Федеральное государственное образовательное бюджетное

учреждение высшего образования

**«Финансовый университет при Правительстве Российской Федерации»**

**(Финансовый университет)**

Колледж информатики и программирования

Специальность: Обеспечение информационной безопасности автоматизированных систем

**ОТЧЕТ**

ПО УЧЕБНОЙ ПРАКТИКЕ L5  
*(указать вид (этап) практики)*

Профессиональный модуль:

Машинно-ориентированное программирование в защите информации

*(наименование профессионального модуля\_)*

Выполнил:

обучающийся учебной группы   
№3ОИБАС-818

В.А. Ефременков

*(подпись) (И.О. Фамилия)*

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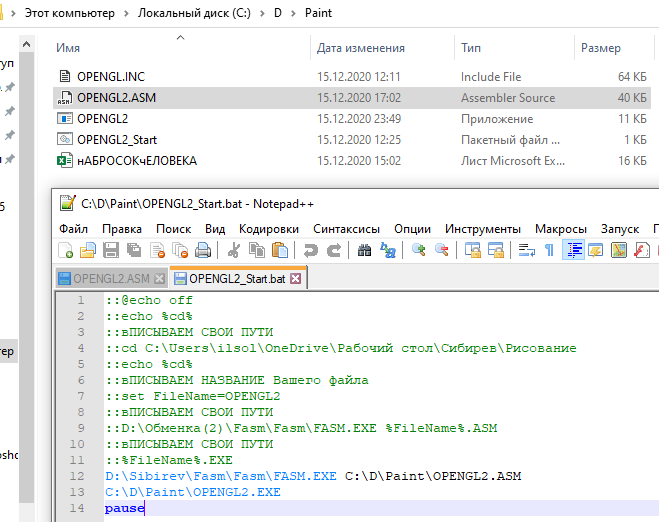
*(оценка) (подпись)*

**Москва – 2020г.**

**L5 Обучение графическому программированию на assembler.**

**Настраиваем запуск отладчика.**

Создаем файл OPENGL2.ASM и OPENGL\_Start, затем открываем их через NotePad++.



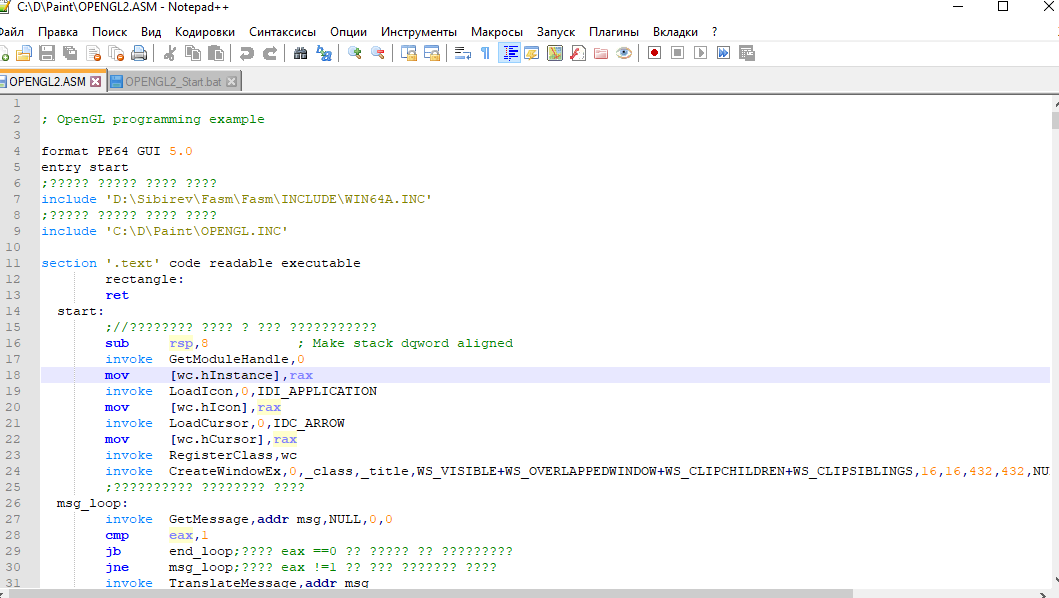
В файле OPENGL2.ASM в первой строчке указываем путь к Fasm.exe и путь к нашему файлу OPENGL2.ASM.

Во второй строчке указываем путь, где необходимо создать EXE файл для запуска программы.

**Далее открываем файл OPENGL2.ASM.**

В папку с FASM закидываем скачанный файл OPENGL.INC и прописываем пути.

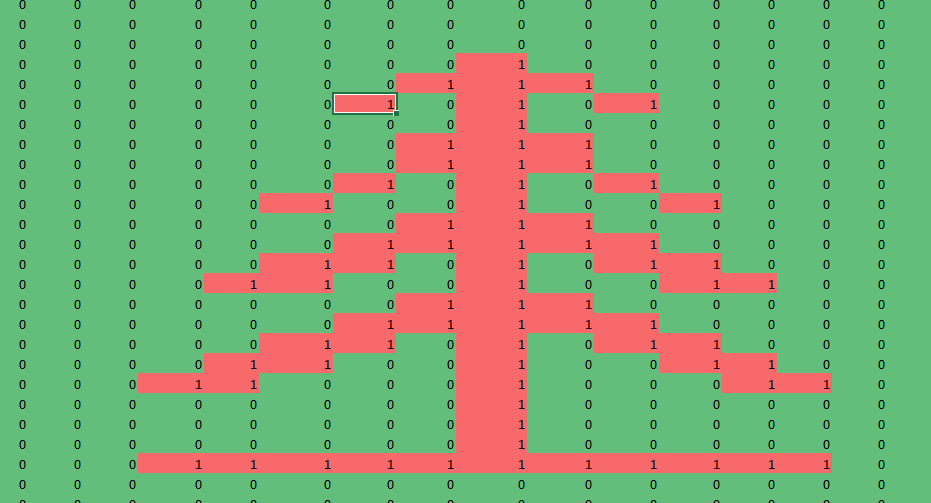
В первой строчке пишем путь к WIN64A.INC. Во второй строчке пишем путь до OPENGL.INC.



**Запуск отладчика мы настроили, дальше переходим к самому программному рисованию.**

Открываем EXCEL файл, я назвал его «Координаты Елки».

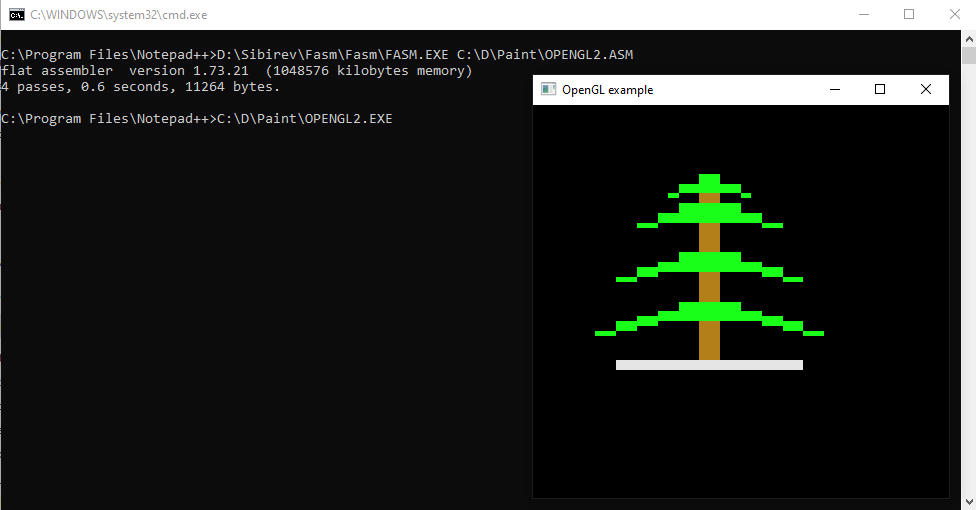
Рисуем в таблице нашей Елки, путем присваивания ячейке значения «1», где необходимо закрасить.



У меня получился вот такая елка. Сверху и слева мы имеем координаты, для масштабирования изображения делим координаты на 0.5.

**Затем переходим к файлу OPENGL2.ASM.**

**В итоге мы получаем следующий вывод.**



**Полный код программы:**

; OpenGL programming example

format PE64 GUI 5.0

entry start

;????? ????? ???? ????

include 'D:\Sibirev\Fasm\Fasm\INCLUDE\WIN64A.INC'

;????? ????? ???? ????

include 'C:\D\Paint\OPENGL.INC'

section '.text' code readable executable

rectangle:

ret

start:

;//???????? ???? ? ??? ???????????

sub rsp,8 ; Make stack dqword aligned

invoke GetModuleHandle,0

mov [wc.hInstance],rax

invoke LoadIcon,0,IDI\_APPLICATION

mov [wc.hIcon],rax

invoke LoadCursor,0,IDC\_ARROW

mov [wc.hCursor],rax

invoke RegisterClass,wc

invoke CreateWindowEx,0,\_class,\_title,WS\_VISIBLE+WS\_OVERLAPPEDWINDOW+WS\_CLIPCHILDREN+WS\_CLIPSIBLINGS,16,16,432,432,NULL,NULL,[wc.hInstance],NULL

;?????????? ???????? ????

msg\_loop:

invoke GetMessage,addr msg,NULL,0,0

cmp eax,1

jb end\_loop;???? eax ==0 ?? ????? ?? ?????????

jne msg\_loop;???? eax !=1 ?? ??? ??????? ????

invoke TranslateMessage,addr msg

invoke DispatchMessage,addr msg

jmp msg\_loop

end\_loop:

invoke ExitProcess,[msg.wParam]

;?????????, ??????? ??????????? ??????????? ???- ?? ???

proc WindowProc uses rbx rsi rdi, hwnd,wmsg,wparam,lparam

mov [hwnd],rcx

frame

cmp edx,WM\_CREATE

je .wmcreate

cmp edx,WM\_SIZE

je .wmsize

cmp edx,WM\_PAINT

je .wmpaint

cmp edx,WM\_KEYDOWN

je .wmkeydown

cmp edx,WM\_DESTROY

je .wmdestroy

.defwndproc:

invoke DefWindowProc,rcx,rdx,r8,r9

jmp .finish

.wmcreate:

invoke GetDC,rcx

mov [hdc],rax

lea rdi,[pfd]

mov rcx,sizeof.PIXELFORMATDESCRIPTOR shr 3

xor eax,eax

rep stosq

mov [pfd.nSize],sizeof.PIXELFORMATDESCRIPTOR

mov [pfd.nVersion],1

mov [pfd.dwFlags],PFD\_SUPPORT\_OPENGL+PFD\_DOUBLEBUFFER+PFD\_DRAW\_TO\_WINDOW

mov [pfd.iLayerType],PFD\_MAIN\_PLANE

mov [pfd.iPixelType],PFD\_TYPE\_RGBA

mov [pfd.cColorBits],16

mov [pfd.cDepthBits],16

mov [pfd.cAccumBits],0

mov [pfd.cStencilBits],0

invoke ChoosePixelFormat,[hdc],addr pfd

invoke SetPixelFormat,[hdc],eax,addr pfd

invoke wglCreateContext,[hdc]

mov [hrc],rax

invoke wglMakeCurrent,[hdc],[hrc]

invoke GetClientRect,[hwnd],addr rc

invoke glViewport,0,0,[rc.right],[rc.bottom]

invoke GetTickCount

mov [clock],eax

xor eax,eax

jmp .finish

.wmsize:

invoke GetClientRect,[hwnd],addr rc

invoke glViewport,0,0,[rc.right],[rc.bottom]

xor eax,eax

jmp .finish

.wmpaint:;?????? ?????

invoke GetTickCount

sub eax,[clock]

cmp eax,10

jb .animation\_ok

add [clock],eax

;;???????? ?????? ??? ????

;invoke glRotatef,float [theta],float dword 0.0,float dword 0.0,float dword 1.0

.animation\_ok:

invoke glClear,GL\_COLOR\_BUFFER\_BIT

;???? ??? ????????? ????? ??????

;?????? ??????

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.9,float dword 0.9

;(-0.5;0.5);(-0.2;0.5)

;(-0.5;0.2);(-0.2;0.2)

invoke glVertex3d,float -0.6,float -0.35,float 0.0

invoke glVertex3d,float 0.3,float -0.35,float 0.0

invoke glVertex3d,float 0.3,float -0.30,float 0.0

invoke glVertex3d,float -0.6,float -0.30,float 0.0

invoke glVertex3d,float -0.6,float -0.35,float 0.0

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glEnd

;?????? ???

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.7,float dword 0.5,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.2,float 0.65,float 0.0

invoke glVertex3d,float -0.1,float 0.65,float 0.0

invoke glVertex3d,float -0.1,float -0.3,float 0.0

invoke glVertex3d,float -0.2,float -0.3,float 0.0

invoke glVertex3d,float -0.2,float 0.65,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.3,float 0.5,float 0.0

invoke glVertex3d,float 0.0,float 0.5,float 0.0

invoke glVertex3d,float 0.0,float 0.4,float 0.0

invoke glVertex3d,float -0.3,float 0.4,float 0.0

invoke glVertex3d,float -0.3,float 0.5,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.3,float 0.25,float 0.0

invoke glVertex3d,float 0.0,float 0.25,float 0.0

invoke glVertex3d,float 0.0,float 0.15,float 0.0

invoke glVertex3d,float -0.3,float 0.15,float 0.0

invoke glVertex3d,float -0.3,float 0.25,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.3,float 0.0,float 0.0

invoke glVertex3d,float 0.0,float 0.0,float 0.0

invoke glVertex3d,float 0.0,float -0.1,float 0.0

invoke glVertex3d,float -0.3,float -0.1,float 0.0

invoke glVertex3d,float -0.3,float 0.0,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.3,float 0.6,float 0.0

invoke glVertex3d,float 0.0,float 0.6,float 0.0

invoke glVertex3d,float 0.0,float 0.55,float 0.0

invoke glVertex3d,float -0.3,float 0.55,float 0.0

invoke glVertex3d,float -0.3,float 0.6,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.35,float 0.55,float 0.0

invoke glVertex3d,float -0.3,float 0.55,float 0.0

invoke glVertex3d,float -0.3,float 0.525,float 0.0

invoke glVertex3d,float -0.35,float 0.525,float 0.0

invoke glVertex3d,float -0.35,float 0.55,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.0,float 0.55,float 0.0

invoke glVertex3d,float 0.05,float 0.55,float 0.0

invoke glVertex3d,float 0.05,float 0.525,float 0.0

invoke glVertex3d,float 0.0,float 0.525,float 0.0

invoke glVertex3d,float 0.0,float 0.55,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.0,float 0.45,float 0.0

invoke glVertex3d,float 0.1,float 0.45,float 0.0

invoke glVertex3d,float 0.1,float 0.4,float 0.0

invoke glVertex3d,float 0.0,float 0.4,float 0.0

invoke glVertex3d,float 0.0,float 0.45,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.4,float 0.45,float 0.0

invoke glVertex3d,float -0.3,float 0.45,float 0.0

invoke glVertex3d,float -0.3,float 0.4,float 0.0

invoke glVertex3d,float -0.4,float 0.4,float 0.0

invoke glVertex3d,float -0.4,float 0.45,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.4,float 0.2,float 0.0

invoke glVertex3d,float -0.3,float 0.2,float 0.0

invoke glVertex3d,float -0.3,float 0.15,float 0.0

invoke glVertex3d,float -0.4,float 0.15,float 0.0

invoke glVertex3d,float -0.4,float 0.2,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.0,float 0.2,float 0.0

invoke glVertex3d,float 0.1,float 0.2,float 0.0

invoke glVertex3d,float 0.1,float 0.15,float 0.0

invoke glVertex3d,float 0.0,float 0.15,float 0.0

invoke glVertex3d,float 0.0,float 0.2,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.4,float -0.05,float 0.0

invoke glVertex3d,float -0.3,float -0.05,float 0.0

invoke glVertex3d,float -0.3,float -0.1,float 0.0

invoke glVertex3d,float -0.4,float -0.1,float 0.0

invoke glVertex3d,float -0.4,float -0.05,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.0,float -0.05,float 0.0

invoke glVertex3d,float 0.1,float -0.05,float 0.0

invoke glVertex3d,float 0.1,float -0.1,float 0.0

invoke glVertex3d,float 0.0,float -0.1,float 0.0

invoke glVertex3d,float 0.0,float -0.05,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.1,float -0.075,float 0.0

invoke glVertex3d,float 0.2,float -0.075,float 0.0

invoke glVertex3d,float 0.2,float -0.125,float 0.0

invoke glVertex3d,float 0.1,float -0.125,float 0.0

invoke glVertex3d,float 0.1,float -0.075,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.5,float -0.075,float 0.0

invoke glVertex3d,float -0.4,float -0.075,float 0.0

invoke glVertex3d,float -0.4,float -0.125,float 0.0

invoke glVertex3d,float -0.5,float -0.125,float 0.0

invoke glVertex3d,float -0.5,float -0.075,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.1,float 0.375,float 0.0

invoke glVertex3d,float 0.2,float 0.375,float 0.0

invoke glVertex3d,float 0.2,float 0.4,float 0.0

invoke glVertex3d,float 0.1,float 0.4,float 0.0

invoke glVertex3d,float 0.1,float 0.375,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.4,float 0.375,float 0.0

invoke glVertex3d,float -0.5,float 0.375,float 0.0

invoke glVertex3d,float -0.5,float 0.4,float 0.0

invoke glVertex3d,float -0.4,float 0.4,float 0.0

invoke glVertex3d,float -0.4,float 0.375,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.5,float 0.175,float 0.0

invoke glVertex3d,float -0.4,float 0.175,float 0.0

invoke glVertex3d,float -0.4,float 0.125,float 0.0

invoke glVertex3d,float -0.5,float 0.125,float 0.0

invoke glVertex3d,float -0.5,float 0.175,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.1,float 0.175,float 0.0

invoke glVertex3d,float 0.2,float 0.175,float 0.0

invoke glVertex3d,float 0.2,float 0.125,float 0.0

invoke glVertex3d,float 0.1,float 0.125,float 0.0

invoke glVertex3d,float 0.1,float 0.175,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.6,float 0.125,float 0.0

invoke glVertex3d,float -0.5,float 0.125,float 0.0

invoke glVertex3d,float -0.5,float 0.1,float 0.0

invoke glVertex3d,float -0.6,float 0.1,float 0.0

invoke glVertex3d,float -0.6,float 0.125,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.3,float 0.125,float 0.0

invoke glVertex3d,float 0.2,float 0.125,float 0.0

invoke glVertex3d,float 0.2,float 0.1,float 0.0

invoke glVertex3d,float 0.3,float 0.1,float 0.0

invoke glVertex3d,float 0.3,float 0.125,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.6,float -0.1,float 0.0

invoke glVertex3d,float -0.5,float -0.1,float 0.0

invoke glVertex3d,float -0.5,float -0.15,float 0.0

invoke glVertex3d,float -0.6,float -0.15,float 0.0

invoke glVertex3d,float -0.6,float -0.1,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.3,float -0.1,float 0.0

invoke glVertex3d,float 0.2,float -0.1,float 0.0

invoke glVertex3d,float 0.2,float -0.15,float 0.0

invoke glVertex3d,float 0.3,float -0.15,float 0.0

invoke glVertex3d,float 0.3,float -0.1,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.7,float -0.15,float 0.0

invoke glVertex3d,float -0.6,float -0.15,float 0.0

invoke glVertex3d,float -0.6,float -0.175,float 0.0

invoke glVertex3d,float -0.7,float -0.175,float 0.0

invoke glVertex3d,float -0.7,float -0.15,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float 0.4,float -0.15,float 0.0

invoke glVertex3d,float 0.3,float -0.15,float 0.0

invoke glVertex3d,float 0.3,float -0.175,float 0.0

invoke glVertex3d,float 0.4,float -0.175,float 0.0

invoke glVertex3d,float 0.4,float -0.15,float 0.0

invoke glEnd

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.1,float dword 1.0,float dword 0.1

;(-0.4;0.2);(-0.3;0.1)

;(-0.4;0.2);(-0.3;0.1)

invoke glVertex3d,float -0.2,float 0.65,float 0.0

invoke glVertex3d,float -0.1,float 0.65,float 0.0

invoke glVertex3d,float -0.1,float 0.6,float 0.0

invoke glVertex3d,float -0.2,float 0.6,float 0.0

invoke glVertex3d,float -0.2,float 0.65,float 0.0

invoke glEnd

invoke SwapBuffers,[hdc]

xor eax,eax

jmp .finish

.wmkeydown:

cmp r8d,VK\_ESCAPE

jne .defwndproc

.wmdestroy:

invoke wglMakeCurrent,0,0

invoke wglDeleteContext,[hrc]

invoke ReleaseDC,[hwnd],[hdc]

invoke PostQuitMessage,0

xor eax,eax

.finish:

endf

ret

endp

section '.data' data readable writeable

\_title db 'OpenGL example',0

\_class db 'FASMOPENGL32',0

theta GLfloat 0.6

wc WNDCLASS 0,WindowProc,0,0,NULL,NULL,NULL,NULL,NULL,\_class

hdc dq ?

hrc dq ?

msg MSG

rc RECT

pfd PIXELFORMATDESCRIPTOR

clock dd ?

section '.idata' import data readable writeable

library kernel,'KERNEL32.DLL',\

user,'USER32.DLL',\

gdi,'GDI32.DLL',\

opengl,'OPENGL32.DLL',\

glu,'GLU32.DLL'

import kernel,\

GetModuleHandle,'GetModuleHandleA',\

GetTickCount,'GetTickCount',\

ExitProcess,'ExitProcess'

import user,\

RegisterClass,'RegisterClassA',\

CreateWindowEx,'CreateWindowExA',\

DefWindowProc,'DefWindowProcA',\

GetMessage,'GetMessageA',\

TranslateMessage,'TranslateMessage',\

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LoadCursor,'LoadCursorA',\

LoadIcon,'LoadIconA',\

GetClientRect,'GetClientRect',\

GetDC,'GetDC',\

ReleaseDC,'ReleaseDC',\

PostQuitMessage,'PostQuitMessage'

import gdi,\

ChoosePixelFormat,'ChoosePixelFormat',\

SetPixelFormat,'SetPixelFormat',\

SwapBuffers,'SwapBuffers'

import opengl,\

glAccum,'glAccum',\

glAlphaFunc,'glAlphaFunc',\

glAreTexturesResident,'glAreTexturesResident',\

glArrayElement,'glArrayElement',\

glBegin,'glBegin',\

glBindTexture,'glBindTexture',\

glBitmap,'glBitmap',\

glBlendFunc,'glBlendFunc',\

glCallList,'glCallList',\

glCallLists,'glCallLists',\

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glClearAccum,'glClearAccum',\

glClearColor,'glClearColor',\

glClearDepth,'glClearDepth',\

glClearIndex,'glClearIndex',\

glClearStencil,'glClearStencil',\

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glColor4usv,'glColor4usv',\

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glCopyTexImage2D,'glCopyTexImage2D',\

glCopyTexSubImage1D,'glCopyTexSubImage1D',\

glCopyTexSubImage2D,'glCopyTexSubImage2D',\

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glDeleteTextures,'glDeleteTextures',\

glDepthFunc,'glDepthFunc',\

glDepthMask,'glDepthMask',\

glDepthRange,'glDepthRange',\

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glEdgeFlagv,'glEdgeFlagv',\

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glEvalMesh2,'glEvalMesh2',\

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glGetTexLevelParameterfv,'glGetTexLevelParameterfv',\

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glIndexPointer,'glIndexPointer',\

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glIndexfv,'glIndexfv',\

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glIndexiv,'glIndexiv',\

glIndexs,'glIndexs',\

glIndexsv,'glIndexsv',\

glIndexub,'glIndexub',\

glIndexubv,'glIndexubv',\

glInitNames,'glInitNames',\

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glIsEnabled,'glIsEnabled',\

glIsList,'glIsList',\

glIsTexture,'glIsTexture',\

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glLightModelfv,'glLightModelfv',\

glLightModeli,'glLightModeli',\

glLightModeliv,'glLightModeliv',\

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glLightfv,'glLightfv',\

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glLoadName,'glLoadName',\

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glPassThrough,'glPassThrough',\

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glPixelStorei,'glPixelStorei',\

glPixelTransferf,'glPixelTransferf',\

glPixelTransferi,'glPixelTransferi',\

glPixelZoom,'glPixelZoom',\

glPointSize,'glPointSize',\

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glPolygonStipple,'glPolygonStipple',\

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glPopClientAttrib,'glPopClientAttrib',\

glPopMatrix,'glPopMatrix',\

glPopName,'glPopName',\

glPrioritizeTextures,'glPrioritizeTextures',\

glPushAttrib,'glPushAttrib',\

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glScaled,'glScaled',\

glScalef,'glScalef',\

glScissor,'glScissor',\

glSelectBuffer,'glSelectBuffer',\

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wglCreateLayerContext,'wglCreateLayerContext',\

wglDeleteContext,'wglDeleteContext',\

wglDescribeLayerPlane,'wglDescribeLayerPlane',\

wglGetCurrentContext,'wglGetCurrentContext',\

wglGetCurrentDC,'wglGetCurrentDC',\

wglGetLayerPaletteEntries,'wglGetLayerPaletteEntries',\

wglMakeCurrent,'wglMakeCurrent',\

wglRealizeLayerPalette,'wglRealizeLayerPalette',\

wglSetLayerPaletteEntries,'wglSetLayerPaletteEntries',\

wglShareLists,'wglShareLists',\

wglSwapLayerBuffers,'wglSwapLayerBuffers',\

wglSwapMultipleBuffers,'wglSwapMultipleBuffers',\

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wglUseFontBitmapsW,'wglUseFontBitmapsW',\

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glTexImage3D,'glTexImage3D',\

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glHistogram,'glHistogram',\

glResetHistogram,'glResetHistogram',\

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gluBuild2DMipmaps,'gluBuild2DMipmaps',\

gluCylinder,'gluCylinder',\

gluDeleteNurbsRenderer,'gluDeleteNurbsRenderer',\

gluDeleteQuadric,'gluDeleteQuadric',\

gluDeleteTess,'gluDeleteTess',\

gluDisk,'gluDisk',\

gluEndCurve,'gluEndCurve',\

gluEndPolygon,'gluEndPolygon',\

gluEndSurface,'gluEndSurface',\

gluEndTrim,'gluEndTrim',\

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gluGetString,'gluGetString',\

gluGetTessProperty,'gluGetTessProperty',\

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gluLookAt,'gluLookAt',\

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gluNewQuadric,'gluNewQuadric',\

gluNewTess,'gluNewTess',\

gluNextContour,'gluNextContour',\

gluNurbsCallback,'gluNurbsCallback',\

gluNurbsCurve,'gluNurbsCurve',\

gluNurbsProperty,'gluNurbsProperty',\

gluNurbsSurface,'gluNurbsSurface',\

gluOrtho2D,'gluOrtho2D',\

gluPartialDisk,'gluPartialDisk',\

gluPerspective,'gluPerspective',\

gluPickMatrix,'gluPickMatrix',\

gluProject,'gluProject',\

gluPwlCurve,'gluPwlCurve',\

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gluQuadricDrawStyle,'gluQuadricDrawStyle',\

gluQuadricNormals,'gluQuadricNormals',\

gluQuadricOrientation,'gluQuadricOrientation',\

gluQuadricTexture,'gluQuadricTexture',\

gluScaleImage,'gluScaleImage',\

gluSphere,'gluSphere',\

gluTessBeginContour,'gluTessBeginContour',\

gluTessBeginPolygon,'gluTessBeginPolygon',\

gluTessCallback,'gluTessCallback',\

gluTessEndContour,'gluTessEndContour',\

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gluUnProject,'gluUnProject'