# Introduction to literate programming with Quarto

These practical exercises will build on your existing knowledge, giving you an opportunity to practice, apply, and learn more about what you can do with Quarto. We will use the .qmd file you've developed from the introduction session to customize it further and explore other tools that can be incorporated.

## Practical exercise 1

Add **headings** to organize the sections of your website. Insert ## followed by the name of your section to add a heading. Add the following headings where suitable:

- [ ] ## Introduction
- [ ] ## Data
- [ ] ## Literature

In the following exercises, it can be useful to put new additions in the appropriate sections.

## Practical exercise 2

You can display information in a **table** using **pipe syntax**.

- | vertical bars separate columns
- --- dashes in the second row indicate table headers

Let's display values from Diet 1 in a table.

- [ ] In a **code chunk**, enter the following:

```
diet1 <- subset(ChickWeight, Diet == 1)
summary(diet1)
```

- [ ] Run the code or render to look at the values
- [ ] Copy and paste the **pipe syntax** below then enter the values for `Weight` and `Time` in the **table**:

```
| Statistic    | Weight  | Time   |
|--------------|---------|--------|
| Minimum      | 35.00   | 0.00   |
| 1st Quarter  | ...     | ...    |
| Median       | ...     | ...    |
| Mean         | ...     | ...    |
| 3rd Quarter  | ...     | ...    |
| Maximum      | ...     | ...    |
```

It can be helpful to enter the syntax in **Source mode**, then switch to **Visual mode** to insert the values.

## Practical exercise 3

You can use `` `{r} expr` `` to add **computed values** directly in the article.

- [ ] Copy the following into a **code chunk** to compute the average final weight of chicks at the last time point:

```
avg_final_weight <- mean(subset(ChickWeight, Time == max(Time))$weight)
```

- [ ] In **markdown text**, copy and paste the following to insert the average value rounded to 1 decimal point into a sentence:

"By the end of the experiment, the average chick weight was `` `{r} round(avg_final_weight, 1)` `` grams."

- [ ] In another **code chunk**, combine the numbers `45, 87, 120, 150, 210` using the `c()` function and assign it to the name "`sample_weights`"
- [ ] Copy and paste the following sentence. Complete it by inserting the average of the `sample_weights` using the `mean()` function as a **computed value** using `` `{r} ... ` ``

"The average weight of 5 selected chicks is ..."

## Practical exercise 4

Let's add items to the YAML header to customize the website's appearance and functionality by changing the **theme** and adding **navigation**.

- [ ] [Click here for a list of themes](#) from the Quarto website

- [ ] Choose a theme and add it to the YAML header:

```
format:
  html:
    theme: insert chosen theme here
```

A **navigation** feature gives the reader an overview of document contents and an easy way to click through it.

- [ ] Insert side navigation by adding it to the YAML header:

```
website:
  sidebar:
    style: "docked"
    search: true
```

The side navigation shows the sections of your document according to your headings.