Learning Goals

- Create a `ggplot2` visualization by initializing a plot with `ggplot()` and mapping variables using `aes()`.
- Produce and interpret common univariate visualizations (histograms, density plots, boxplots) for a single quantitative variable.
- Create bivariate visualizations (scatter plots and grouped comparisons) to explore relationships between two variables.
- Group and compare distributions across categories using aesthetics (such as `fill=` and `color=`) and using faceting.

Key Definitions / Functions

- `ggplot()`:
- `aes()`:
- `geom_histogram()`:
- `geom_density()`:
- `geom_point()`:
- `geom_boxplot()`:

Practice Problems

For each task below, write the R code you would use *and* briefly describe what you expect the output to look like.

1. Using the built-in `iris` dataset, create a histogram of `Sepal.Width`. Make the bars have `fill="lightblue"` and `color="black"`. Choose either `bins` or `binwidth` and explain what your choice controls.

2. Using the `iris` dataset, create a density plot of `Sepal.Width` where the density curves are grouped by `Species` using the `fill` aesthetic. Set `alpha=0.2` so you can see overlapping curves.

3. Using the `iris` dataset, create a scatter plot with `Petal.Width` on the x-axis and `Petal.Length` on the y-axis. Then modify your code so that points are colored by `Species`.

4. Using the `iris` dataset, create side-by-side boxplots of `Sepal.Width` for each `Species`. Your plot should have `Sepal.Width` on the x-axis and `Species` on the y-axis.