EngineRollingDemo/engine.pas

NAME

Rolling Engine Demo - See a four cylinder engine run.

COPYRIGHT

FUNCTION

Learn about an engine, by viewing one run.
The idea is to create a rolling demo of 4 cylinders moving in an engine block.

INPUTS

Blend on or not.

RESULT

View demo in transperancy mode or not.

NOTES

To do this program, I was learning C++, OpenGL, and Pascal simultaneously.
Pitty my Linux box wasn't working.
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engine.pas/units:gl,glu,glut

FUNCTION

gl is the main unit for opengl functionality, glu, and glut, aid opengl usage.

NOTES

Requires Opengl32.dll, Glu.dll, and the Glut.dll to run this kind of compiled program.

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engine.pas/CentreCamera

NAME

CentreCamera

FUNCTION

Sets the camera in the middle, out of the screen, ready to draw the next
object with respect to the centre.

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engine.pas/SetView

NAME

SetWiew

FUNCTION

Used to setup what portion of the 3D-world is viewed.

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engine.pas/DrawBox

NAME

DrawBox

FUNCTION

This is used to draw a cube, glut already has its own method of doing so.
But making your own procedures gives more flexibility,
and in complex engines is probably the only way to make things right.

INPUTS

x1=width of box,
y1=height of box,
z1=debth of box.
r,g,b represent red green blue for coloring the box.
a represents the alpha blending element (for translucency).

NOTES

glBegin and glEnd, enclose any OpenGL verteces or objects be drawn.
glBegin(GL_QUADS), this GL_QUADS informs opengl, that the following verteces are in pairs of 4, thus a a quad. By a combination of 6 squares, a cube
Note that OpenGL expects the 4 verteces of a square to be told in order rotating clockwise or anti-clockwise.
glColor is used to tell opengl what color to draw an following verteces, values for a red, green, and blue element, as well as an alpha blending.

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engine.pas/DrawCyl

NAME

DrawCyl

FUNCTION

This is used to draw a box with 2 open opposite ends.

INPUTS

x1=width of box,
y1=height of box,
z1=debth of box.
r,g,b represent red green blue for coloring the box.
a represents the alpha blending element (for translucency).

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engine.pas/YValue

NAME

YValue

FUNCTION

You input the loop counter's value, and it will evaluate by how much must the box be translated.

NOTES

This function took the most to come up with, (2 days), and I had to solve it on paper, by
writing down a range of values for the main loop counter, and listing next to it, what Y value
would I want for each of these different main loop counter values. Then I made a liner
mathematical equation.

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engine.pas/FuelExhaust

NAME

FuelExhaust

FUNCTION

Manages filling the empty space above the piston and draws the fuel/exhaust/explosion.

INPUTS

yanswer: simply half the YValue. The reason this is passed, and not calculated within
the procedure, is to minimise the number of times it has to be calculated.
i: this indicates which firing order is the piston, thus which colour should the
fuel/compression/explossion/exhuast be drawn.
c: this is simply just to indicate, if the drawin is for the 2 center pistons or the
2 external pistons.

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engine.pas/MovingBox

NAME

MovingBox

FUNCTION

To move the box to represent the moving cylinder.

NOTES

In brief, translates the camera, to draw the different objects, with their centre in different places.

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engine.pas/CylinderWall

NAME

CylinderWall

FUNCTION

To Draw the cylinder 'containers'

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engine.pas/ClearScreen

NAME

ClearScreen

FUNCTION

Clears screen for the next rendering scene

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engine.pas/keyboardcheck

NAME

keyboardcheck

FUNCTION

Checks the keyboard's keys, and alters any varriable if required.

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engine.pas/DisplayWindow

NAME

DisplayWindow

FUNCTION

This is where all the action happens. (The main loop).

NOTES

Clear screen.
Loop pointlessly. (The delay loop).
Draw piston + exhuast.
Draw Cylinders.
Centre Camera.
Draw a box as the engine block.
Check keyboard.
Draw all till now onto screen.
Check whether the main counter should be incrimented, and do so if required.
Incriment four if required (determines what stage is the 1st piston).

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engine.pas/do_idle

NAME

do_idle

FUNCTION

This is the procedure that is called when on idle.
Basicaly, it tells it to redisplay the display loop, in our case, DisplayWindow, unless
the boolean variable that states whether the q button has been pressed, in which case
the procedure then terminates the application.

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engine.pas/SetWindow

NAME

SetWindow

FUNCTION

This is used to setup the window in the windows environment.
In a nutshell, the initialisation of the win32 window.

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engine.pas/ResChoice

NAME

ResChoice

FUNCTION

Menu to choose at which resolution to run the program.

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engine.pas/init

NAME

Nameless, this is the standard main pascal loop.

FUNCTION

Contains the main source which starts off everything else.