EECS 428 / ECE 578
DATA VISUALIZATION
Spring 2017

ASSIGNMENT 3
Due Date: *Sunday, 23/04/2017 23:59*
(14 Points)

Assignment Submission: *Turn in your assignment by the due date through LMS**.** Prepare and upload **one zip file** that you will name as <your first name>_<your last name>_ assignment3. See the question for what you should return.*

You can and encouraged to discuss HTML, CSS, SVG, JavaScript and D3 with each other. ***However, all work in questions (implementation) must be your own; you must neither copy from nor provide assistance to anybody else (including online resources). If you need guidance for any question, talk to the instructor or TAs.***

In this assignment, you will use the same data of 119 countries that you used in the previous assignment (*countries.json*). As you remember, the file contains information about the population, GDP, life expectancy, and many other aspects for various countries from 1995 to 2012. You will plot Gross Domestic Product (GDP) trends of the countries from 2000 to 2012 in various forms. However, you will not only visualize GDP information for all counties, but you will also enable interactivity to have a closer look at the data with different charts.

The main graph will be a pie chart that shows the GDP of ***the top 10 countries with the highest GDP in a selected continent for the year 2012*** as can be seen in Figure 3.1 below. The size of each pie should be proportional to the GDP of the corresponding country. Make sure to use different colors for each pie. A dropdown menu (combobox) that lists all continents specified in the file should enable the continent selection. Whenever a different continent is selected from the dropdown menu, the pie chart should be updated with the GDP data of the countries in this new continent. You should also have checkboxes for the selected countries in a given continent. If the user selects or deselects a given country, that country should be added to or removed from the pie chart. Make sure to use animation to smoothly update the chart during changes.

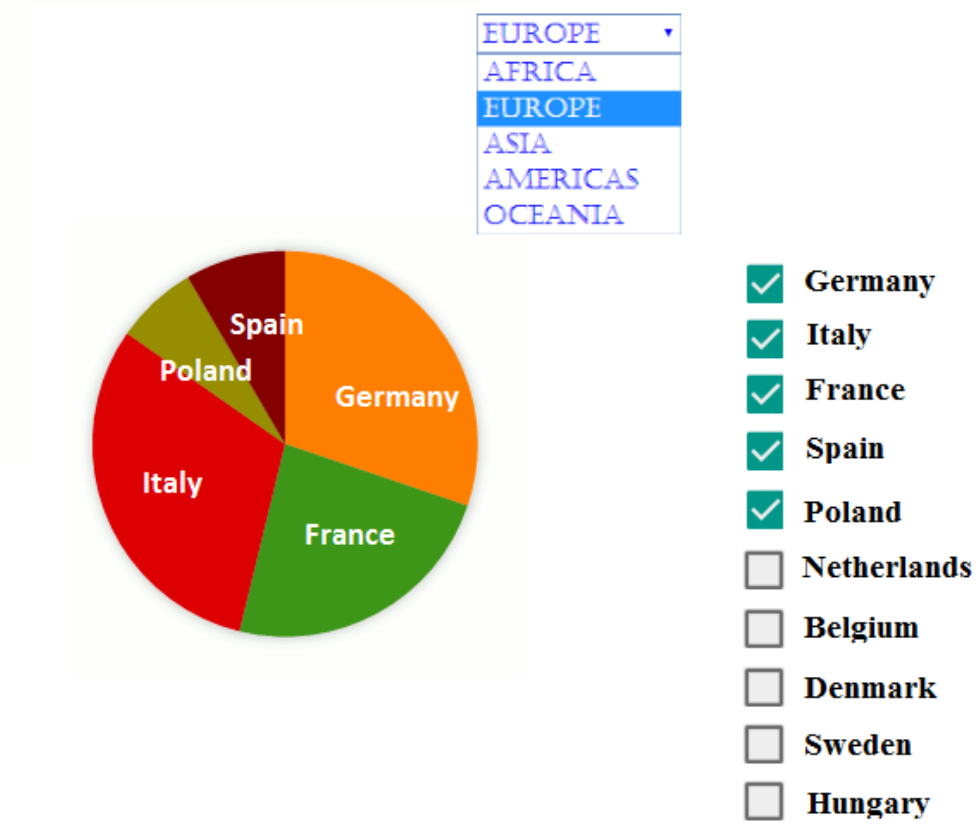

Figure 3.1 – Top 10 countries with the Highest GDP in Europe (2012)

Pie Chart Events

On the main pie chart, enable the following events to highlight various aspects interactively.

Mouse Over: - When a mouse moves over a pie in the pie chart, a tooltip should appear with the name and GDP data (year 2012) of this country as shown in Figure 3.2. You can create and style the tooltip anyway you prefer.

Mouse Click: - When a mouse click event occurs on any pie in the pie chart, a stacked bar chart should appear with the GDP data of the selected countries (the countries shown on the pie chart) from the years 2000 to 2012. This stacked bar chart should appear inside a tooltip as shown in Figure 3.3. You can create and style the tooltip anyway you prefer.

Mouse Double Click: - When a mouse double-click event occurs on a pie in the pie chart, an area chart should appear with the name and GDP data of the corresponding country from 2000 to 2012 as can be seen in Figure 3.4. Make sure that the area chart has the updated axes and the axes scale with proper values as the country changes. You can create and style the tooltip anyway you prefer.

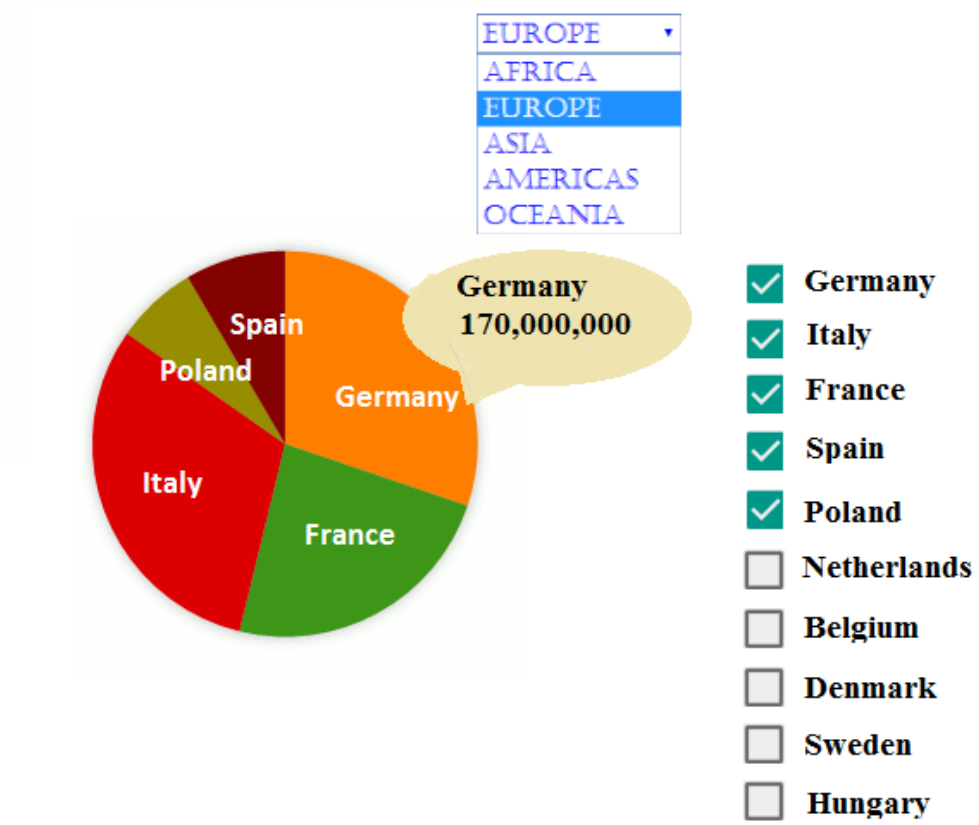

Figure 3.2 – Mouse Over Event

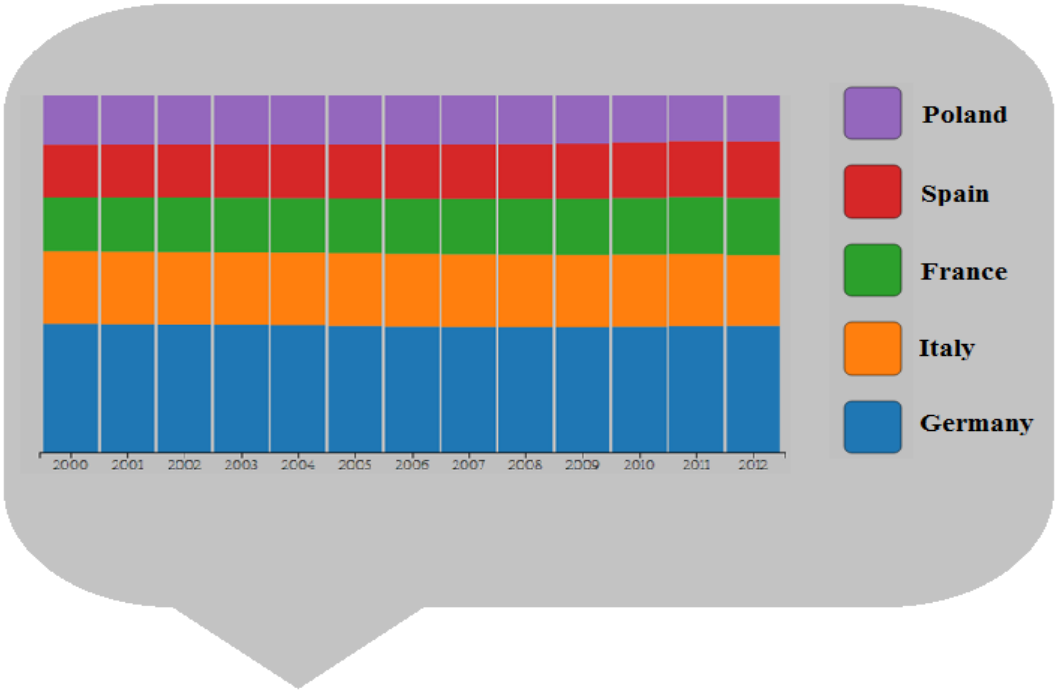

Figure 3.3 – Tooltip for Mouse Click Event

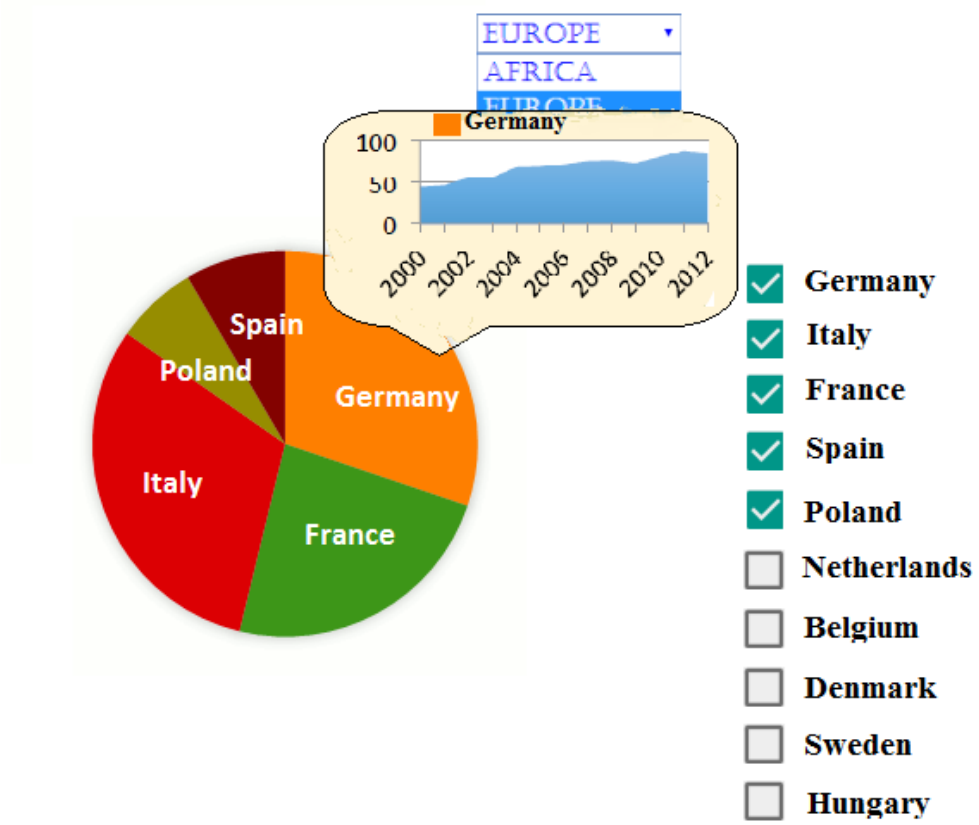

Figure 3.4 – Mouse Double Click event

In all events, the tooltip location should be close to the event location, ideally, the middle point of the pie where the event is triggered.

Please return in a directory:

- All your HTML, JavaScript and CSS files (you can have sub-directories if you prefer). Your main HTML file should be named as ***index.html***. When we open *index.html* in our web browser (*Chrome* will be used for grading), the visuals should show up in the main page.