Technical Summary Data Visualization

In my data visualization project, the data is read in to Processing in the format of a tsv file, which is a tab separated format. This can be advantageous over the csv format in that there can be commas in the data points and the data can still be easily read without reformatting. The data is loaded using a class called Float Table. This class uses a 2D array of floats to save the data. It also keeps two string arrays of the X and Y data labels for quick access.

The data is displayed by calling the drawDataP method, which takes the row number and draws all the data points from that row. Because the data is being visualized in a 3D environment, there is also a Z value to the points. In the project, the z value is calculated based on the row number so that the middle row number is at where the z axis equal to zero. The name of that line is then drawn to the left of the line after the points are drawn. This is done for every row in the data if the user wants to see all of the data points. If the user only wants to see one country, only that specific row will be drawn.

The data labels on the x and y axis are drawn with the drawYearLabels and drawScaleLabels methods. Both methods iterate through the array of years or scale values and draw them at a spaced out interval on the graph. Their positions are determined relative to the initially set coordinates of the four corners of the graph. The year labels are drawn every two years. The years are drawn from the lowest year in the data to the highest year in the data. The scale labels for the y axis are drawn by mapping the value to the dataMax value to the zero y value to the max y value. The text is then drawn to the left of the y axis. This program uses for loops to iterate through the data and to draw each row separately. For loops are also used to repeatedly read in and format the data.

This program also features a controller menu that allows the user to change a number of variables in the data visualization such as the z axis scale, the maximum data range, the number of countries viewed, and the country being viewed. The user can also reset the controller menu with the click of a button.

This program also uses the peasycam libraries to let the user rotate and move the camera. This allows the user to “fly” through the line graph and view certain areas of the graph more closely, if desired. The peasycam libraries provide a better way to look at a 3D project such as this one.