Please find the theoretical questions on the next page.

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

Task 2a) Shortly **name** and **describe four effects** of visual variables **in your own words** using one example of a visual variable each.

Answer:

- When some data variables (e.g. color hue) change for a datapoint or a group of datapoints that is being selected, helping to differentiate this point/group from the others in a visualization, there is a **selective effect**.

- A variable has an **associative effect** when we can perceive datapoints as a group even though they are different with respect to these variables. For example, if we represent datapoints as arrows that have a specific color depending on the group they belong to, the orientation of these arrows has an associate effect.
- Variables for which their values can be spontaneously ordered by the human eye like the position have an **ordered effect**. For example, in a histogram a bar that has it top edge point at a higher y-position are perceived as higher than ones with a lower one.
- The size of a datapoint can have a **proportional effect** when it is directly liked to the relative size with respect to the other datapoints. For example, a the higher influence if a datapoint can be expressed with a larger size.

Task 2b) Aside from the already implemented visual variables (Position, Size & Color) in Task 1, what are **two further visual variables** that could be used to encode more information on the scatterplot? Give two examples on which data dimension could be encoded by which visual variable.

Answer:

- Shape: For example, to encode the sex when the colors represent species or island.

- Use the **color value** for example to have a higher saturation when flipper length is higher given than the position and size is determined by the culmen_lenght, culphen_depht and body mass of the penguin.

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

<u>Submission: Zipped folder including all files of the programming exercise (index.html, index.js, index.css, data.js) and a PDF of the completed written exercise.</u>

Please find yourself in Groups of **2 Students**. Only 1 member of the group must submit the exercise in ILIAS.