Mini Project Report

Topic- Rocket Launch Into Space

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TECHNOLOGY USED:

OpenGL is a cross language, cross platform application programming interface (API) for rendering 2D and 3D vector graphics. The API is typically used to interact with the Graphics Processing Unit (GPU), to achieve hardware accelerated rendering. For this project: **Rocket Launch Into Space** we used freeglut. A cross-platform windowing and keyboard-mouse handler. This API is a superset of GLUT API, and it is more stable and up-todate than GLUT.

Basic Idea Of Project:

The project displays a rocket taking off from a launch pad and going into space in upward diection.
There are different functions for each scene and a counter whose job is to display one scene after another in sequence so that this represents a fluid motion.

Functions Used:

- **glut SwapBuffers**

  Basically: the front buffer is displayed on screen and you draw to the back buffer, then you swap them when you're done drawing

- **glutPostRedisplay:**

  glutPostRedisplay () essentially sets a flag so that on the next iteration of the main loop, your registered display() function is called. If you don't tell the main loop it needs to draw the next frame with a glutPostRedisplay, then your animation will look as if it is stuck ie no animation even though the x,y,z position of the “Rocket" will be changing!

- **GlutOrtho2D**

  The gluOrtho2D function sets up a two-dimensional orthographic viewing region for construction the rocket in the X-Y Plane.

- **glutInitDisplayMode(GLUT_DOUBLE| GLUT_RGB)**

  glutInitDisplayMode: It is a function that is a bit more involved since it defines what type of openGL context we would like and how the device should render our scene.

  GLUT_DOUBLE: A flag that enables the usage of double buffering which is a feature that reduces image flickering. With double buffering, all of the draw commands are executed on an off-screen buffer, which is sent to the screen

when all of the drawing for a frame has been completed so that no incomplete images are displayed.

GLUT_RGBA:
It is a flag that defines the way colours are composited by using individual red, green, blue and alpha.

CONCLUSION:

Here we have used OpenGL as our graphics software for implementing mini-project for Displaying Rocket Takeoff and climb into Space.

GLUT makes it easier to learn and explore OpenGL programming. By using the above-mentioned concepts and various functions that are explained Rocket Launch is implemented with animation using openGL.