
{
   get
   {
      return R1Box.Text;
   }
   set
   {
      R1Box.Text = value;
   }
}

[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public string R2_Query
{
   get
   {
      return R2Box.Text;
   }
   set
   {
      R2Box.Text = value;
   }
}

[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public string R3_Query
{
   get
   {
      return R3Box.Text;
   }
   set
   {
      R3Box.Text = value;
   }
}
[Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
public string R4_Query
{
   get
   {
      return R4Box.Text;
   }
   set
   {
      R4Box.Text = value;
   }
```

```
        }

        [Browsable(true), EditorBrowsable(EditorBrowsableState.Always)]
        public string EN_Query
        {
            get
            {
                return ENBox.Text;
            }
            set
            {
                ENBox.Text = value;
            }
        }

        public int Ck()
        {

            if(R1Box.Checked == true && RS == "1")
                return 1;
            if(R2Box.Checked == true && RS == "2")
                return 1;
            if(R3Box.Checked == true && RS == "3")
                return 1;
            if(R4Box.Checked == true && RS == "4")
                return 1;

            return 0;

        }

        public void Dck()
        {

            R1Box.Checked = false;
        R2Box.Checked = false;
        R3Box.Checked = false;
        R4Box.Checked = false;
        }
    }
}
```

Intrebare.Designer.cs:

```
namespace WindowsFormsApplication4
{
   partial class Intrebare
   {
      /// <summary>
      /// Required designer variable.
      /// </summary>
      private System.ComponentModel.IContainer components = null;

      /// <summary>
      /// Clean up any resources being used.
      /// </summary>
      /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
      protected override void Dispose(bool disposing)
      {
      if(disposing && (components != null))
      {
      components.Dispose();
      }
      base.Dispose(disposing);
      }

      #region Component Designer generated code

      /// <summary>
      /// Required method for Designer support - do not modify
      /// the contents of this method with the code editor.
      /// </summary>
      private void InitializeComponent()
      {
         System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(Intrebare));
         this.IDBox = new System.Windows.Forms.Label();
         this.ENBox = new System.Windows.Forms.Label();
         this.R1Box = new System.Windows.Forms.RadioButton();
         this.R2Box = new System.Windows.Forms.RadioButton();
         this.R3Box = new System.Windows.Forms.RadioButton();
         this.R4Box = new System.Windows.Forms.RadioButton();
         this.SuspendLayout();
         //
         // IDBox
         //
         this.IDBox.AutoSize = true;
         this.IDBox.Location = new System.Drawing.Point(40, 16);
         this.IDBox.Name = "IDBox";
         this.IDBox.Size = new System.Drawing.Size(18, 13);
         this.IDBox.TabIndex = 0;
```

```
            this.IDBox.Text = "ID";
            //
            // ENBox
            //
            this.ENBox.Anchor = ((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Bottom)
            | System.Windows.Forms.AnchorStyles.Left)
            | System.Windows.Forms.AnchorStyles.Right)));
            this.ENBox.Location = new System.Drawing.Point(64, 16);
            this.ENBox.Name = "ENBox";
            this.ENBox.Size = new System.Drawing.Size(541, 48);
            this.ENBox.TabIndex = 1;
            this.ENBox.Text = resources.GetString("ENBox.Text");
            //
            // R1Box
            //
            this.R1Box.AutoSize = true;
            this.R1Box.Location = new System.Drawing.Point(67, 67);
            this.R1Box.Name = "R1Box";
            this.R1Box.Size = new System.Drawing.Size(39, 17);
            this.R1Box.TabIndex = 6;
            this.R1Box.TabStop = true;
            this.R1Box.Text = "R1";
            this.R1Box.UseVisualStyleBackColor = true;
            //
            // R2Box
            //
            this.R2Box.AutoSize = true;
            this.R2Box.Location = new System.Drawing.Point(67, 87);
            this.R2Box.Name = "R2Box";
            this.R2Box.Size = new System.Drawing.Size(39, 17);
            this.R2Box.TabIndex = 7;
            this.R2Box.TabStop = true;
            this.R2Box.Text = "R2";
            this.R2Box.UseVisualStyleBackColor = true;
            //
            // R3Box
            //
            this.R3Box.AutoSize = true;
            this.R3Box.Location = new System.Drawing.Point(67, 110);
            this.R3Box.Name = "R3Box";
            this.R3Box.Size = new System.Drawing.Size(39, 17);
            this.R3Box.TabIndex = 8;
            this.R3Box.TabStop = true;
            this.R3Box.Text = "R3";
            this.R3Box.UseVisualStyleBackColor = true;
            //
            // R4Box
            //
```

```
            this.R4Box.AutoSize = true;
            this.R4Box.Location = new System.Drawing.Point(67, 133);
            this.R4Box.Name = "R4Box";
            this.R4Box.Size = new System.Drawing.Size(39, 17);
            this.R4Box.TabIndex = 9;
            this.R4Box.TabStop = true;
            this.R4Box.Text = "R4";
            this.R4Box.UseVisualStyleBackColor = true;
            //
            // Intrebare
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.Controls.Add(this.R4Box);
            this.Controls.Add(this.R3Box);
            this.Controls.Add(this.R2Box);
            this.Controls.Add(this.R1Box);
            this.Controls.Add(this.ENBox);
            this.Controls.Add(this.IDBox);
            this.Name = "Intrebare";
            this.Size = new System.Drawing.Size(629, 170);
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.Label IDBox;
        private System.Windows.Forms.Label ENBox;
        private System.Windows.Forms.RadioButton R1Box;
        private System.Windows.Forms.RadioButton R2Box;
        private System.Windows.Forms.RadioButton R3Box;
        private System.Windows.Forms.RadioButton R4Box;
    }
}
```

MyProgressBar2.cs:

```
using System;
using System.Drawing;
using System.Windows.Forms;
using System.ComponentModel;

namespace WindowsFormsApplication4
{
   public class MyProgressBar2 :UserControl
   {
      public int Maximum_Value = 100;
      private int int_0 = 5;
      public int _Value;
      private IContainer icontainer_0;
      private Panel slider;

      public int BorderRadius
      {
         get
         {
         return this.int_0;
         }
         set
         {
            this.int_0 = value;
            Elipse.Apply((Control)this.slider, this.int_0);
            Elipse.Apply((Control)this, this.int_0);
         }
      }

      public Color ProgressColor
      {
         get
         {
         return this.slider.BackColor;
         }
         set
         {
         this.slider.BackColor = value;
         }
      }

      public int Value
      {
         get
         {
            return this._Value;
         }
```

```
    set
    {
    if(value > this.Maximum_Value)  throw new Exception("Maxium Value Rached");
        this._Value = value;
        this.slider.Width = this.Width * this._Value / this.Maximum_Value;
        Elipse.Apply(this.slider, this.int_0);

    }
}

public int MaximumValue
{
    get
    {
        return this.Maximum_Value;
    }
    set
    {
        this.Maximum_Value = value;
        try
        {
            this.slider.Width = this.Width * this._Value / this.Maximum_Value;
            Elipse.Apply((Control)this.slider, this.int_0);
        }
            catch(Exception ex)
        {

        }
    }
}

public event EventHandler progressChanged;

public MyProgressBar2()
{
    this.InitializeComponent();
}

private void ProgressBar2_Resize(object sender, EventArgs e)
{
    this.slider.Width = this.Width * this._Value / this.Maximum_Value;
    Elipse.Apply((Control)this.slider, this.int_0);
    Elipse.Apply((Control)this, this.int_0);
}

protected override void Dispose(bool disposing)
{
    if(disposing && this.icontainer_0 != null)
        this.icontainer_0.Dispose();
```

```
            base.Dispose(disposing);
        }

        private void InitializeComponent()
        {
            this.slider = new Panel();
            this.SuspendLayout();
            this.slider.BackColor = Color.Teal;
            this.slider.Dock = DockStyle.Left;
            this.slider.Location = new Point(0, 0);
            this.slider.Name = "slider";
            this.slider.Size = new Size(0, 10);
            this.slider.TabIndex = 1;
            this.AutoScaleDimensions = new SizeF(6f, 13f);
            this.AutoScaleMode = AutoScaleMode.Font;
            this.BackColor = Color.Silver;
            this.Controls.Add((Control)this.slider);
            this.Name = "myProgressBar2";
            this.Size = new Size(410, 10);
            this.Resize += new EventHandler(this.ProgressBar2_Resize);
            this.ResumeLayout(false);
        }
    }
}
```

MySeparator:

```
using System;
using System.Drawing;
using System.Windows.Forms;
using System.ComponentModel;

namespace WindowsFormsApplication4
{
    public class MySeparator :UserControl
    {
        private bool bool_0;
        private IContainer icontainer_0;
        private PictureBox pictureBox1;

        public bool Vertical
        {
            get
            {
                return this.bool_0;
            }
            set
            {
                if(value == this.bool_0)
                    return;
                this.bool_0 = value;
                int height = this.pictureBox1.Height;
                this.pictureBox1.Height = this.pictureBox1.Width;
                this.pictureBox1.Width = height;
                this.OnResize(new EventArgs());
            }
        }

        public Color LineColor
        {
            get
            {
                return this.pictureBox1.BackColor;
            }
            set
            {
                this.pictureBox1.BackColor = value;
            }
        }

        public int Transparency
        {
            get
            {
```

```
        return (int)this.pictureBox1.BackColor.A;
    }
    set
    {
        PictureBox pictureBox1 = this.pictureBox1;
        int alpha = value;
        Color backColor = this.pictureBox1.BackColor;
        int r = (int)backColor.R;
        backColor = this.pictureBox1.BackColor;
        int g = (int)backColor.G;
        backColor = this.pictureBox1.BackColor;
        int b = (int)backColor.B;
        Color color = Color.FromArgb(alpha, r, g, b);
        pictureBox1.BackColor = color;
    }
}

public int LineThickness
{
    get
    {
        if(this.Vertical)
            return this.pictureBox1.Width;
        return this.pictureBox1.Height;
    }
    set
    {
        if(this.Vertical)
            this.pictureBox1.Width = value;
        else
            this.pictureBox1.Height = value;
    }
}

public MySeparator()
{
this.InitializeComponent();
this.OnResize(new EventArgs());
int usageMode = (int)LicenseManager.UsageMode;
}

private void mySeparator_BackColorChanged(object sender, EventArgs e)
{
if(this.BackColor != Color.Transparent)
    throw new Exception("Invalid Value");
}

private void mySeparator_Resize(object sender, EventArgs e)
{
```

```
            if(this.Vertical)
            {
                this.pictureBox1.Top = 0;
                this.pictureBox1.Height = this.Height;
                this.pictureBox1.Left = this.Width / 2 - this.pictureBox1.Width / 2;
            }
            else
            {
                this.pictureBox1.Left = 0;
                this.pictureBox1.Width = this.Width;
                this.pictureBox1.Top = this.Height / 2 - this.pictureBox1.Height / 2;
            }
        }


        protected override void Dispose(bool disposing)
        {
            if(disposing && this.icontainer_0 != null)
                this.icontainer_0.Dispose();
            base.Dispose(disposing);
        }

        private void InitializeComponent()
        {
            this.pictureBox1 = new PictureBox();
            ((ISupportInitialize)this.pictureBox1).BeginInit();
            this.SuspendLayout();
            this.pictureBox1.BackColor = Color.DimGray;
            this.pictureBox1.Location = new Point(0, 15);
            this.pictureBox1.Name = "pictureBox1";
            this.pictureBox1.Size = new Size(639, 1);
            this.pictureBox1.TabIndex = 0;
            this.pictureBox1.TabStop = false;
            this.AutoScaleDimensions = new SizeF(6f, 13f);
            this.AutoScaleMode = AutoScaleMode.Font;
            this.BackColor = Color.Transparent;
            this.Controls.Add((Control)this.pictureBox1);
            this.Name = "mySeparator";
            this.Size = new Size(639, 35);
            this.BackColorChanged += new EventHandler(this.mySeparator_BackColorChanged);
            this.Resize += new EventHandler(this.mySeparator_Resize);
            ((ISupportInitialize)this.pictureBox1).EndInit();
            this.ResumeLayout(false);
        }
    }
}
```

Canvas2.cs:

```
using System.Windows.Forms;

namespace WindowsFormsApplication4
{
    public class Canvas2 : Panel
    {
        public Canvas2()
        {
            this.SetStyle(ControlStyles.AllPaintingInWmPaint, true);
            this.SetStyle(ControlStyles.OptimizedDoubleBuffer, true);
            this.SetStyle(ControlStyles.UserPaint, true);
            this.SetStyle(ControlStyles.ResizeRedraw, true);
        }
    }
}
```

Elipse.cs:

```
using System;
using System.Drawing;
using System.Windows.Forms;
using System.Runtime.InteropServices;

namespace WindowsFormsApplication4
{
    public static class Elipse
    {
        [DllImport("Gdi32.dll")]
        private static extern IntPtr CreateRoundRectRgn(int int_0, int int_1, int int_2, int int_3, int int_4, int int_5);

        public static void Apply(Form ctrl, int _Elipse2)
        {
            try
            {
                ctrl.FormBorderStyle = FormBorderStyle.None;
                ctrl.Region = Region.FromHrgn(Elipse.CreateRoundRectRgn(0, 0, ctrl.Width, ctrl.Height, _Elipse2, _Elipse2));
            }
            catch(Exception ex)
            {

            }
        }
        public static void Apply(Control ctrl, int _Elipse)
        {
            try
            {
                ctrl.Region = Region.FromHrgn(Elipse.CreateRoundRectRgn(0, 0, ctrl.Width, ctrl.Height, _Elipse, _Elipse));
            }
            catch(Exception ex)
            {

            }
        }

    }
}
```

BIBLIOGRAFIE

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