**РУСЕНСКИ УНИВЕРСИТЕТ „АНГЕЛ КЪНЧЕВ“**

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# Задание

Да се разработи програмна система, симулираща работата на модула за **управление на реалната памет (стратегия за разполагане First Fit)** при следните изходни данни:

* ***Основни необходими структури:***
  + Blocks [1..B] таблица за разположението на процесите
* ***Основни обработки:***
  + Load(Proc, Size) стартиране на нов процес с даден обем памет;
  + Finish(Proc) завършване на процес;
  + GarbageCollector уплътняване на паметта
  + Show показване на състоянието на основните структури

Разработеният проект да има подходящ потребителски интерфейс за обръщение към основните обработки. Обяснителната записка да съдържа заданието, описание на използваните структури данни и алгоритми и програмен листинг.

# Описание на използваните структури данни и алгоритми

Когато операционна система (ОС) трябва да зареди процес в оперативната памет или да разтовари процес и ако има повече от един свободен блок в паметта с достатъчен размер, то ОС трябва да реши кой свободен блок трябва да бъде разпределен. Един от алгоритмите за извършване на тази задача е first-fit (първият, който може да бъде запълнен). First-fit започва със сканиране на паметта от самото начало и избира първия свободен блок, който е достатъчно голям.

Класът Process има следните полета:

* String processId – идентификатор на процеса;
* int startBlock – номера на първия блок на процеса в паметта;
* uint size – брой блокове (дължина);
* Color color – цветът, който съответства на процеса

Използвани са следните функции:

* private void btnSetMemory\_Click(object sender, EventArgs e) – изпълнява след като бутонът „OK“ бъде натиснат: изчислява се броят на блоковете и се изчертават на екрана;
* private void btnSaveProcess\_Click(object sender, EventArgs e) – изпълнява се, когато бутонът „Load“ бъде натиснат: служи за стартиране на нов процес.
* private void Repaint() – използва се за обновяване на визуалните компоненти (цветът на блоковете)
* private int SaveProcess(uint size) – функция за записване(стартиране) на процеса в паметта. Ако операцията е изпълнена успешно се връща номерът на началния блок;
* private int checkSize(uint size) – функция за проверка дали процесът може да бъде записан/стартиран;
* private void btnDelete\_Click(object sender, EventArgs e) – изпълнява се, когато бутонът „Finish“ бъде натиснат: за изтриване на файл;
* private void buttonGarbageCollector\_Click(object sender, EventArgs e) - изпълнява се, когато бутонът „Garbage Collector“ бъде натиснат: уплътнява се паметта;

# Код на програмата (листинг)



## Program.cs

using System;

using System.Windows.Forms;

namespace OS\_First\_Fit

{

static class Program

{

[STAThread]

static void Main()

{

Application.EnableVisualStyles();

Application.SetCompatibleTextRenderingDefault(false);

Application.Run(new frmMain());

}

}

}

## frmMain.cs

using System;

using System.Collections.Generic;

using System.Drawing;

using System.Windows.Forms;

namespace OS\_First\_Fit

{

public partial class frmMain : Form

{

private const int MAX\_BLOCKS\_ON\_ROW = 20;

private uint memorySize;

private uint blockSize;

private uint freeMemorySize;

private int[] blockMemory;

private List<Process> processes;

public frmMain()

{

InitializeComponent();

}

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

{

// init

processes = new List<Process>();

dataGridView1.DataSource = null;

dataGridView1.Refresh();

memorySize = (uint)this.nudMemorySize.Value;

blockSize = (uint)this.nudBlockSize.Value;

blockMemory = new int[(int)Math.Round(memorySize / (float)blockSize, MidpointRounding.AwayFromZero)];

freeMemorySize = (uint)blockMemory.Length;

float d = blockMemory.Length / (float)MAX\_BLOCKS\_ON\_ROW;

tableLayoutPanel6.RowCount = (d - (int)d) > 0 ? (int)(d + 1) : (int)d;

tableLayoutPanel6.RowStyles.Clear();

tableLayoutPanel6.SuspendLayout();

tableLayoutPanel6.Controls.Clear();

for (int i = 0; i < tableLayoutPanel6.RowCount; i++)

{

tableLayoutPanel6.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

}

tableLayoutPanel6.ColumnCount = blockMemory.Length < MAX\_BLOCKS\_ON\_ROW ? blockMemory.Length : MAX\_BLOCKS\_ON\_ROW;

tableLayoutPanel6.ColumnStyles.Clear();

for (int j = 0; j < tableLayoutPanel6.ColumnCount; j++)

{

tableLayoutPanel6.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 50F));

}

int counter = 0;

for (int i = 0; i < tableLayoutPanel6.RowCount; i++)

{

for (int j = 0; j < tableLayoutPanel6.ColumnCount; j++)

{

if (counter >= blockMemory.Length)

{

break;

}

Panel backgroundColorPanel = new Panel();

backgroundColorPanel.BackColor = Color.White;

backgroundColorPanel.Dock = DockStyle.Fill;

Label cellNumber = new Label();

cellNumber.ForeColor = Color.DarkGray;

cellNumber.Text = counter.ToString();

backgroundColorPanel.Controls.Add(cellNumber);

tableLayoutPanel6.Controls.Add(backgroundColorPanel, j, i);

counter++;

}

}

tableLayoutPanel6.ResumeLayout();

Repaint();

this.lblMemorySizeStatusValue.Text = blockMemory.Length.ToString();

this.lblFreeMemoryStatusValue.Text = freeMemorySize.ToString();

scContent.Enabled = true;

}

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

{

if (!String.IsNullOrWhiteSpace(tbProcessId.Text))

{

Process process = new Process();

process.ProcessId = tbProcessId.Text;

uint size = (uint)Math.Round(nudProcessSize.Value / nudBlockSize.Value, MidpointRounding.AwayFromZero);

if (size == 0)

{

size = 1;

}

process.Size = (uint)nudProcessSize.Value;

process.StartBlock = SaveProcess(size);

if (process.StartBlock >= 0)

{

KnownColor[] colors = (KnownColor[])Enum.GetValues(typeof(KnownColor));

bool same = false;

do

{

same = false;

process.Color = Color.FromKnownColor(colors[new Random().Next(0, colors.Length)]);

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

{

if (processes[i].Color == process.Color)

{

same = true;

break;

}

}

} while (process.Color == Color.White || process.Color == Color.DarkGray || process.Color == Color.Transparent || process.Color == Color.GhostWhite || same);

processes.Add(process);

tbProcessId.Text = "";

nudProcessSize.Value = nudProcessSize.Minimum;

btnDelete.Enabled = true;

Repaint();

}

}

else

{

MessageBox.Show("Моля въведете името на файла!");

}

}

private void Repaint()

{

this.lblFreeMemoryStatusValue.Text = freeMemorySize.ToString();

tableLayoutPanel6.SuspendLayout();

int counter = 0;

for (int f = 0; f < processes.Count; f++)

{

counter = 0;

int end = (int)(processes[f].StartBlock + processes[f].Size);

for (int i = 0; i < tableLayoutPanel6.RowCount; i++)

{

for (int j = 0; j < tableLayoutPanel6.ColumnCount; j++)

{

if (counter >= end)

{

break;

}

if (processes[f].StartBlock <= counter && counter < end)

{

tableLayoutPanel6.GetControlFromPosition(j, i).BackColor = processes[f].Color;

}

counter++;

}

}

}

counter = 0;

for (int i = 0; i < tableLayoutPanel6.RowCount; i++)

{

for (int j = 0; j < tableLayoutPanel6.ColumnCount; j++)

{

if (counter >= blockMemory.Length)

{

break;

}

if (blockMemory[counter] == 0)

{

tableLayoutPanel6.GetControlFromPosition(j, i).BackColor = Color.White;

}

counter++;

}

}

tableLayoutPanel6.ResumeLayout();

BindingSource bs = new BindingSource();

bs.DataSource = processes;

dataGridView1.DataSource = bs;

dataGridView1.Columns[dataGridView1.Columns.Count - 1].Visible = false;

}

private int SaveProcess(uint size)

{

int firstAddress = checkSize(size);

if (firstAddress >= 0)

{

freeMemorySize -= size;

for (int i = firstAddress; i < (firstAddress + size); i++)

{

blockMemory[i] = 1;

}

}

else

{

MessageBox.Show("Файлът не може да се запише!");

}

return firstAddress;

}

private int checkSize(uint size)

{

if (freeMemorySize < size)

{

return -1;

}

int sizeCounter = 0;

int firstAddress = -1;

int nextTest = 0;

bool result = false;

while(true)

{

for (int i = nextTest; i < blockMemory.Length && sizeCounter < size; i++)

{

if (blockMemory[i] == 0)

{

if (firstAddress < 0)

{

firstAddress = i;

}

sizeCounter++;

}

else if (firstAddress >= 0 && sizeCounter <= size)

{

firstAddress = -1;

nextTest = i + 1;

sizeCounter = 0;

break;

}

}

if (nextTest >= blockMemory.Length)

{

result = false;

break;

}

else if (firstAddress >= 0 && sizeCounter == size)

{

result = true;

break;

}

}

if (result)

{

return firstAddress;

}

return -1;

}

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

{

if (dataGridView1.SelectedRows.Count > 0)

{

Process process = processes[dataGridView1.SelectedRows[0].Index];

for (int i = process.StartBlock; i < (process.StartBlock + process.Size); i++)

{

freeMemorySize++;

blockMemory[i] = 0;

}

processes.RemoveAt(dataGridView1.SelectedRows[0].Index);

Repaint();

btnDelete.Enabled = processes.Count > 0 ? true : false;

}

else

{

MessageBox.Show("Моля изберете елемент от FAT таблицата!");

}

}

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

{

List<int> blocks = new List<int>(blockMemory.Length);

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

{

int[] subArray = new int[processes[i].Size];

Array.Copy(blockMemory, processes[i].StartBlock, subArray, 0, processes[i].Size);

processes[i].StartBlock = blocks.Count;

blocks.InsertRange(blocks.Count, subArray);

}

Array.Clear(blockMemory, 0, blockMemory.Length);

Array.Copy(blocks.ToArray(), 0, blockMemory, 0, blocks.Count);

Repaint();

}

}

}

## frmMain.Designer.cs

namespace OS\_First\_Fit

{

partial class frmMain

{

/// <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.scMain = new System.Windows.Forms.SplitContainer();

this.tableLayoutPanel1 = new System.Windows.Forms.TableLayoutPanel();

this.buttonGarbageCollector = new System.Windows.Forms.Button();

this.btnSetMemory = new System.Windows.Forms.Button();

this.nudMemorySize = new System.Windows.Forms.NumericUpDown();

this.nudBlockSize = new System.Windows.Forms.NumericUpDown();

this.lblMemorySize = new System.Windows.Forms.Label();

this.label1 = new System.Windows.Forms.Label();

this.scContent = new System.Windows.Forms.SplitContainer();

this.tableLayoutPanel6 = new System.Windows.Forms.TableLayoutPanel();

this.tableLayoutPanel2 = new System.Windows.Forms.TableLayoutPanel();

this.tableLayoutPanel3 = new System.Windows.Forms.TableLayoutPanel();

this.btnDelete = new System.Windows.Forms.Button();

this.dataGridView1 = new System.Windows.Forms.DataGridView();

this.tableLayoutPanel4 = new System.Windows.Forms.TableLayoutPanel();

this.lblMemorySizeStatusValue = new System.Windows.Forms.Label();

this.lblFreeMemoryStatus = new System.Windows.Forms.Label();

this.lblMemorySizeStatus = new System.Windows.Forms.Label();

this.lblFreeMemoryStatusValue = new System.Windows.Forms.Label();

this.tableLayoutPanel5 = new System.Windows.Forms.TableLayoutPanel();

this.btnSaveFile = new System.Windows.Forms.Button();

this.tbProcessId = new System.Windows.Forms.TextBox();

this.lblProcessId = new System.Windows.Forms.Label();

this.nudProcessSize = new System.Windows.Forms.NumericUpDown();

this.lblProcessSize = new System.Windows.Forms.Label();

((System.ComponentModel.ISupportInitialize)(this.scMain)).BeginInit();

this.scMain.Panel1.SuspendLayout();

this.scMain.Panel2.SuspendLayout();

this.scMain.SuspendLayout();

this.tableLayoutPanel1.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.nudMemorySize)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.nudBlockSize)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.scContent)).BeginInit();

this.scContent.Panel1.SuspendLayout();

this.scContent.Panel2.SuspendLayout();

this.scContent.SuspendLayout();

this.tableLayoutPanel2.SuspendLayout();

this.tableLayoutPanel3.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.dataGridView1)).BeginInit();

this.tableLayoutPanel4.SuspendLayout();

this.tableLayoutPanel5.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.nudProcessSize)).BeginInit();

this.SuspendLayout();

//

// scMain

//

this.scMain.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;

this.scMain.Dock = System.Windows.Forms.DockStyle.Fill;

this.scMain.Location = new System.Drawing.Point(0, 0);

this.scMain.Name = "scMain";

this.scMain.Orientation = System.Windows.Forms.Orientation.Horizontal;

//

// scMain.Panel1

//

this.scMain.Panel1.Controls.Add(this.tableLayoutPanel1);

//

// scMain.Panel2

//

this.scMain.Panel2.Controls.Add(this.scContent);

this.scMain.Size = new System.Drawing.Size(879, 564);

this.scMain.SplitterDistance = 90;

this.scMain.TabIndex = 0;

//

// tableLayoutPanel1

//

this.tableLayoutPanel1.ColumnCount = 3;

this.tableLayoutPanel1.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel1.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel1.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 197F));

this.tableLayoutPanel1.Controls.Add(this.buttonGarbageCollector, 2, 1);

this.tableLayoutPanel1.Controls.Add(this.btnSetMemory, 2, 0);

this.tableLayoutPanel1.Controls.Add(this.nudMemorySize, 0, 0);

this.tableLayoutPanel1.Controls.Add(this.nudBlockSize, 0, 1);

this.tableLayoutPanel1.Controls.Add(this.lblMemorySize, 1, 0);

this.tableLayoutPanel1.Controls.Add(this.label1, 1, 1);

this.tableLayoutPanel1.Dock = System.Windows.Forms.DockStyle.Fill;

this.tableLayoutPanel1.Location = new System.Drawing.Point(0, 0);

this.tableLayoutPanel1.Name = "tableLayoutPanel1";

this.tableLayoutPanel1.RowCount = 2;

this.tableLayoutPanel1.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel1.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel1.Size = new System.Drawing.Size(877, 88);

this.tableLayoutPanel1.TabIndex = 0;

//

// buttonGarbageCollector

//

this.buttonGarbageCollector.Dock = System.Windows.Forms.DockStyle.Fill;

this.buttonGarbageCollector.FlatStyle = System.Windows.Forms.FlatStyle.Flat;

this.buttonGarbageCollector.Location = new System.Drawing.Point(683, 47);

this.buttonGarbageCollector.Name = "buttonGarbageCollector";

this.buttonGarbageCollector.Size = new System.Drawing.Size(191, 38);

this.buttonGarbageCollector.TabIndex = 6;

this.buttonGarbageCollector.Text = "Garbage Collector";

this.buttonGarbageCollector.UseVisualStyleBackColor = true;

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

//

// btnSetMemory

//

this.btnSetMemory.Dock = System.Windows.Forms.DockStyle.Fill;

this.btnSetMemory.Location = new System.Drawing.Point(683, 3);

this.btnSetMemory.Name = "btnSetMemory";

this.btnSetMemory.Size = new System.Drawing.Size(191, 38);

this.btnSetMemory.TabIndex = 5;

this.btnSetMemory.Text = "ОК";

this.btnSetMemory.UseVisualStyleBackColor = true;

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

//

// nudMemorySize

//

this.nudMemorySize.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Left | System.Windows.Forms.AnchorStyles.Right)));

this.nudMemorySize.Location = new System.Drawing.Point(3, 12);

this.nudMemorySize.Maximum = new decimal(new int[] {

500,

0,

0,

0});

this.nudMemorySize.Minimum = new decimal(new int[] {

10,

0,

0,

0});

this.nudMemorySize.Name = "nudMemorySize";

this.nudMemorySize.Size = new System.Drawing.Size(334, 20);

this.nudMemorySize.TabIndex = 1;

this.nudMemorySize.Value = new decimal(new int[] {

100,

0,

0,

0});

//

// nudBlockSize

//

this.nudBlockSize.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Left | System.Windows.Forms.AnchorStyles.Right)));

this.nudBlockSize.Location = new System.Drawing.Point(3, 56);

this.nudBlockSize.Maximum = new decimal(new int[] {

10,

0,

0,

0});

this.nudBlockSize.Minimum = new decimal(new int[] {

1,

0,

0,

0});

this.nudBlockSize.Name = "nudBlockSize";

this.nudBlockSize.Size = new System.Drawing.Size(334, 20);

this.nudBlockSize.TabIndex = 2;

this.nudBlockSize.Value = new decimal(new int[] {

1,

0,

0,

0});

//

// lblMemorySize

//

this.lblMemorySize.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblMemorySize.AutoSize = true;

this.lblMemorySize.Location = new System.Drawing.Point(343, 15);

this.lblMemorySize.Name = "lblMemorySize";

this.lblMemorySize.Size = new System.Drawing.Size(129, 13);

this.lblMemorySize.TabIndex = 3;

this.lblMemorySize.Text = "Размер на паметта (KB)";

//

// label1

//

this.label1.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.label1.AutoSize = true;

this.label1.Location = new System.Drawing.Point(343, 59);

this.label1.Name = "label1";

this.label1.Size = new System.Drawing.Size(149, 13);

this.label1.TabIndex = 4;

this.label1.Text = "Големина на един блок (KB)";

//

// scContent

//

this.scContent.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;

this.scContent.Dock = System.Windows.Forms.DockStyle.Fill;

this.scContent.Enabled = false;

this.scContent.Location = new System.Drawing.Point(0, 0);

this.scContent.Name = "scContent";

//

// scContent.Panel1

//

this.scContent.Panel1.Controls.Add(this.tableLayoutPanel6);

//

// scContent.Panel2

//

this.scContent.Panel2.Controls.Add(this.tableLayoutPanel2);

this.scContent.Size = new System.Drawing.Size(879, 470);

this.scContent.SplitterDistance = 652;

this.scContent.TabIndex = 0;

//

// tableLayoutPanel6

//

this.tableLayoutPanel6.ColumnCount = 2;

this.tableLayoutPanel6.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 20F));

this.tableLayoutPanel6.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 630F));

this.tableLayoutPanel6.Dock = System.Windows.Forms.DockStyle.Fill;

this.tableLayoutPanel6.Location = new System.Drawing.Point(0, 0);

this.tableLayoutPanel6.Name = "tableLayoutPanel6";

this.tableLayoutPanel6.RowCount = 2;

this.tableLayoutPanel6.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel6.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel6.Size = new System.Drawing.Size(650, 468);

this.tableLayoutPanel6.TabIndex = 0;

//

// tableLayoutPanel2

//

this.tableLayoutPanel2.ColumnCount = 1;

this.tableLayoutPanel2.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 100F));

this.tableLayoutPanel2.Controls.Add(this.tableLayoutPanel3, 0, 0);

this.tableLayoutPanel2.Controls.Add(this.tableLayoutPanel4, 0, 2);

this.tableLayoutPanel2.Controls.Add(this.tableLayoutPanel5, 0, 1);

this.tableLayoutPanel2.Dock = System.Windows.Forms.DockStyle.Fill;

this.tableLayoutPanel2.Location = new System.Drawing.Point(0, 0);

this.tableLayoutPanel2.Name = "tableLayoutPanel2";

this.tableLayoutPanel2.RowCount = 3;

this.tableLayoutPanel2.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 55F));

this.tableLayoutPanel2.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 30F));

this.tableLayoutPanel2.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 15F));

this.tableLayoutPanel2.Size = new System.Drawing.Size(221, 468);

this.tableLayoutPanel2.TabIndex = 0;

//

// tableLayoutPanel3

//

this.tableLayoutPanel3.ColumnCount = 1;

this.tableLayoutPanel3.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 100F));

this.tableLayoutPanel3.Controls.Add(this.btnDelete, 0, 1);

this.tableLayoutPanel3.Controls.Add(this.dataGridView1, 0, 0);

this.tableLayoutPanel3.Dock = System.Windows.Forms.DockStyle.Fill;

this.tableLayoutPanel3.Location = new System.Drawing.Point(3, 3);

this.tableLayoutPanel3.Name = "tableLayoutPanel3";

this.tableLayoutPanel3.RowCount = 2;

this.tableLayoutPanel3.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 100F));

this.tableLayoutPanel3.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Absolute, 30F));

this.tableLayoutPanel3.Size = new System.Drawing.Size(215, 251);

this.tableLayoutPanel3.TabIndex = 0;

//

// btnDelete

//

this.btnDelete.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top | System.Windows.Forms.AnchorStyles.Right)));

this.btnDelete.Enabled = false;

this.btnDelete.Location = new System.Drawing.Point(137, 224);

this.btnDelete.Name = "btnDelete";

this.btnDelete.Size = new System.Drawing.Size(75, 24);

this.btnDelete.TabIndex = 1;

this.btnDelete.Text = "Finish";

this.btnDelete.UseVisualStyleBackColor = true;

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

//

// dataGridView1

//

this.dataGridView1.AllowUserToAddRows = false;

this.dataGridView1.AllowUserToDeleteRows = false;

this.dataGridView1.AutoSizeColumnsMode = System.Windows.Forms.DataGridViewAutoSizeColumnsMode.Fill;

this.dataGridView1.ColumnHeadersHeightSizeMode = System.Windows.Forms.DataGridViewColumnHeadersHeightSizeMode.AutoSize;

this.dataGridView1.Dock = System.Windows.Forms.DockStyle.Fill;

this.dataGridView1.Location = new System.Drawing.Point(0, 0);

this.dataGridView1.Margin = new System.Windows.Forms.Padding(0);

this.dataGridView1.MultiSelect = false;

this.dataGridView1.Name = "dataGridView1";

this.dataGridView1.ReadOnly = true;

this.dataGridView1.SelectionMode = System.Windows.Forms.DataGridViewSelectionMode.FullRowSelect;

this.dataGridView1.Size = new System.Drawing.Size(215, 221);

this.dataGridView1.TabIndex = 2;

//

// tableLayoutPanel4

//

this.tableLayoutPanel4.ColumnCount = 2;

this.tableLayoutPanel4.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle());

this.tableLayoutPanel4.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 100F));

this.tableLayoutPanel4.Controls.Add(this.lblMemorySizeStatusValue, 1, 1);

this.tableLayoutPanel4.Controls.Add(this.lblFreeMemoryStatus, 0, 0);

this.tableLayoutPanel4.Controls.Add(this.lblMemorySizeStatus, 0, 1);

this.tableLayoutPanel4.Controls.Add(this.lblFreeMemoryStatusValue, 1, 0);

this.tableLayoutPanel4.Dock = System.Windows.Forms.DockStyle.Fill;

this.tableLayoutPanel4.Location = new System.Drawing.Point(3, 400);

this.tableLayoutPanel4.Name = "tableLayoutPanel4";

this.tableLayoutPanel4.RowCount = 2;

this.tableLayoutPanel4.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel4.RowStyles.Add(new System.Windows.Forms.RowStyle(System.Windows.Forms.SizeType.Percent, 50F));

this.tableLayoutPanel4.Size = new System.Drawing.Size(215, 65);

this.tableLayoutPanel4.TabIndex = 1;

//

// lblMemorySizeStatusValue

//

this.lblMemorySizeStatusValue.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblMemorySizeStatusValue.AutoSize = true;

this.lblMemorySizeStatusValue.Font = new System.Drawing.Font("Microsoft Sans Serif", 8.25F, System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(204)));

this.lblMemorySizeStatusValue.Location = new System.Drawing.Point(113, 42);

this.lblMemorySizeStatusValue.Name = "lblMemorySizeStatusValue";

this.lblMemorySizeStatusValue.Size = new System.Drawing.Size(14, 13);

this.lblMemorySizeStatusValue.TabIndex = 3;

this.lblMemorySizeStatusValue.Text = "0";

//

// lblFreeMemoryStatus

//

this.lblFreeMemoryStatus.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblFreeMemoryStatus.AutoSize = true;

this.lblFreeMemoryStatus.Location = new System.Drawing.Point(3, 9);

this.lblFreeMemoryStatus.Name = "lblFreeMemoryStatus";

this.lblFreeMemoryStatus.Size = new System.Drawing.Size(104, 13);

this.lblFreeMemoryStatus.TabIndex = 0;

this.lblFreeMemoryStatus.Text = "Свободни блокове:";

//

// lblMemorySizeStatus

//

this.lblMemorySizeStatus.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblMemorySizeStatus.AutoSize = true;

this.lblMemorySizeStatus.Location = new System.Drawing.Point(3, 42);

this.lblMemorySizeStatus.Name = "lblMemorySizeStatus";

this.lblMemorySizeStatus.Size = new System.Drawing.Size(80, 13);

this.lblMemorySizeStatus.TabIndex = 1;

this.lblMemorySizeStatus.Text = "Брой блокове:";

//

// lblFreeMemoryStatusValue

//

this.lblFreeMemoryStatusValue.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblFreeMemoryStatusValue.AutoSize = true;

this.lblFreeMemoryStatusValue.Font = new System.Drawing.Font("Microsoft Sans Serif", 8.25F, System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(204)));

this.lblFreeMemoryStatusValue.Location = new System.Drawing.Point(113, 9);

this.lblFreeMemoryStatusValue.Name = "lblFreeMemoryStatusValue";

this.lblFreeMemoryStatusValue.Size = new System.Drawing.Size(14, 13);

this.lblFreeMemoryStatusValue.TabIndex = 2;

this.lblFreeMemoryStatusValue.Text = "0";

//

// tableLayoutPanel5

//

this.tableLayoutPanel5.ColumnCount = 2;

this.tableLayoutPanel5.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Percent, 100F));

this.tableLayoutPanel5.ColumnStyles.Add(new System.Windows.Forms.ColumnStyle(System.Windows.Forms.SizeType.Absolute, 122F));

this.tableLayoutPanel5.Controls.Add(this.btnSaveFile, 1, 2);

this.tableLayoutPanel5.Controls.Add(this.tbProcessId, 1, 0);

this.tableLayoutPanel5.Controls.Add(this.lblProcessId, 0, 0);

this.tableLayoutPanel5.Controls.Add(this.nudProcessSize, 1, 1);

this.tableLayoutPanel5.Controls.Add(this.lblProcessSize, 0, 1);

this.tableLayoutPanel5.Dock = System.Windows.Forms.DockStyle.Top;

this.tableLayoutPanel5.Location = new System.Drawing.Point(3, 260);

this.tableLayoutPanel5.Name = "tableLayoutPanel5";

this.tableLayoutPanel5.RowCount = 3;

this.tableLayoutPanel5.RowStyles.Add(new System.Windows.Forms.RowStyle());

this.tableLayoutPanel5.RowStyles.Add(new System.Windows.Forms.RowStyle());

this.tableLayoutPanel5.RowStyles.Add(new System.Windows.Forms.RowStyle());

this.tableLayoutPanel5.Size = new System.Drawing.Size(215, 100);

this.tableLayoutPanel5.TabIndex = 2;

//

// btnSaveFile

//

this.btnSaveFile.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top | System.Windows.Forms.AnchorStyles.Right)));

this.btnSaveFile.Location = new System.Drawing.Point(137, 55);

this.btnSaveFile.Name = "btnSaveFile";

this.btnSaveFile.Size = new System.Drawing.Size(75, 30);

this.btnSaveFile.TabIndex = 2;

this.btnSaveFile.Text = "Load";

this.btnSaveFile.UseVisualStyleBackColor = true;

this.btnSaveFile.Click += new System.EventHandler(this.btnSaveProcess\_Click);

//

// tbProcessId

//

this.tbProcessId.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Left | System.Windows.Forms.AnchorStyles.Right)));

this.tbProcessId.Location = new System.Drawing.Point(96, 3);

this.tbProcessId.Name = "tbProcessId";

this.tbProcessId.Size = new System.Drawing.Size(116, 20);

this.tbProcessId.TabIndex = 0;

//

// lblProcessId

//

this.lblProcessId.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblProcessId.AutoSize = true;

this.lblProcessId.Location = new System.Drawing.Point(3, 6);

this.lblProcessId.Name = "lblProcessId";

this.lblProcessId.Size = new System.Drawing.Size(48, 13);

this.lblProcessId.TabIndex = 3;

this.lblProcessId.Text = "Процес:";

//

// nudProcessSize

//

this.nudProcessSize.Anchor = ((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Left | System.Windows.Forms.AnchorStyles.Right)));

this.nudProcessSize.Location = new System.Drawing.Point(96, 29);

this.nudProcessSize.Maximum = new decimal(new int[] {

500,

0,

0,

0});

this.nudProcessSize.Minimum = new decimal(new int[] {

1,

0,

0,

0});

this.nudProcessSize.Name = "nudProcessSize";

this.nudProcessSize.Size = new System.Drawing.Size(116, 20);

this.nudProcessSize.TabIndex = 1;

this.nudProcessSize.Value = new decimal(new int[] {

1,

0,

0,

0});

//

// lblProcessSize

//

this.lblProcessSize.Anchor = System.Windows.Forms.AnchorStyles.Left;

this.lblProcessSize.AutoSize = true;

this.lblProcessSize.Location = new System.Drawing.Point(3, 32);

this.lblProcessSize.Name = "lblProcessSize";

this.lblProcessSize.Size = new System.Drawing.Size(69, 13);

this.lblProcessSize.TabIndex = 4;

this.lblProcessSize.Text = "Размер (KB)";

//

// frmMain

//

this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);

this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;

this.ClientSize = new System.Drawing.Size(879, 564);

this.Controls.Add(this.scMain);

this.Name = "frmMain";

this.StartPosition = System.Windows.Forms.FormStartPosition.CenterScreen;

this.Text = "Управление на реалната памет - стрaтегия First Fit";

this.scMain.Panel1.ResumeLayout(false);

this.scMain.Panel2.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.scMain)).EndInit();

this.scMain.ResumeLayout(false);

this.tableLayoutPanel1.ResumeLayout(false);

this.tableLayoutPanel1.PerformLayout();

((System.ComponentModel.ISupportInitialize)(this.nudMemorySize)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.nudBlockSize)).EndInit();

this.scContent.Panel1.ResumeLayout(false);

this.scContent.Panel2.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.scContent)).EndInit();

this.scContent.ResumeLayout(false);

this.tableLayoutPanel2.ResumeLayout(false);

this.tableLayoutPanel3.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.dataGridView1)).EndInit();

this.tableLayoutPanel4.ResumeLayout(false);

this.tableLayoutPanel4.PerformLayout();

this.tableLayoutPanel5.ResumeLayout(false);

this.tableLayoutPanel5.PerformLayout();

((System.ComponentModel.ISupportInitialize)(this.nudProcessSize)).EndInit();

this.ResumeLayout(false);

}

#endregion

private System.Windows.Forms.SplitContainer scMain;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel1;

private System.Windows.Forms.NumericUpDown nudMemorySize;

private System.Windows.Forms.NumericUpDown nudBlockSize;

private System.Windows.Forms.Label lblMemorySize;

private System.Windows.Forms.Label label1;

private System.Windows.Forms.SplitContainer scContent;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel2;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel3;

private System.Windows.Forms.Button btnDelete;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel4;

private System.Windows.Forms.Label lblMemorySizeStatusValue;

private System.Windows.Forms.Label lblFreeMemoryStatus;

private System.Windows.Forms.Label lblMemorySizeStatus;

private System.Windows.Forms.Label lblFreeMemoryStatusValue;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel5;

private System.Windows.Forms.TextBox tbProcessId;

private System.Windows.Forms.NumericUpDown nudProcessSize;

private System.Windows.Forms.Button btnSaveFile;

private System.Windows.Forms.TableLayoutPanel tableLayoutPanel6;

private System.Windows.Forms.Label lblProcessId;

private System.Windows.Forms.Label lblProcessSize;

private System.Windows.Forms.DataGridView dataGridView1;

private System.Windows.Forms.Button buttonGarbageCollector;

private System.Windows.Forms.Button btnSetMemory;

}

}

## Process.cs

using System;

using System.Drawing;

namespace OS\_First\_Fit

{

public class Process

{

private String processId;

private int startBlock;

private uint size;

private Color color;

public string ProcessId

{

get

{

return processId;

}

set

{

processId = value;

}

}

public int StartBlock

{

get

{

return startBlock;

}

set

{

startBlock = value;

}

}

public uint Size

{

get

{

return size;

}

set

{

size = value;

}

}

public Color Color

{

get

{

return color;

}

set

{

color = value;

}

}

}

}

# Демо







