cm20219 Assignment 3

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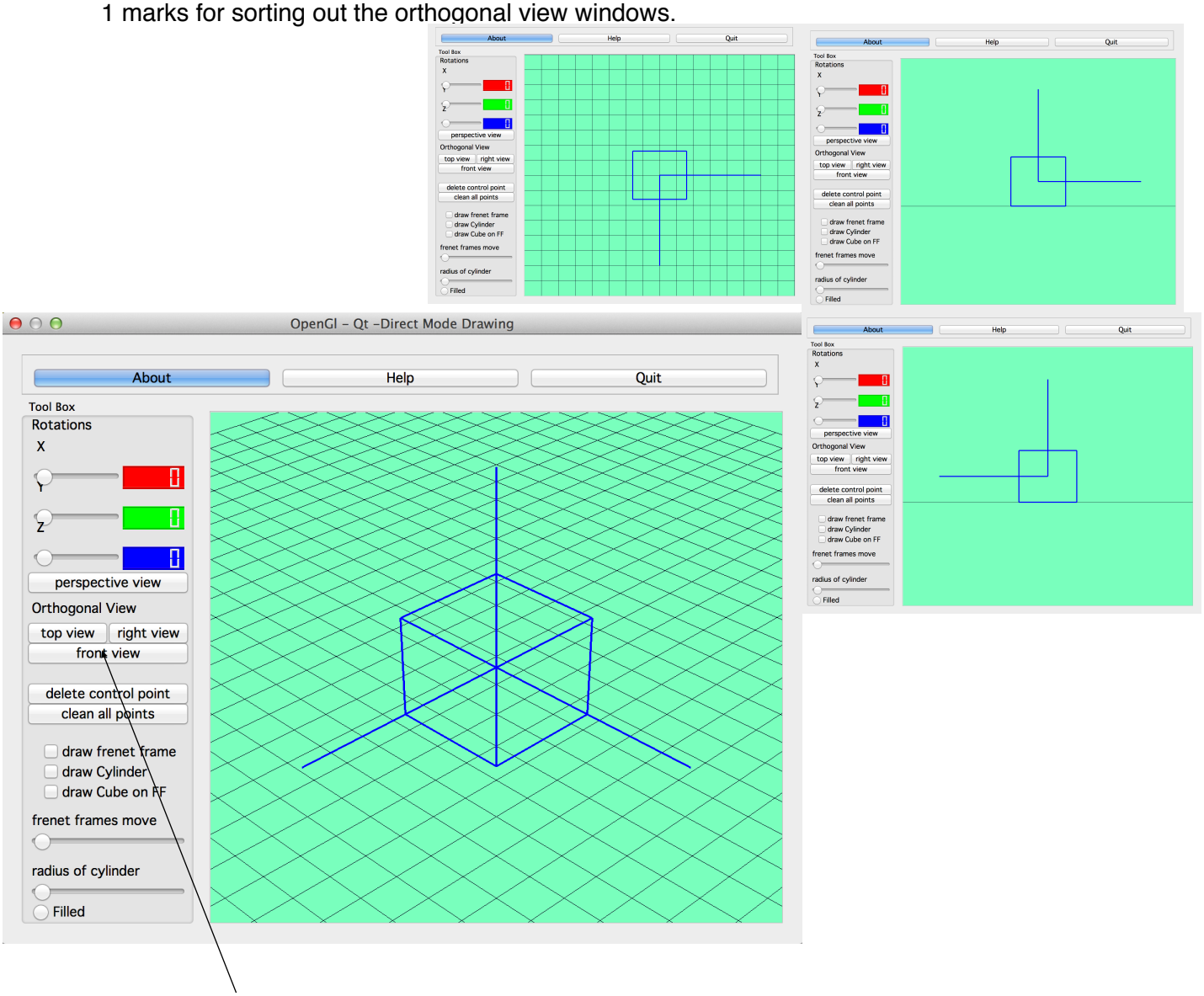
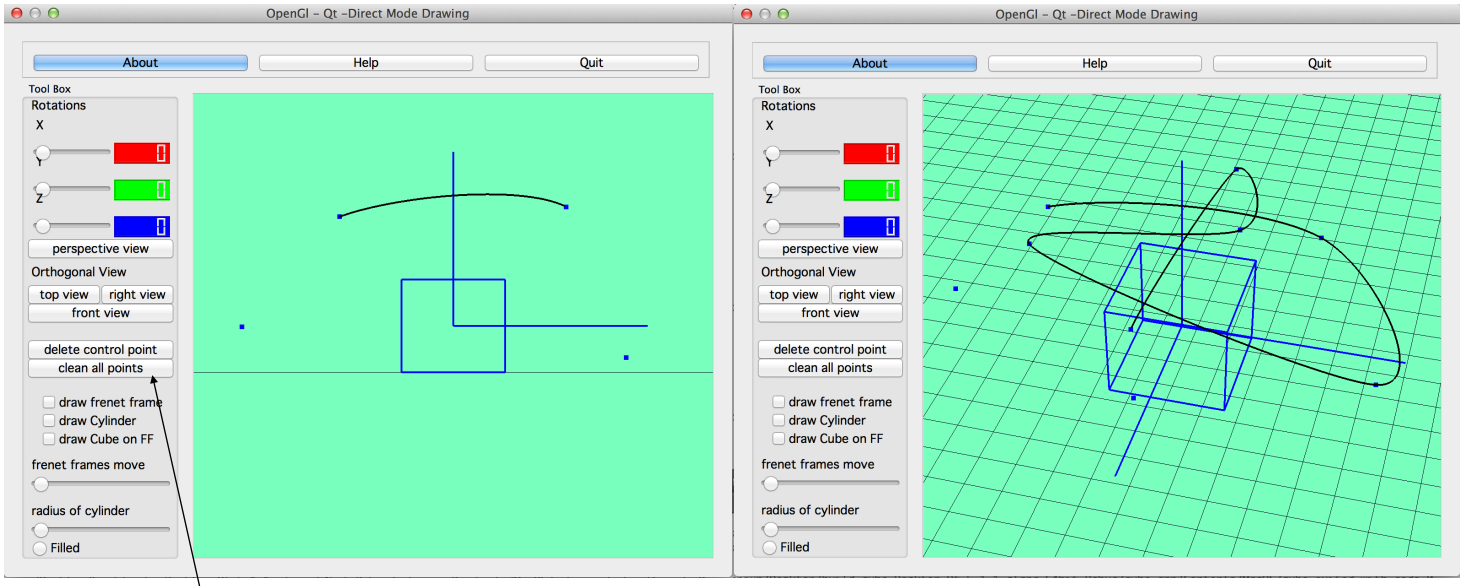
Functionality
– Editing a parametric curve (4 marks)
1 marks for sorting out the orthogonal view windows.



You can use orthogonal view buttons(top view, right view, front view) to change the screen to the orthogonal view.

2 marks for being able to add, pick and move a control point and have the curve follow(Catmul-Rom spline).

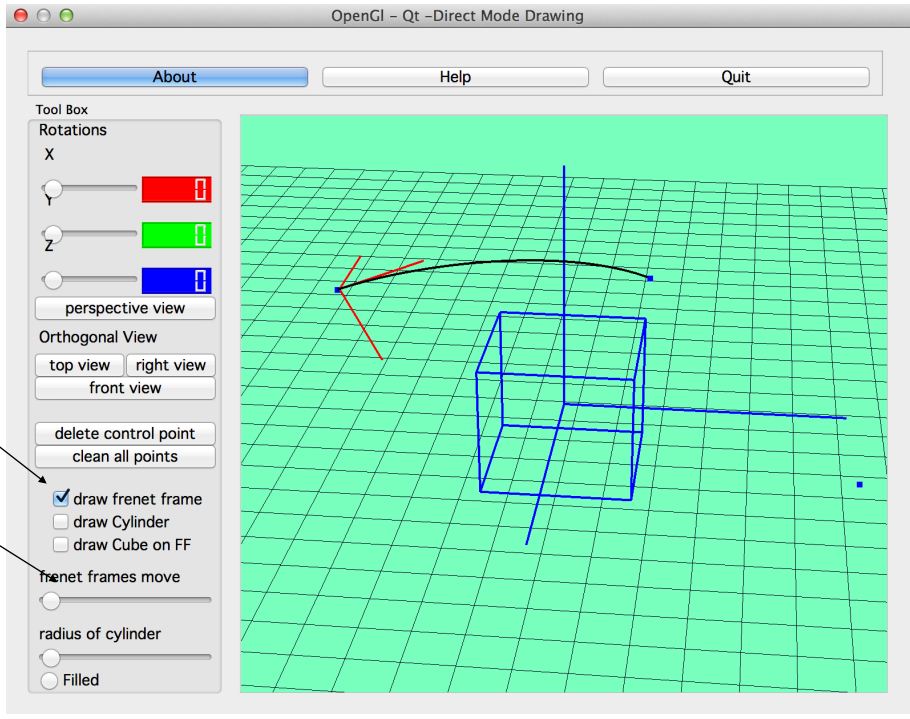


In my project, you must add points under the orthogonal view. Once you have add more than 3 points on the screen, the catmul-rom spline will be drawn automatically. You can use mouse to pick and move the control points in the screen. The points will change to red when you picked it. (Because I written my program on the retina screen, and there is no any other computer in my home, so if you are not using retina screen you may need change some value in the program 707-757 lines, such like:"(e->x()-284)/71.25". Otherwise you may be cannot pick and move the control points.I am very sorry that I cannot change this value for you because I have no any other computer. And also, this graphics may also different between the retina screen and other screens.Sorry again!)

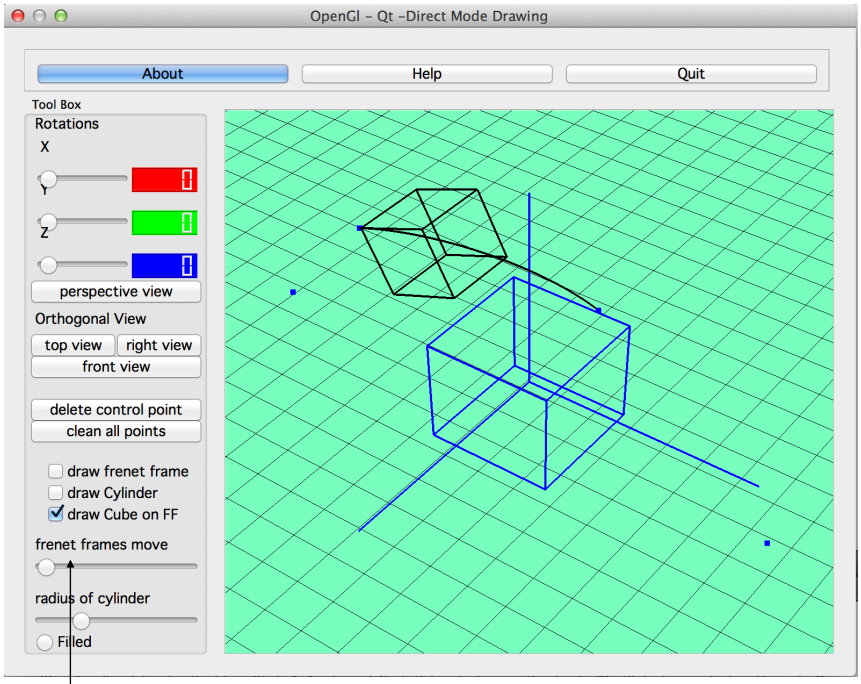
1 mark for being able to delete points.
– Frenet Frames (4 marks)
Here you can use these button to delete selected points or clean all points.

2 marks for being able to calculate the Frenet frame and show it at any point along the curve.
After you have add more than 3 points, you could click the "draw frenet frame" check box to make the frenet frame to show on screen.

Here you can get the frenet frame at any point by moving the slider.

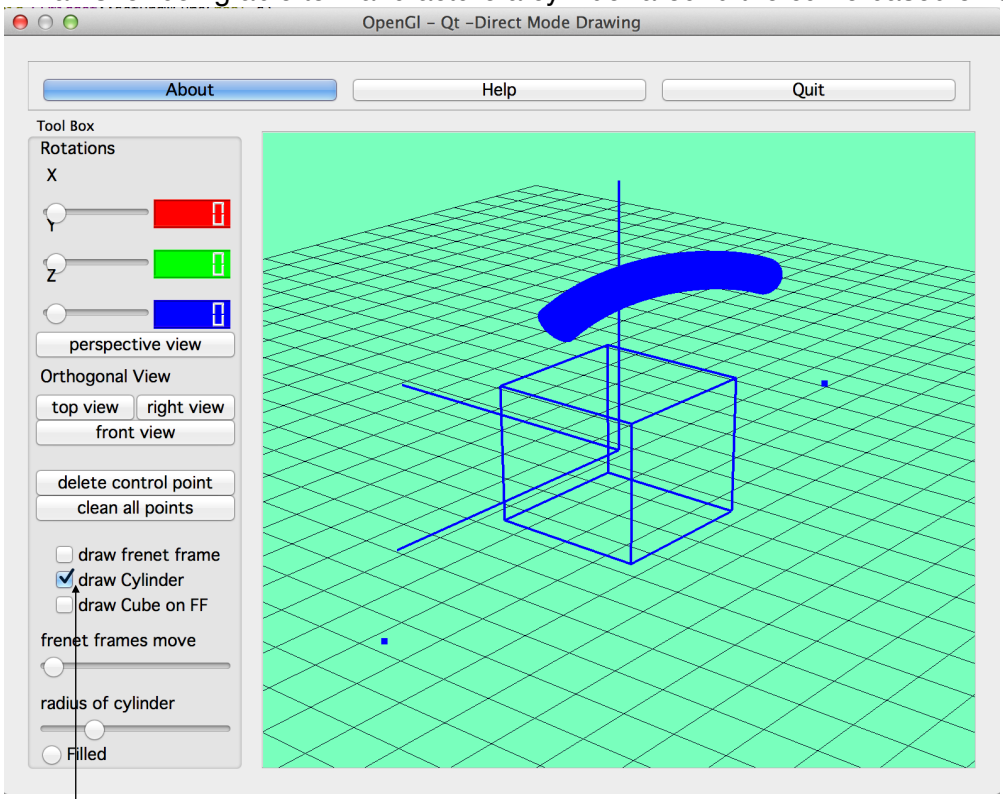


2 marks for being able to show the cube correctly oriented w.r.t the frame.

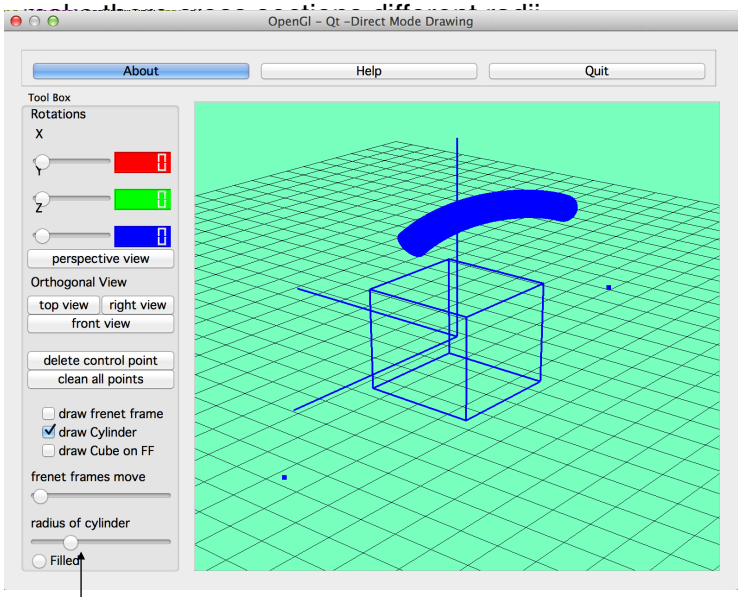


Here you can move the cube by moving the frenet frame slider.

– Generalized Cyinder (4)
4 marks for being able to manufacture a cylinder around the curve based on the

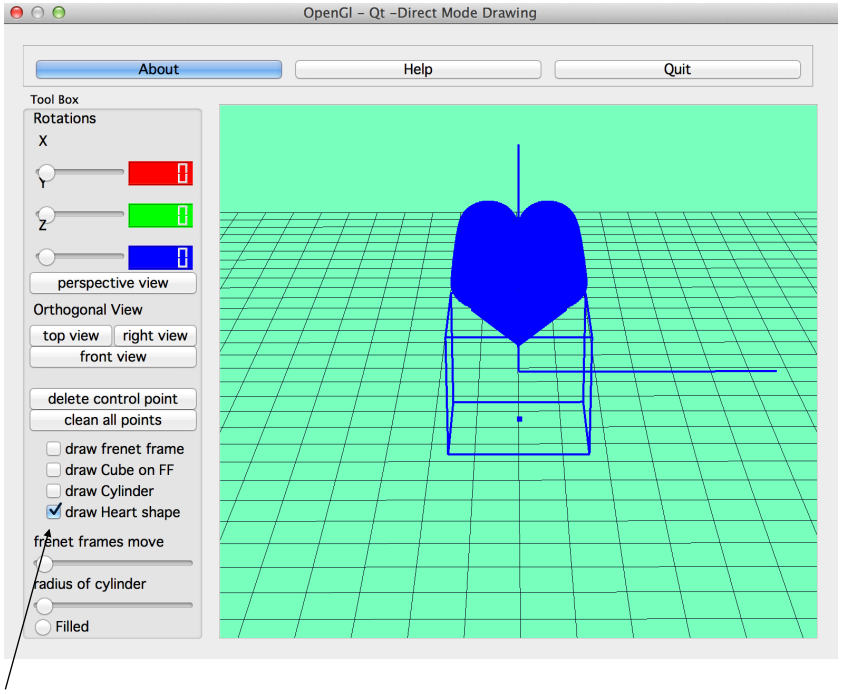


After you have catmul-rom on the screen, you could click “draw cylinder to show the cylinder on the screen”



You can change the radius of the cylinder by move the slider.

• make the cross section an arbitrary polygon - e.g smiley face or heart shaped.



You can get the heart shaped by clicking the “draw heart shape ” check box.