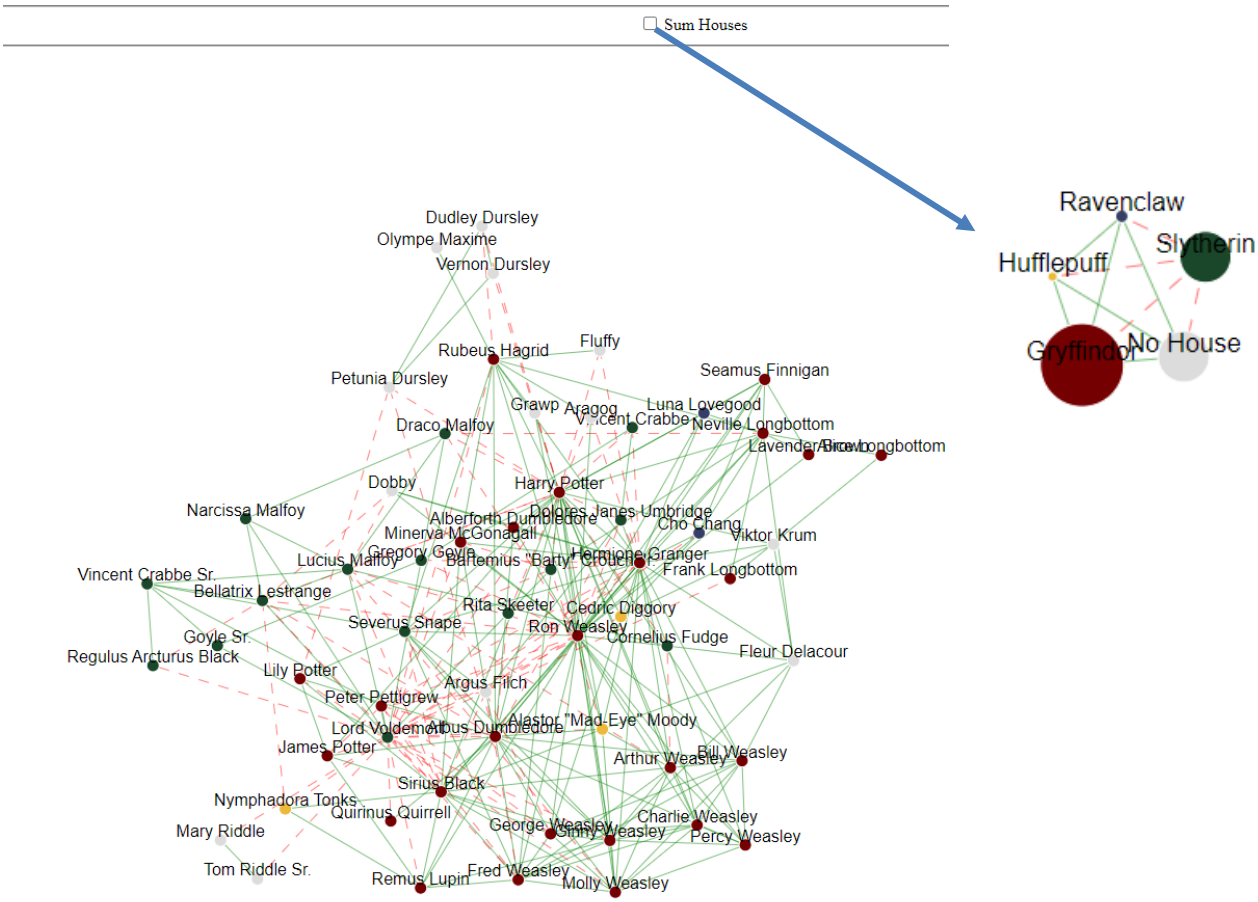
Exercise5: Gestalt Laws **(20 points)**

Due: 29.05.2023 8AM



Task 1: Network graph **(12 points)**

The goal of this exercise is to implement an interactive network graph with D3. The graph data should be aggregated to each house (No House is also a house) and updated by clicking the checkbox “sum houses”.
Attached to this exercise, you will find a folder called *harrypotter*. The folder contains an unfinished implementation of the network graph above. Your task is to finish the implementation such that opening the *index.html* shows the network graph as depicted in the left figure above, and clicking the checkbox transforms the network graph into the one showed in the right.
To finish the implementation, follow the steps described as comments in the dedicated file. Each comment starting with *TASK* indicates a position you have to add code.
The *harrypotter* folder has **5** files:

- **index.html (0 Points)**
  The main entry point of the visualization.
- **index.js (12 points)**
  The main JavaScript entry point. All the coding tasks are in here.
- **index.css (0 points)**
  Implements CSS Rules for specific elements.
- **data.js (0 points)**
  Initializes a variable called *data* and reflects the dataset we want to visualize.
- **d3.js (0 points)**
  d3 library

Task 2: Visual Perception **(8 points)**

Task 2a) Using your own words, describe what is ***pre-attentive processing*** and why it is important for data visualization.

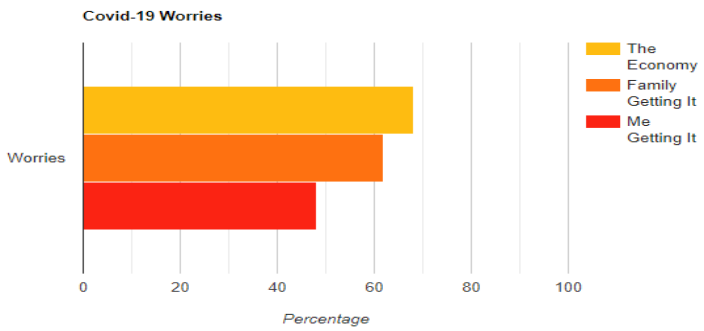
Answer: Pre-attentive processing refers to the rapid and unconscious analysis of visual properties before our conscious attention is fully engaged. It involves the automatic perception and extraction of visual attributes such as color, size, shape, and orientation. These attributes are processed effortlessly and accurately by our visual system.
Pre-attentive processing is important for data visualization because it allows us to quickly and effortlessly perceive patterns, differences, and relationships in visual information. By utilizing visual cues that are processed pre-attentively, we can efficiently transfer data insights and facilitate effective information comprehension. We can encode data variables in a way that supports pre-attentive processing, for example, in a scatter plot that represents the relationship between two variables such as height and weight, by applying pre-attentive processing we can encode additional information such as using different colors to encode gender. In short, pre-attentive processing is important in data visualization as it enables us to leverage the natural capabilities of the human visual system.

Task 2b) You are asked to evaluate the visualization of **"Biggest Covid-19 worries"** below.

- What is the information that the visualization author wanted to communicate?
- What do you think went wrong during the data encoding phase?
- Critique the visualization design, and propose an alternative representation that would be better (provide a sketch of the alternative visualization)

Answer:

- The information that the visualization author perhaps wanted to communicate is the relative proportions or percentages of different worries related to Covid-19 among the surveyed population.
- There appears to be an issue during the data encoding phase. The percentages associated exceed 100% which suggests an error or inconsistency in the data representation. Possible reasons for this error could be Calculation Errors, Labeling Errors, Data Reporting Issues, etc.
- Inaccurate Data – The percentages shown exceeds 100% in total, indicating a flaw in the data representation which could lead to misinterpretation of the situation by the viewers. Lack of Context – The visualization lacks an explanation about the surveyed population, sample size, or methodology used to college the data. Wrong choice of Visualization – Using a pie chart to represent multiple worries may not be the best choice. Pie charts are best suited for displaying the proportions of a whole. *Alternative Representation that would be better*: A suitable alternative would be a horizontal bar chart. This type of chart allows for easy comparison of multiple categories and their respective proportions.



➔ **After completing your answers, export the docx-File to PDF and upload it alongside the source code files.**

Submission: Zipped harrypotter folder including all files (index.html, index.js, index.css, data.js, d3.js) and a PDF of the completed written exercise.

Please form a group of **2 Students**. Only 1 member of the group must submit the exercise in ILIAS.