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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*(И.О. Фамилия)*

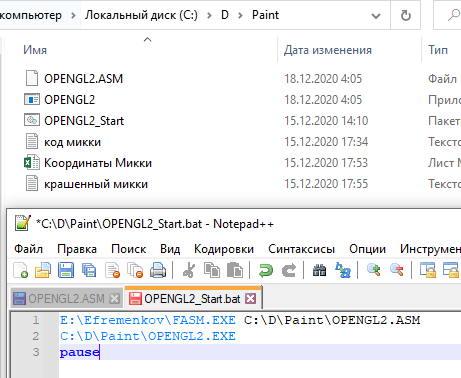
*(оценка) (подпись)*

**Москва – 2020г.**

**L5 Обучение графическому программированию на assembler.**

**Настраиваем запуск отладчика.**

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



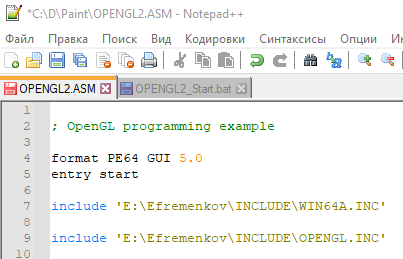
В файле OPENGL2.ASM в первой строчке указываем путь к Fasm.exe и путь к нашему файлу OPENGL2.ASM.

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.

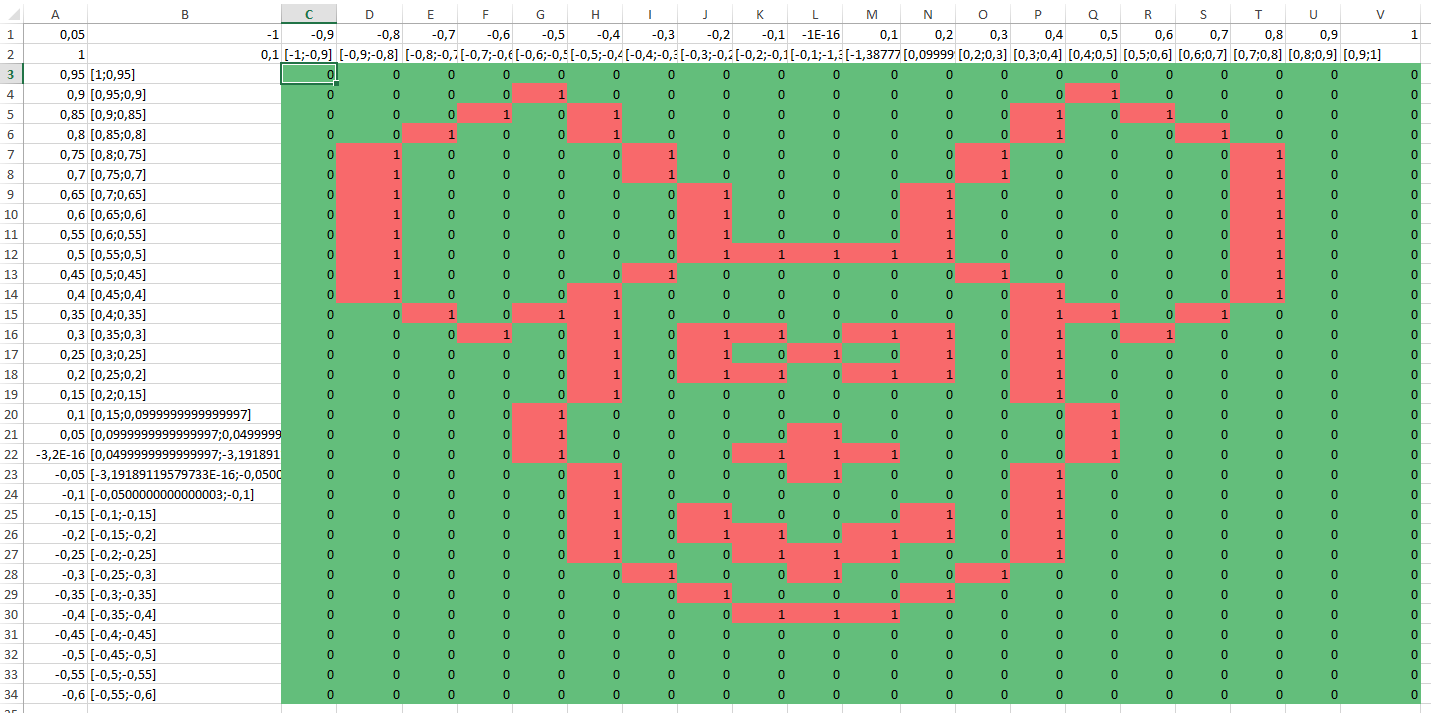
В первой строчке пишем путь к WIN64A.INC. Во второй строчке пишем путь до OPENGL.INC.



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

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

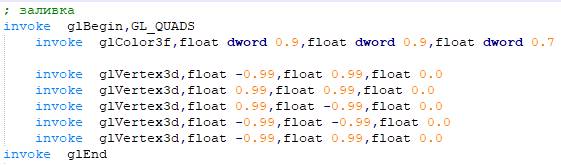
Рисуем в таблице нашего Микки Мауса, путем присваивания ячейке значения «1», где необходимо закрасить.



У меня получился вот такой Микки Маус. Сверху и слева мы имеем координаты, для масштабирования изображения делим координаты на 0.5.

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

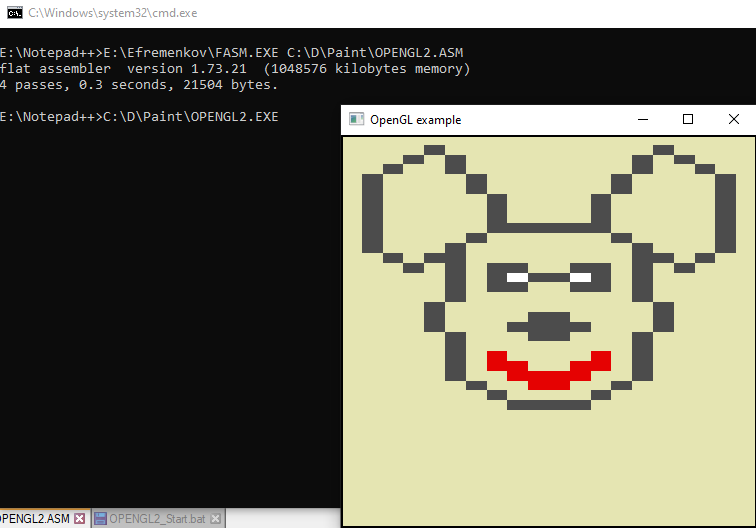
Для начала я решил залить все пространство бежевым цветом, чтобы у Микки было бежевое лицо.



Подобрав цвет (0.9; 0.9; 0.7), начинаем писать координаты 5-и точек заливки. Координаты берем из таблицы в Excel. Мы получаем залитый квадрат, определенного цвета.

Таким способом прописываем все наши координаты и цвета.

**В итоге мы получаем следующий вывод.**



**Полный код программы:**

; OpenGL programming example

format PE64 GUI 5.0

entry start

include 'E:\Efremenkov\INCLUDE\WIN64A.INC'

include 'E:\Efremenkov\INCLUDE\OPENGL.INC'

section '.text' code readable executable

start:

;//сОЗДАНИЕ ОКНА И ЕГО РЕГИСТРАЦИЯ

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

;оБРАБОТЧИК СООБЩЕНИ ОКНА

msg\_loop:

invoke GetMessage,addr msg,NULL,0,0

cmp eax,1

jb end\_loop;Если eax ==0 то выйти из программы

jne msg\_loop;Если eax !=1 то гда переход есть

invoke TranslateMessage,addr msg

invoke DispatchMessage,addr msg

jmp msg\_loop

end\_loop:

invoke ExitProcess,[msg.wParam]

;пРОЦЕДУРА, КОТОРАЯ ЗАПУСКАЕТСЯ БЕСКОНЕЧНОЕ КОЛ- ВО РАЗ

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:;рИСУЕМ СДЕСЬ

invoke GetTickCount

sub eax,[clock]

cmp eax,10

jb .animation\_ok

add [clock],eax

;;Вращение Вашего бит мапа

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

.animation\_ok:

invoke glClear,GL\_COLOR\_BUFFER\_BIT

;бЛОК ДЛЯ РИСОВАНИЯ ВАШЕЙ ФИГУРЫ

; заливка

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.9,float dword 0.7

invoke glVertex3d,float -0.99,float 0.99,float 0.0

invoke glVertex3d,float 0.99,float 0.99,float 0.0

invoke glVertex3d,float 0.99,float -0.99,float 0.0

invoke glVertex3d,float -0.99,float -0.99,float 0.0

invoke glVertex3d,float -0.99,float 0.99,float 0.0

invoke glEnd

;норм -0.8

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.9,float 0.8,float 0.0

invoke glVertex3d,float -0.8,float 0.8,float 0.0

invoke glVertex3d,float -0.8,float 0.4,float 0.0

invoke glVertex3d,float -0.9,float 0.4,float 0.0

invoke glVertex3d,float -0.9,float 0.8,float 0.0

invoke glEnd

;норм -0.7

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.8,float 0.85,float 0.0

invoke glVertex3d,float -0.7,float 0.85,float 0.0

invoke glVertex3d,float -0.7,float 0.8,float 0.0

invoke glVertex3d,float -0.8,float 0.8,float 0.0

invoke glVertex3d,float -0.8,float 0.85,float 0.0

invoke glEnd

;норм -0.7

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.8,float 0.4,float 0.0

invoke glVertex3d,float -0.7,float 0.4,float 0.0

invoke glVertex3d,float -0.7,float 0.35,float 0.0

invoke glVertex3d,float -0.8,float 0.35,float 0.0

invoke glVertex3d,float -0.8,float 0.4,float 0.0

invoke glEnd

;норм -0.6

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.7,float 0.9,float 0.0

invoke glVertex3d,float -0.6,float 0.9,float 0.0

invoke glVertex3d,float -0.6,float 0.85,float 0.0

invoke glVertex3d,float -0.7,float 0.85,float 0.0

invoke glVertex3d,float -0.7,float 0.9,float 0.0

invoke glEnd

;норм -0.6

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.7,float 0.35,float 0.0

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

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

invoke glVertex3d,float -0.7,float 0.3,float 0.0

invoke glVertex3d,float -0.7,float 0.35,float 0.0

invoke glEnd

;норм -0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.6,float 0.95,float 0.0

invoke glVertex3d,float -0.5,float 0.95,float 0.0

invoke glVertex3d,float -0.5,float 0.9,float 0.0

invoke glVertex3d,float -0.6,float 0.9,float 0.0

invoke glVertex3d,float -0.6,float 0.95,float 0.0

invoke glEnd

;норм -0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.6,float 0.4,float 0.0

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

invoke glVertex3d,float -0.5,float 0.35,float 0.0

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

invoke glVertex3d,float -0.6,float 0.4,float 0.0

invoke glEnd

;норм -0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

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

invoke glVertex3d,float -0.5,float 0,float 0.0

invoke glVertex3d,float -0.6,float 0,float 0.0

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

invoke glEnd

;норм -0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.5,float 0.9,float 0.0

invoke glVertex3d,float -0.4,float 0.9,float 0.0

invoke glVertex3d,float -0.4,float 0.8,float 0.0

invoke glVertex3d,float -0.5,float 0.8,float 0.0

invoke glVertex3d,float -0.5,float 0.9,float 0.0

invoke glEnd

;норм -0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.5,float 0.45,float 0.0

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

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

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

invoke glVertex3d,float -0.5,float 0.45,float 0.0

invoke glEnd

;норм -0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.5,float 0,float 0.0

invoke glVertex3d,float -0.4,float 0,float 0.0

invoke glVertex3d,float -0.4,float -0.25,float 0.0

invoke glVertex3d,float -0.5,float -0.25,float 0.0

invoke glVertex3d,float -0.5,float 0,float 0.0

invoke glEnd

;норм -0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.4,float 0.8,float 0.0

invoke glVertex3d,float -0.3,float 0.8,float 0.0

invoke glVertex3d,float -0.3,float 0.7,float 0.0

invoke glVertex3d,float -0.4,float 0.7,float 0.0

invoke glVertex3d,float -0.4,float 0.8,float 0.0

invoke glEnd

;норм -0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

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

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

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

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

invoke glEnd

;норм -0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.4,float -0.25,float 0.0

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

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

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

invoke glVertex3d,float -0.4,float -0.25,float 0.0

invoke glEnd

;норм -0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.3,float 0.7,float 0.0

invoke glVertex3d,float -0.2,float 0.7,float 0.0

invoke glVertex3d,float -0.2,float 0.5,float 0.0

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

invoke glVertex3d,float -0.3,float 0.7,float 0.0

invoke glEnd

;норм -0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

invoke glVertex3d,float -0.2,float 0.35,float 0.0

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

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

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

invoke glEnd

;норм -0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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 -0.2,float 0.0

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

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

invoke glEnd

;норм -0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

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

invoke glVertex3d,float -0.2,float -0.35,float 0.0

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

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

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.2,float 0.55,float 0.0

invoke glVertex3d,float -0.1,float 0.55,float 0.0

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

invoke glVertex3d,float -0.2,float 0.5,float 0.0

invoke glVertex3d,float -0.2,float 0.55,float 0.0

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.2,float 0.35,float 0.0

invoke glVertex3d,float -0.1,float 0.35,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 0.35,float 0.0

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.999,float dword 0.999,float dword 0.999

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

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

invoke glVertex3d,float -0.1,float 0.25,float 0.0

invoke glVertex3d,float -0.2,float 0.25,float 0.0

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

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.2,float 0.25,float 0.0

invoke glVertex3d,float -0.1,float 0.25,float 0.0

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

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

invoke glVertex3d,float -0.2,float 0.25,float 0.0

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.2,float 0.05,float 0.0

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

invoke glVertex3d,float -0.1,float 0,float 0.0

invoke glVertex3d,float -0.2,float 0,float 0.0

invoke glVertex3d,float -0.2,float 0.05,float 0.0

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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

invoke glVertex3d,float -0.1,float -0.15,float 0.0

invoke glVertex3d,float -0.1,float -0.25,float 0.0

invoke glVertex3d,float -0.2,float -0.25,float 0.0

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

invoke glEnd

;норм -0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.2,float -0.35,float 0.0

invoke glVertex3d,float -0.1,float -0.35,float 0.0

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

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

invoke glVertex3d,float -0.2,float -0.35,float 0.0

invoke glEnd

;-------------------------------------------------------------------------------------

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.1,float 0.55,float 0.0

invoke glVertex3d,float 0,float 0.55,float 0.0

invoke glVertex3d,float 0,float 0.5,float 0.0

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

invoke glVertex3d,float -0.1,float 0.55,float 0.0

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

invoke glVertex3d,float 0,float 0.3,float 0.0

invoke glVertex3d,float 0,float 0.25,float 0.0

invoke glVertex3d,float -0.1,float 0.25,float 0.0

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

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

invoke glVertex3d,float 0,float 0.1,float 0.0

invoke glVertex3d,float 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 glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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

invoke glVertex3d,float 0,float -0.2,float 0.0

invoke glVertex3d,float 0,float -0.3,float 0.0

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

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

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float -0.1,float -0.35,float 0.0

invoke glVertex3d,float 0,float -0.35,float 0.0

invoke glVertex3d,float 0,float -0.4,float 0.0

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

invoke glVertex3d,float -0.1,float -0.35,float 0.0

invoke glEnd

;-------------------------------------------------------------------------------------

; норм 0.8

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.9,float 0.8,float 0.0

invoke glVertex3d,float 0.8,float 0.8,float 0.0

invoke glVertex3d,float 0.8,float 0.4,float 0.0

invoke glVertex3d,float 0.9,float 0.4,float 0.0

invoke glVertex3d,float 0.9,float 0.8,float 0.0

invoke glEnd

;норм 0.7

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.8,float 0.85,float 0.0

invoke glVertex3d,float 0.7,float 0.85,float 0.0

invoke glVertex3d,float 0.7,float 0.8,float 0.0

invoke glVertex3d,float 0.8,float 0.8,float 0.0

invoke glVertex3d,float 0.8,float 0.85,float 0.0

invoke glEnd

;норм 0.7

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.8,float 0.4,float 0.0

invoke glVertex3d,float 0.7,float 0.4,float 0.0

invoke glVertex3d,float 0.7,float 0.35,float 0.0

invoke glVertex3d,float 0.8,float 0.35,float 0.0

invoke glVertex3d,float 0.8,float 0.4,float 0.0

invoke glEnd

;норм 0.6

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.7,float 0.9,float 0.0

invoke glVertex3d,float 0.6,float 0.9,float 0.0

invoke glVertex3d,float 0.6,float 0.85,float 0.0

invoke glVertex3d,float 0.7,float 0.85,float 0.0

invoke glVertex3d,float 0.7,float 0.9,float 0.0

invoke glEnd

;норм 0.6

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.7,float 0.35,float 0.0

invoke glVertex3d,float 0.6,float 0.35,float 0.0

invoke glVertex3d,float 0.6,float 0.3,float 0.0

invoke glVertex3d,float 0.7,float 0.3,float 0.0

invoke glVertex3d,float 0.7,float 0.35,float 0.0

invoke glEnd

;норм 0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.6,float 0.95,float 0.0

invoke glVertex3d,float 0.5,float 0.95,float 0.0

invoke glVertex3d,float 0.5,float 0.9,float 0.0

invoke glVertex3d,float 0.6,float 0.9,float 0.0

invoke glVertex3d,float 0.6,float 0.95,float 0.0

invoke glEnd

;норм 0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.6,float 0.4,float 0.0

invoke glVertex3d,float 0.5,float 0.4,float 0.0

invoke glVertex3d,float 0.5,float 0.35,float 0.0

invoke glVertex3d,float 0.6,float 0.35,float 0.0

invoke glVertex3d,float 0.6,float 0.4,float 0.0

invoke glEnd

;норм 0.5

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.6,float 0.15,float 0.0

invoke glVertex3d,float 0.5,float 0.15,float 0.0

invoke glVertex3d,float 0.5,float 0,float 0.0

invoke glVertex3d,float 0.6,float 0,float 0.0

invoke glVertex3d,float 0.6,float 0.15,float 0.0

invoke glEnd

;норм 0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.5,float 0.9,float 0.0

invoke glVertex3d,float 0.4,float 0.9,float 0.0

invoke glVertex3d,float 0.4,float 0.8,float 0.0

invoke glVertex3d,float 0.5,float 0.8,float 0.0

invoke glVertex3d,float 0.5,float 0.9,float 0.0

invoke glEnd

;норм 0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.5,float 0.45,float 0.0

invoke glVertex3d,float 0.4,float 0.45,float 0.0

invoke glVertex3d,float 0.4,float 0.15,float 0.0

invoke glVertex3d,float 0.5,float 0.15,float 0.0

invoke glVertex3d,float 0.5,float 0.45,float 0.0

invoke glEnd

;норм 0.4

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.5,float 0,float 0.0

invoke glVertex3d,float 0.4,float 0,float 0.0

invoke glVertex3d,float 0.4,float -0.25,float 0.0

invoke glVertex3d,float 0.5,float -0.25,float 0.0

invoke glVertex3d,float 0.5,float 0,float 0.0

invoke glEnd

;норм 0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.4,float 0.8,float 0.0

invoke glVertex3d,float 0.3,float 0.8,float 0.0

invoke glVertex3d,float 0.3,float 0.7,float 0.0

invoke glVertex3d,float 0.4,float 0.7,float 0.0

invoke glVertex3d,float 0.4,float 0.8,float 0.0

invoke glEnd

;норм 0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.4,float 0.5,float 0.0

invoke glVertex3d,float 0.3,float 0.5,float 0.0

invoke glVertex3d,float 0.3,float 0.45,float 0.0

invoke glVertex3d,float 0.4,float 0.45,float 0.0

invoke glVertex3d,float 0.4,float 0.5,float 0.0

invoke glEnd

;норм 0.3

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.4,float -0.25,float 0.0

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

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

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

invoke glVertex3d,float 0.4,float -0.25,float 0.0

invoke glEnd

;норм 0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.3,float 0.7,float 0.0

invoke glVertex3d,float 0.2,float 0.7,float 0.0

invoke glVertex3d,float 0.2,float 0.5,float 0.0

invoke glVertex3d,float 0.3,float 0.5,float 0.0

invoke glVertex3d,float 0.3,float 0.7,float 0.0

invoke glEnd

;норм 0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.3,float 0.35,float 0.0

invoke glVertex3d,float 0.2,float 0.35,float 0.0

invoke glVertex3d,float 0.2,float 0.2,float 0.0

invoke glVertex3d,float 0.3,float 0.2,float 0.0

invoke glVertex3d,float 0.3,float 0.35,float 0.0

invoke glEnd

;норм 0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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 -0.2,float 0.0

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

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

invoke glEnd

;норм 0.2

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

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

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

invoke glVertex3d,float 0.2,float -0.35,float 0.0

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

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

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.2,float 0.55,float 0.0

invoke glVertex3d,float 0.1,float 0.55,float 0.0

invoke glVertex3d,float 0.1,float 0.5,float 0.0

invoke glVertex3d,float 0.2,float 0.5,float 0.0

invoke glVertex3d,float 0.2,float 0.55,float 0.0

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.2,float 0.35,float 0.0

invoke glVertex3d,float 0.1,float 0.35,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 0.35,float 0.0

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.999,float dword 0.999,float dword 0.999

invoke glVertex3d,float 0.2,float 0.3,float 0.0

invoke glVertex3d,float 0.1,float 0.3,float 0.0

invoke glVertex3d,float 0.1,float 0.25,float 0.0

invoke glVertex3d,float 0.2,float 0.25,float 0.0

invoke glVertex3d,float 0.2,float 0.3,float 0.0

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.2,float 0.25,float 0.0

invoke glVertex3d,float 0.1,float 0.25,float 0.0

invoke glVertex3d,float 0.1,float 0.2,float 0.0

invoke glVertex3d,float 0.2,float 0.2,float 0.0

invoke glVertex3d,float 0.2,float 0.25,float 0.0

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.2,float 0.05,float 0.0

invoke glVertex3d,float 0.1,float 0.05,float 0.0

invoke glVertex3d,float 0.1,float 0,float 0.0

invoke glVertex3d,float 0.2,float 0,float 0.0

invoke glVertex3d,float 0.2,float 0.05,float 0.0

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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

invoke glVertex3d,float 0.1,float -0.15,float 0.0

invoke glVertex3d,float 0.1,float -0.25,float 0.0

invoke glVertex3d,float 0.2,float -0.25,float 0.0

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

invoke glEnd

;норм 0.1

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.2,float -0.35,float 0.0

invoke glVertex3d,float 0.1,float -0.35,float 0.0

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

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

invoke glVertex3d,float 0.2,float -0.35,float 0.0

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.1,float 0.55,float 0.0

invoke glVertex3d,float 0,float 0.55,float 0.0

invoke glVertex3d,float 0,float 0.5,float 0.0

invoke glVertex3d,float 0.1,float 0.5,float 0.0

invoke glVertex3d,float 0.1,float 0.55,float 0.0

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.1,float 0.3,float 0.0

invoke glVertex3d,float 0,float 0.3,float 0.0

invoke glVertex3d,float 0,float 0.25,float 0.0

invoke glVertex3d,float 0.1,float 0.25,float 0.0

invoke glVertex3d,float 0.1,float 0.3,float 0.0

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.1,float 0.1,float 0.0

invoke glVertex3d,float 0,float 0.1,float 0.0

invoke glVertex3d,float 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 glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.9,float dword 0.01,float dword 0.01

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

invoke glVertex3d,float 0,float -0.2,float 0.0

invoke glVertex3d,float 0,float -0.3,float 0.0

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

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

invoke glEnd

;норм 0

invoke glBegin,GL\_QUADS

invoke glColor3f,float dword 0.3,float dword 0.3,float dword 0.3

invoke glVertex3d,float 0.1,float -0.35,float 0.0

invoke glVertex3d,float 0,float -0.35,float 0.0

invoke glVertex3d,float 0,float -0.4,float 0.0

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

invoke glVertex3d,float 0.1,float -0.35,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',\

DispatchMessage,'DispatchMessageA',\

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',\

glClear,'glClear',\

glClearAccum,'glClearAccum',\

glClearColor,'glClearColor',\

glClearDepth,'glClearDepth',\

glClearIndex,'glClearIndex',\

glClearStencil,'glClearStencil',\

glClipPlane,'glClipPlane',\

glColor3b,'glColor3b',\

glColor3bv,'glColor3bv',\

glColor3d,'glColor3d',\

glColor3dv,'glColor3dv',\

glColor3f,'glColor3f',\

glColor3fv,'glColor3fv',\

glColor3i,'glColor3i',\

glColor3iv,'glColor3iv',\

glColor3s,'glColor3s',\

glColor3sv,'glColor3sv',\

glColor3ub,'glColor3ub',\

glColor3ubv,'glColor3ubv',\

glColor3ui,'glColor3ui',\

glColor3uiv,'glColor3uiv',\

glColor3us,'glColor3us',\

glColor3usv,'glColor3usv',\

glColor4b,'glColor4b',\

glColor4bv,'glColor4bv',\

glColor4d,'glColor4d',\

glColor4dv,'glColor4dv',\

glColor4f,'glColor4f',\

glColor4fv,'glColor4fv',\

glColor4i,'glColor4i',\

glColor4iv,'glColor4iv',\

glColor4s,'glColor4s',\

glColor4sv,'glColor4sv',\

glColor4ub,'glColor4ub',\

glColor4ubv,'glColor4ubv',\

glColor4ui,'glColor4ui',\

glColor4uiv,'glColor4uiv',\

glColor4us,'glColor4us',\

glColor4usv,'glColor4usv',\

glColorMask,'glColorMask',\

glColorMaterial,'glColorMaterial',\

glColorPointer,'glColorPointer',\

glCopyPixels,'glCopyPixels',\

glCopyTexImage1D,'glCopyTexImage1D',\

glCopyTexImage2D,'glCopyTexImage2D',\

glCopyTexSubImage1D,'glCopyTexSubImage1D',\

glCopyTexSubImage2D,'glCopyTexSubImage2D',\

glCullFace,'glCullFace',\

glDeleteLists,'glDeleteLists',\

glDeleteTextures,'glDeleteTextures',\

glDepthFunc,'glDepthFunc',\

glDepthMask,'glDepthMask',\

glDepthRange,'glDepthRange',\

glDisable,'glDisable',\

glDisableClientState,'glDisableClientState',\

glDrawArrays,'glDrawArrays',\

glDrawBuffer,'glDrawBuffer',\

glDrawElements,'glDrawElements',\

glDrawPixels,'glDrawPixels',\

glEdgeFlag,'glEdgeFlag',\

glEdgeFlagPointer,'glEdgeFlagPointer',\

glEdgeFlagv,'glEdgeFlagv',\

glEnable,'glEnable',\

glEnableClientState,'glEnableClientState',\

glEnd,'glEnd',\

glEndList,'glEndList',\

glEvalCoord1d,'glEvalCoord1d',\

glEvalCoord1dv,'glEvalCoord1dv',\

glEvalCoord1f,'glEvalCoord1f',\

glEvalCoord1fv,'glEvalCoord1fv',\

glEvalCoord2d,'glEvalCoord2d',\

glEvalCoord2dv,'glEvalCoord2dv',\

glEvalCoord2f,'glEvalCoord2f',\

glEvalCoord2fv,'glEvalCoord2fv',\

glEvalMesh1,'glEvalMesh1',\

glEvalMesh2,'glEvalMesh2',\

glEvalPoint1,'glEvalPoint1',\

glEvalPoint2,'glEvalPoint2',\

glFeedbackBuffer,'glFeedbackBuffer',\

glFinish,'glFinish',\

glFlush,'glFlush',\

glFogf,'glFogf',\

glFogfv,'glFogfv',\

glFogi,'glFogi',\

glFogiv,'glFogiv',\

glFrontFace,'glFrontFace',\

glFrustum,'glFrustum',\

glGenLists,'glGenLists',\

glGenTextures,'glGenTextures',\

glGetBooleanv,'glGetBooleanv',\

glGetClipPlane,'glGetClipPlane',\

glGetDoublev,'glGetDoublev',\

glGetError,'glGetError',\

glGetFloatv,'glGetFloatv',\

glGetIntegerv,'glGetIntegerv',\

glGetLightfv,'glGetLightfv',\

glGetLightiv,'glGetLightiv',\

glGetMapdv,'glGetMapdv',\

glGetMapfv,'glGetMapfv',\

glGetMapiv,'glGetMapiv',\

glGetMaterialfv,'glGetMaterialfv',\

glGetMaterialiv,'glGetMaterialiv',\

glGetPixelMapfv,'glGetPixelMapfv',\

glGetPixelMapuiv,'glGetPixelMapuiv',\

glGetPixelMapusv,'glGetPixelMapusv',\

glGetPointerv,'glGetPointerv',\

glGetPolygonStipple,'glGetPolygonStipple',\

glGetString,'glGetString',\

glGetTexEnvfv,'glGetTexEnvfv',\

glGetTexEnviv,'glGetTexEnviv',\

glGetTexGendv,'glGetTexGendv',\

glGetTexGenfv,'glGetTexGenfv',\

glGetTexGeniv,'glGetTexGeniv',\

glGetTexImage,'glGetTexImage',\

glGetTexLevelParameterfv,'glGetTexLevelParameterfv',\

glGetTexLevelParameteriv,'glGetTexLevelParameteriv',\

glGetTexParameterfv,'glGetTexParameterfv',\

glGetTexParameteriv,'glGetTexParameteriv',\

glHint,'glHint',\

glIndexMask,'glIndexMask',\

glIndexPointer,'glIndexPointer',\

glIndexd,'glIndexd',\

glIndexdv,'glIndexdv',\

glIndexf,'glIndexf',\

glIndexfv,'glIndexfv',\

glIndexi,'glIndexi',\

glIndexiv,'glIndexiv',\

glIndexs,'glIndexs',\

glIndexsv,'glIndexsv',\

glIndexub,'glIndexub',\

glIndexubv,'glIndexubv',\

glInitNames,'glInitNames',\

glInterleavedArrays,'glInterleavedArrays',\

glIsEnabled,'glIsEnabled',\

glIsList,'glIsList',\

glIsTexture,'glIsTexture',\

glLightModelf,'glLightModelf',\

glLightModelfv,'glLightModelfv',\

glLightModeli,'glLightModeli',\

glLightModeliv,'glLightModeliv',\

glLightf,'glLightf',\

glLightfv,'glLightfv',\

glLighti,'glLighti',\

glLightiv,'glLightiv',\

glLineStipple,'glLineStipple',\

glLineWidth,'glLineWidth',\

glListBase,'glListBase',\

glLoadIdentity,'glLoadIdentity',\

glLoadMatrixd,'glLoadMatrixd',\

glLoadMatrixf,'glLoadMatrixf',\

glLoadName,'glLoadName',\

glLogicOp,'glLogicOp',\

glMap1d,'glMap1d',\

glMap1f,'glMap1f',\

glMap2d,'glMap2d',\

glMap2f,'glMap2f',\

glMapGrid1d,'glMapGrid1d',\

glMapGrid1f,'glMapGrid1f',\

glMapGrid2d,'glMapGrid2d',\

glMapGrid2f,'glMapGrid2f',\

glMaterialf,'glMaterialf',\

glMaterialfv,'glMaterialfv',\

glMateriali,'glMateriali',\

glMaterialiv,'glMaterialiv',\

glMatrixMode,'glMatrixMode',\

glMultMatrixd,'glMultMatrixd',\

glMultMatrixf,'glMultMatrixf',\

glNewList,'glNewList',\

glNormal3b,'glNormal3b',\

glNormal3bv,'glNormal3bv',\

glNormal3d,'glNormal3d',\

glNormal3dv,'glNormal3dv',\

glNormal3f,'glNormal3f',\

glNormal3fv,'glNormal3fv',\

glNormal3i,'glNormal3i',\

glNormal3iv,'glNormal3iv',\

glNormal3s,'glNormal3s',\

glNormal3sv,'glNormal3sv',\

glNormalPointer,'glNormalPointer',\

glOrtho,'glOrtho',\

glPassThrough,'glPassThrough',\

glPixelMapfv,'glPixelMapfv',\

glPixelMapuiv,'glPixelMapuiv',\

glPixelMapusv,'glPixelMapusv',\

glPixelStoref,'glPixelStoref',\

glPixelStorei,'glPixelStorei',\

glPixelTransferf,'glPixelTransferf',\

glPixelTransferi,'glPixelTransferi',\

glPixelZoom,'glPixelZoom',\

glPointSize,'glPointSize',\

glPolygonMode,'glPolygonMode',\

glPolygonOffset,'glPolygonOffset',\

glPolygonStipple,'glPolygonStipple',\

glPopAttrib,'glPopAttrib',\

glPopClientAttrib,'glPopClientAttrib',\

glPopMatrix,'glPopMatrix',\

glPopName,'glPopName',\

glPrioritizeTextures,'glPrioritizeTextures',\

glPushAttrib,'glPushAttrib',\

glPushClientAttrib,'glPushClientAttrib',\

glPushMatrix,'glPushMatrix',\

glPushName,'glPushName',\

glRasterPos2d,'glRasterPos2d',\

glRasterPos2dv,'glRasterPos2dv',\

glRasterPos2f,'glRasterPos2f',\

glRasterPos2fv,'glRasterPos2fv',\

glRasterPos2i,'glRasterPos2i',\

glRasterPos2iv,'glRasterPos2iv',\

glRasterPos2s,'glRasterPos2s',\

glRasterPos2sv,'glRasterPos2sv',\

glRasterPos3d,'glRasterPos3d',\

glRasterPos3dv,'glRasterPos3dv',\

glRasterPos3f,'glRasterPos3f',\

glRasterPos3fv,'glRasterPos3fv',\

glRasterPos3i,'glRasterPos3i',\

glRasterPos3iv,'glRasterPos3iv',\

glRasterPos3s,'glRasterPos3s',\

glRasterPos3sv,'glRasterPos3sv',\

glRasterPos4d,'glRasterPos4d',\

glRasterPos4dv,'glRasterPos4dv',\

glRasterPos4f,'glRasterPos4f',\

glRasterPos4fv,'glRasterPos4fv',\

glRasterPos4i,'glRasterPos4i',\

glRasterPos4iv,'glRasterPos4iv',\

glRasterPos4s,'glRasterPos4s',\

glRasterPos4sv,'glRasterPos4sv',\

glReadBuffer,'glReadBuffer',\

glReadPixels,'glReadPixels',\

glRectd,'glRectd',\

glRectdv,'glRectdv',\

glRectf,'glRectf',\

glRectfv,'glRectfv',\

glRecti,'glRecti',\

glRectiv,'glRectiv',\

glRects,'glRects',\

glRectsv,'glRectsv',\

glRenderMode,'glRenderMode',\

glRotated,'glRotated',\

glRotatef,'glRotatef',\

glScaled,'glScaled',\

glScalef,'glScalef',\

glScissor,'glScissor',\

glSelectBuffer,'glSelectBuffer',\

glShadeModel,'glShadeModel',\

glStencilFunc,'glStencilFunc',\

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glStencilOp,'glStencilOp',\

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glTexEnviv,'glTexEnviv',\

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glTexGendv,'glTexGendv',\

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glTexGeniv,'glTexGeniv',\

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glTexParameterf,'glTexParameterf',\

glTexParameterfv,'glTexParameterfv',\

glTexParameteri,'glTexParameteri',\

glTexParameteriv,'glTexParameteriv',\

glTexSubImage1D,'glTexSubImage1D',\

glTexSubImage2D,'glTexSubImage2D',\

glTranslated,'glTranslated',\

glTranslatef,'glTranslatef',\

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wglGetCurrentDC,'wglGetCurrentDC',\

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wglUseFontBitmapsW,'wglUseFontBitmapsW',\

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gluBuild2DMipmaps,'gluBuild2DMipmaps',\

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gluGetTessProperty,'gluGetTessProperty',\

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gluOrtho2D,'gluOrtho2D',\

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gluPerspective,'gluPerspective',\

gluPickMatrix,'gluPickMatrix',\

gluProject,'gluProject',\

gluPwlCurve,'gluPwlCurve',\

gluQuadricCallback,'gluQuadricCallback',\

gluQuadricDrawStyle,'gluQuadricDrawStyle',\

gluQuadricNormals,'gluQuadricNormals',\

gluQuadricOrientation,'gluQuadricOrientation',\

gluQuadricTexture,'gluQuadricTexture',\

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gluTessVertex,'gluTessVertex',\

gluUnProject,'gluUnProject'