HOCHSCHULE KONSTANZ TECHNIK, WIRTSCHAFT UND GESTALTUNG
Fakultät für Informatik
Labor für Computergrafik
Prof. Dr. G. Umlauf

Konstanz, 08.10.2014

Assignment 6

„Geometric Modeling“

Deadline 21.01.2015, F033.

Framework for the assignments:
Download the zip-file for the assignments from the web page of the course:

- The file `glwidget.cpp` contains a framework, for the required implementations. Comments mark the relevant lines in the code.
- The framework is based on OpenGL and Qt. The zip-file contains a Qt-project-file (.pro), which can be opened using the Qt-menu of VisualC++. It contains an executable framework including a GUI, see Figure 1.

The functionality of your implementation will be tested using the source code!

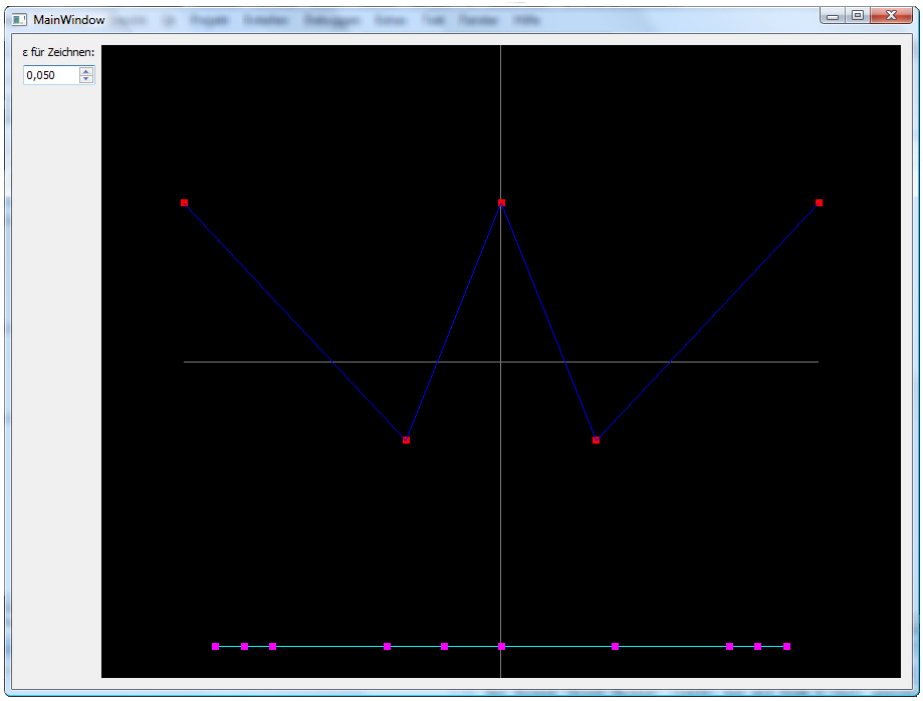

Figure 1 The GUI of the framework for assignment 6.

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Assignment 6

Integrate three functions into the framework

a. Implement a function to insert a new knot to a B-spline curve.

   - The control points (see Figure 1, red) and the knot vector (see Figure 1, magenta) of a quartic B-spline curve are pre-defined in the framework.

b. Implement a function to draw a B-Spline curve. To this end, convert the B-spline curve to Bézier representation and use the functions to draw a Bézier curve from assignment 4.

   - Test your program using B-spline curves of different degrees.

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