

CM 20219 Assignment Three

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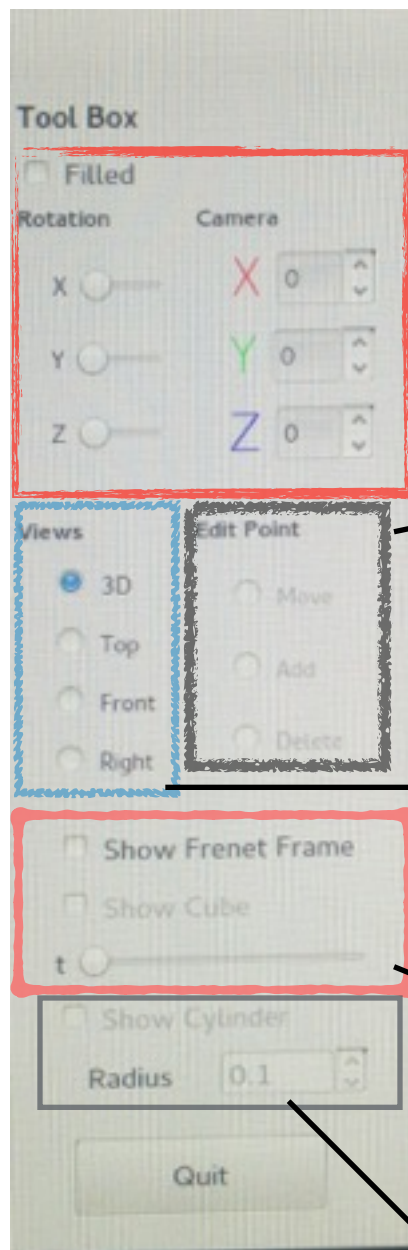
How to run:

I am using QT Creator in Ubuntu environment, I need to do following to make initial code work:

1. Use `'#include <GL/glu.h>'` instead of `'#include <glu.h>'` in `glwidget.h` class;
2. Add `'LIBS += -L/usr/local/lib -lGLU'` in `cube.pro` file.

So if you can not run my program, try to change this back to original version.

How to use:



This part works exactly the same as assignment 2. You can fill cube with red color, rotate cube as well as move camera.

You can move/add/delete point. It will show Catmul-Rom Spline if possible. (You can only do this in Top/Front/Right Views)

Change camera views:

1. Perspective View: you can rotate camera, move toward point.
2. Orthogonal View:
 1. Top View
 2. Front View
 3. Right View

Show Frenet Frame at a specific point. You can move the frame along the spline by controlling the slider t . A cube could be shown with regard to the frame.

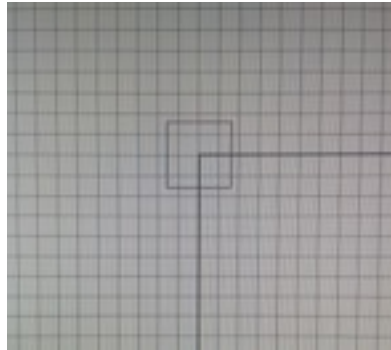
Generalize a cylinder along the spline. You can adjust the radius of the cylinder.

Reminders:

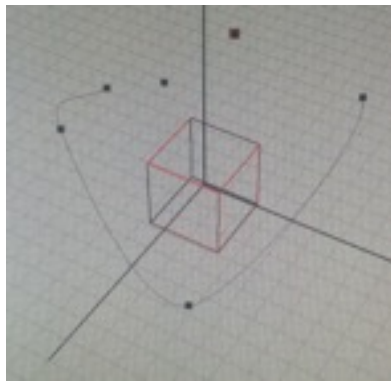
1. You can move camera in 3D view only
2. Points add in Top View will have ' $y=0$ ' by default; in Front View will have ' $z=0$ '; in Right View will have ' $x=0$ '. You can adjust points' position those 3 views. Any view will affect 2 axis of the points (Top View: x-z; Front View: x-z; Right View: y-z).
3. There are two different kinds of cylinders. One is generalized by default, the other one need uncomment line 422 to line 450 in 'scene.cpp'. The different between them is: first one uses 'glucylinder', adjoins a lot cylinders along the curve; second one draw a lot circles and join all of them together to form a cylinder. The first one is much nicer, so i use it by default.

Some screen shots:

Top View:



Catmul-Rom Spline:



Frenet Frame:



Cylinder:

