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#include <vcl.h>
#pragma hdrstop

#include "OC_11.h"
//-----
#pragma package(smart_init)
#pragma resource "*.dfm"
TForm1 *Form1;
//-----
__fastcall TForm1::TForm1(TComponent* Owner)
: TForm(Owner)
{
    MainGrid->Cells[0][0]="Процесс";
    MainGrid->Cells[1][0]="Состояние";
    MainGrid->Cells[2][0]="Макс. ресурса";
    MainGrid->Cells[3][0]="Дано ресурса";
    MainGrid->Cells[4][0]="Нужно ресурса";
    MainGrid->Cells[5][0]="Нужно времени";
    MainGrid->Cells[6][0]="Дано времени";
    MainGrid->Cells[7][0]="Время";
}
//-----

#define n 4
#define t 10
//-----
bool emptyArr(float fArr[])
{
    bool flag = true;
    for(int i=0; i<n; i++)
        if(fArr[i] > 0) flag = false;
    return(flag);
}
//-----
bool trueArr(bool bArr[])
{
    bool flag = true;
    for(int i=0; i<n; i++) flag = flag && bArr[i];
    return(flag);
}
//-----
void __fastcall TForm1::StartButtonClick(TObject *Sender)
{
    int i, m[n], l[n], c[n];
    float fQuant[n];
    bool activity[n];
    StartButton->Enabled = false;
    EditSec->Enabled = false;
    MainGrid->RowCount = 5;
    randomize();
    for(i=0; i<n; i++)
    {
        l[i] = 1;
        m[i] = random(t-n)+2;
        fQuant[i] = random(3)+1;
        MainGrid->Cells[0][i+1]=IntToStr(i+1);
        MainGrid->Cells[1][i+1]="Ожидает";
        MainGrid->Cells[2][i+1]=IntToStr(m[i]);
        MainGrid->Cells[3][i+1]=IntToStr(l[i]);
        MainGrid->Cells[4][i+1]=IntToStr(m[i]-l[i]);
        MainGrid->Cells[5][i+1]=FloatToStr(fQuant[i]);
        MainGrid->Cells[6][i+1]="0";
        MainGrid->Cells[7][i+1]="0";
    }
    int pos, actind, T, cmin;
    while(!emptyArr(fQuant))
    {
        for(i=0; i<n; i++)
            c[i] = m[i]-l[i];
        cmin = t-n+2;
        for(i=0; i<n; i++)
            if((fQuant[i]>0) && (!activity[i]) && (c[i]<cmin))

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    {
        cmin = c[i];
        actind = i;
    }
    activity[actind] = true;
    int A = 0, Amin = 0;
    for(i=0; i<n; i++)
    {
        A = A+l[i];
        if(activity[i]) Amin = Amin+c[i];
    }
    A = t-A;
    if(A >= Amin)
    {
        l[actind] = m[actind];
        if(!trueArr(activity)) continue;
    }
    else activity[actind] = false;
    float nActive = 0;
    for(i=0; i<n; i++)
        if(activity[i] && fQuant[i]>0) nActive++;
    for(i=0; i<n; i++)
        if(activity[i] && fQuant[i]>0) fQuant[i]-=(1/nActive);
    T++;
    for(i=0; i<n; i++)
    {
        pos = n*T+i+1;
        MainGrid->Cells[1][pos]="Блокирован";
        MainGrid->Cells[6][pos]="0";
        if(fQuant[i]<=0)
        {
            MainGrid->Cells[1][pos]="Завершён";
            l[i] = 0;
            m[i] = 0;
            c[i] = 0;
            fQuant[i] = 0;
        }
        if(activity[i] && fQuant[i]>0)
        {
            MainGrid->Cells[1][pos]="Активен";
            MainGrid->Cells[6][pos]=FloatToStr(1/nActive);
        }
        MainGrid->Cells[0][pos]=IntToStr(i+1);
        MainGrid->Cells[2][pos]=IntToStr(m[i]);
        MainGrid->Cells[3][pos]=IntToStr(l[i]);
        MainGrid->Cells[4][pos]=IntToStr(c[i]);
        MainGrid->Cells[5][pos]=FloatToStr(fQuant[i]);
        MainGrid->Cells[7][pos]=IntToStr(T);
    }
    if(T>5) MainGrid->TopRow+=n;
    MainGrid->Repaint();
    Sleep(SetDelay->Position*1000);
    MainGrid->RowCount+=n;
}
StartButton->Enabled = true;
EditSec->Enabled = true;
}
//-----

```