THE BASICS OF BUILDING AND FUNCTIONS OF OPENGL

Semikopenko A.
Supervisor: Voevodina M.
E-mail: anzhelika.semykopenko2311@outlook.com, voevodina@kname.edu.ua
Kharksiv, O. M. Beketov National University of Urban Economy in Kharkiv

OpenGL is one of the most popular Application Programming Interface (APIs) for application development in the field of two-dimensional and three-dimensional graphics.

The OpenGL standard (Open Graphics Library –open graphic library) was developed and approved in 1992 by leading software development firms as an effective hardware-independent interface suitable for implementations on various platforms. The basis of the standard was the library IRIS GL, developed by Silicon Graphics Inc. [1]

Characteristic features of OpenGL, which ensured the spread and development of this graphic standard, are:

Stability. Additions and changes to the standard are implemented in such a way as to maintain compatibility with previously developed software.

Reliability and portability. Applications using OpenGL, guarantee the same visual result outside depending on the type of operating system used and the organization of information display. In addition, these applications can run on personal computers as well as on workstations and supercomputers.

Ease of use. The OpenGL standard has a well-thought-out structure and an intuitive interface, which makes it possible to create efficient applications with lower costs, containing fewer lines of code than using other graphic libraries. The necessary functions to ensure compatibility with various equipment are implemented at the library level and greatly simplify the development of applications. [2]

OpenGL can be compared to a finite state machine, whose state is determined by the set of values of special variables (their names usually begin with GL_ characters) and the values of the current normal, color and texture coordinates. All this information will be used when entering the coordinate system of the vertex to build the shape in which it is included. The change of States occurs with the help of commands that are issued as function calls. [3]

Having a good basic package for working with three-dimensional applications makes it easier for students to understand the key topics of the course on computer graphics – modeling three-dimensional objects, painting, texturing, animation, etc. The wide functionality of the OpenGL provides a good foundation for the presentation of theoretical and practical aspects of the subject.

References

[1] Wikipedia. OpenGL [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/OpenGL

[2] OpenGL. Graphics library OpenGL [Electronic resource]. – Access mode: https://studfiles.net/preview/412266/

[3] OpenGL. The architecture and features of the syntax [Electronic resource]. – Access mode: https://studfiles.net/preview/2532692/page:4/