

MEMORANDUM

To: Mr. Bolden

From: Tao Zhang

Subject: Programming Assignment 2

Date: February 14, 2014

This memo shows the process and results of programming assignment 2 on NetBeans IDE.

I spent some time understanding the differences among frame, viewport, and window by drawing diagrams with coordinates. When turned to design, I decided that I need set all the size and positions of them:

- Set a fixed size frame
- Set the viewport by reading the starting position (x_S , y_S), which is left-bot of viewport, on frame with the width and height.
- Set the window by reading the starting position (x_W , y_W), which is left-bot of window, on the Axes with the width and height.

Then I need to write the function to transfer them:

- Window to Viewport: This function will performs basic 2D scaling transformation.
- Viewport to Frame: This function will performs basic mapping transformation. It is little tricky, since the direction of their y-axis are opposite. So the x coordinate on frame is just the sum of x_S (starting point) and x_V (coordinate on Viewport), and the y coordinate on frame is $y_S - y_V$.
- MoveTo: This function combines both WindowToViewport and ViewportToFrame, which means it transfer the point from window coordinates to frame coordinate. It needs to read the coordinates from window.

In order to plot the graph:

- DrawTo: input the next coordiante. store the last coordinate, then move to the next coordiante by MoveTo function. Finally, draw a line between these two coordinates by `.drawLine()`, only if the coordinates are inside of the viewport.
- Followed by the lecture notes, use loop to draw the curves.

Everything runs ok, and the output is good to go. Due to the lack of experience in Java, the code is not organized very well.