ETC5523: Communicating with Data

Data storytelling on the web

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📅 Week 4

🌐 cwd.numbat.space

> ⚠️ **Aim**
>
> - Understand a website structure and its difference to a webpage
> - Learn how to use Quarto
> - Adopt reproducible workflows using Quarto
> - Host web content using either Quarto Pub, GitHub Pages or Netlify
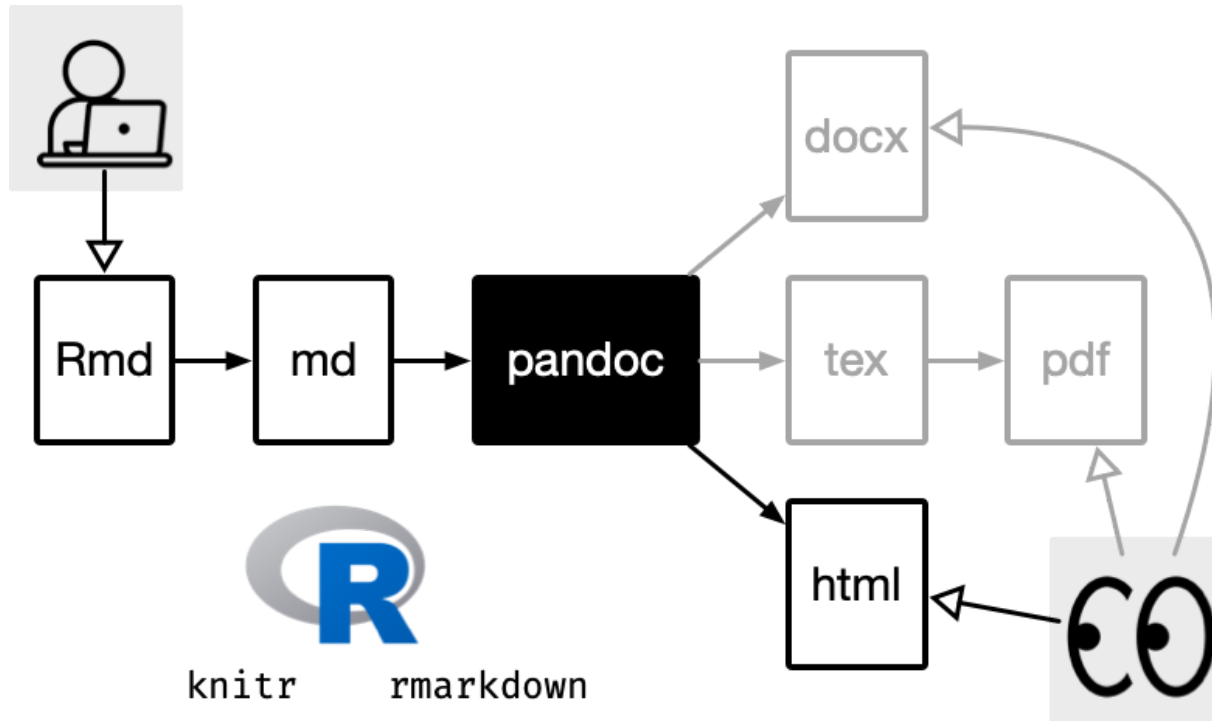
> 💡 **Why**
>
> - Communication on the web is increasingly common
> - There are challenges to streamline reproducible data analysis on the web

R Markdown

(Assumed knowledge from ETC5513)

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R Markdown system

Benefits

- Better reproducibility for analytical results via R

- Change output document type easily (thanks to Pandoc)

- Active maintenance and development by RStudio a.k.a. Posit team

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qmd Quarto
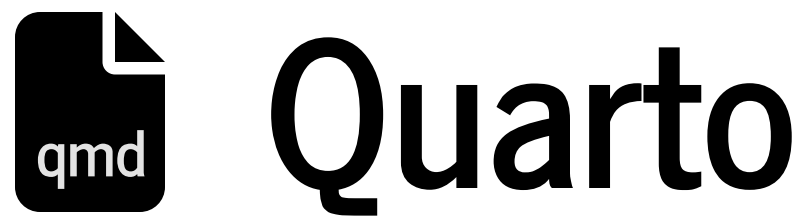
(multi-language, next generation version of R Markdown)

Note: this is developed by RStudio (or Posit from October 2022) team.

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Quarto system
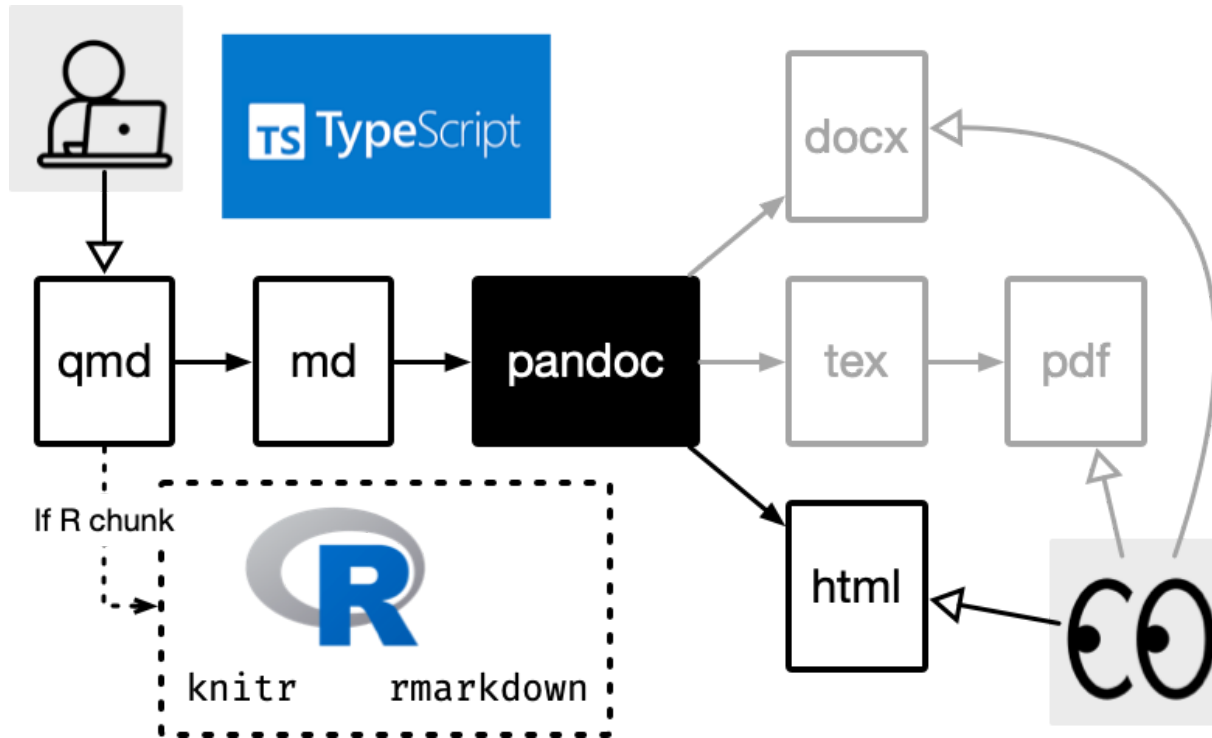
Changes

- The reproducible workflow is no longer dependant on R

- Better multi-language support (e.g. Python, Julia, JavaScript, R, etc) and multi-engine support (e.g. Jupyter, Knitr, Observable)

- Consistency in systems across all formats (e.g. layouts, cross references)

- Some specifications for YAML and chunk options

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Overall syntax comparison

Rmd

```
 1  ---
 2  title: "My document"
 3  output:
 4    html_document:
 5      toc: true
 6      css: styles.css
 7  ---
 8
 9  ```{r, warning = FALSE, message = FALSE}
10  knitr::opts_chunk$set(echo = FALSE,
11                           fig.width = 8,
12                           fig.height = 6)
13  library(tidyverse)
14  ```
```

Qmd

```
 1  ---
 2  title: "My document"
 3  execute:
 4    echo: false
 5  format:
 6    html:
 7      toc: true
 8      css: styles.css
 9      fig-width: 8
10      fig-height: 6
11      html-math-method: katex
12  ---
13
14  ```{r}
15  #| warning: false
16  #| message: false
17  library(tidyverse)
18  ```
```

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Do we use Rmd or Qmd?

- If your computation uses only R, Rmd is completely fine.

- In this unit, we will be using Quarto for making:

  - websites (including blogs) and

  - presentation slides.

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How to use Quarto

- Quarto is quite NEW – v1 was released only on 20th July 2022! ⬇

- The best documentaton is at https://quarto.org/

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🌐 Making Websites with Quarto

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Webpage vs. Website

What is the difference?

Webpages

html   html   html

Website

html ↔ html ↔ html
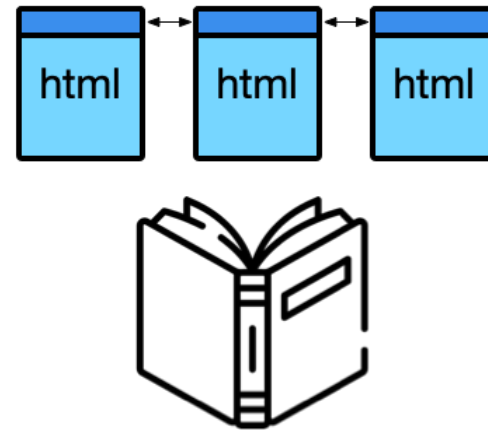
- A **webpage** is a *single* document written in HTML.

- While a **website** is a collection of webpages where it usually share a common ***navigation*** bar (or tab), and possibly a common ***footer***.

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Web server directory index

- `index.html` is a special reserved name for the "index" page

- If you go to `https://cwd.numbat.space/` , this in fact is loading
  `https://cwd.numbat.space/index.html`

- Any other file name and folder structure requires you to append it to
  the domain or subdomain,
  e.g. `https://cwd.numbat.space/lectures/lecture-00.html`

Getting started with Quarto blog

> **ⓘ Using RStudio IDE**
>
> File > New Project > New Directory > Quarto Blog
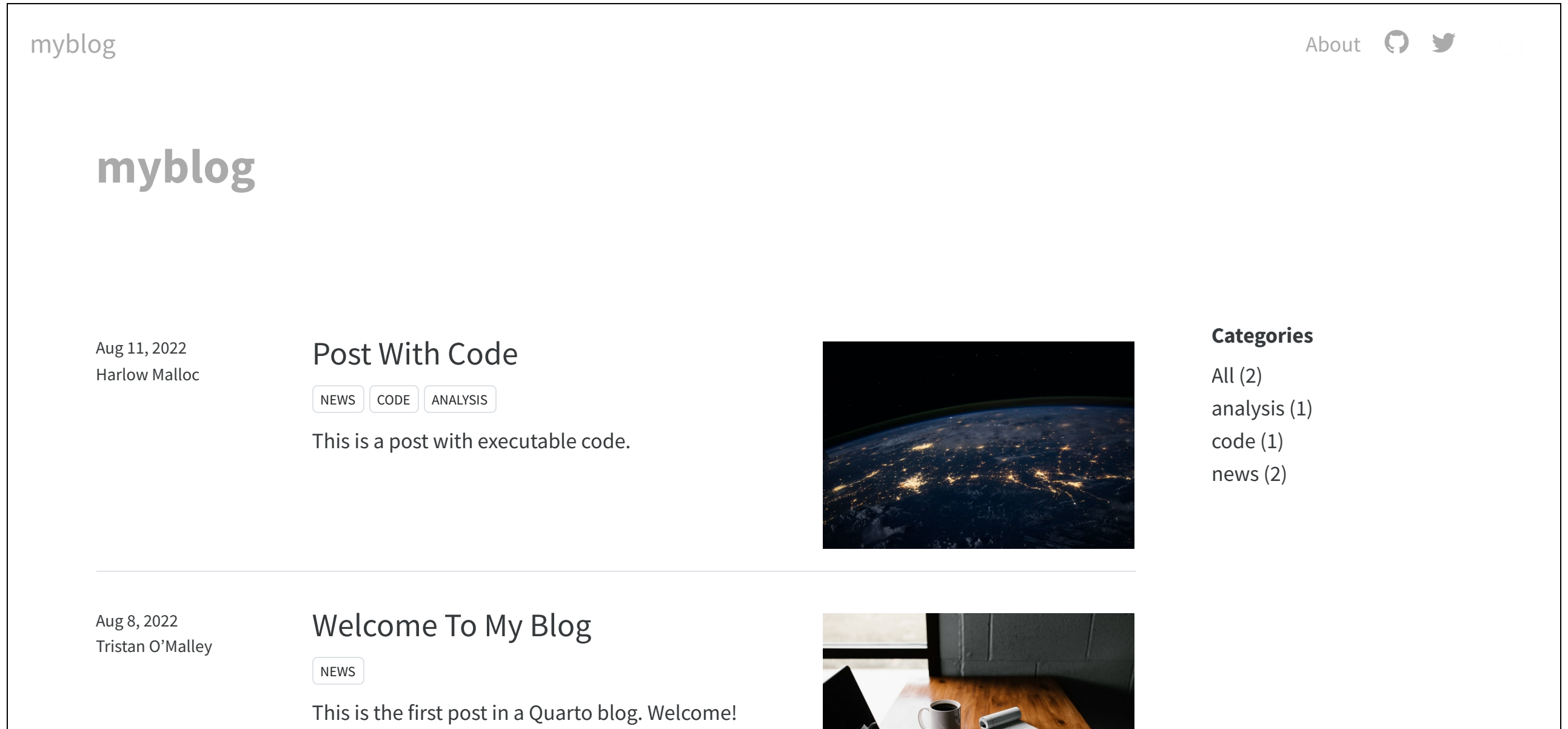
> **ⓘ Command line**
>
> Run in the terminal:
>
> ```
> 1  quarto create-project myblog --type website:blog
> ```
>
> This creates a basic file structure in the `myblog` directory.

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Quarto blog template

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Quarto blog structure

```
 1  ├── _quarto.yml
 2  ├── index.qmd
 3  ├── about.qmd
 4  ├── profile.jpg
 5  ├── styles.css
 6  └── posts
 7      ├── _metadata.yml
 8      ├── welcome
 9      │   ├── thumbnail.jpg
10      │   └── index.qmd
11      └── post-with-code
12          ├── image.jpg
13          └── index.qmd
```

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Quarto workflow

- For a live preview of the website (when developing):

```
1  quarto preview
```

- For rendering the website (default folder is _site):

```
1  quarto render
```

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`_quarto.yml`

```
 1  project:
 2    type: website
 3
 4  website:
 5    title: "myblog"
 6    navbar:
 7      right:
 8        - about.qmd
 9        - icon: github
10          href: https://github.com/
11        - icon: twitter
12          href: https://twitter.com
13  format:
14    html:
15      theme: cosmo
16      css: styles.css
```
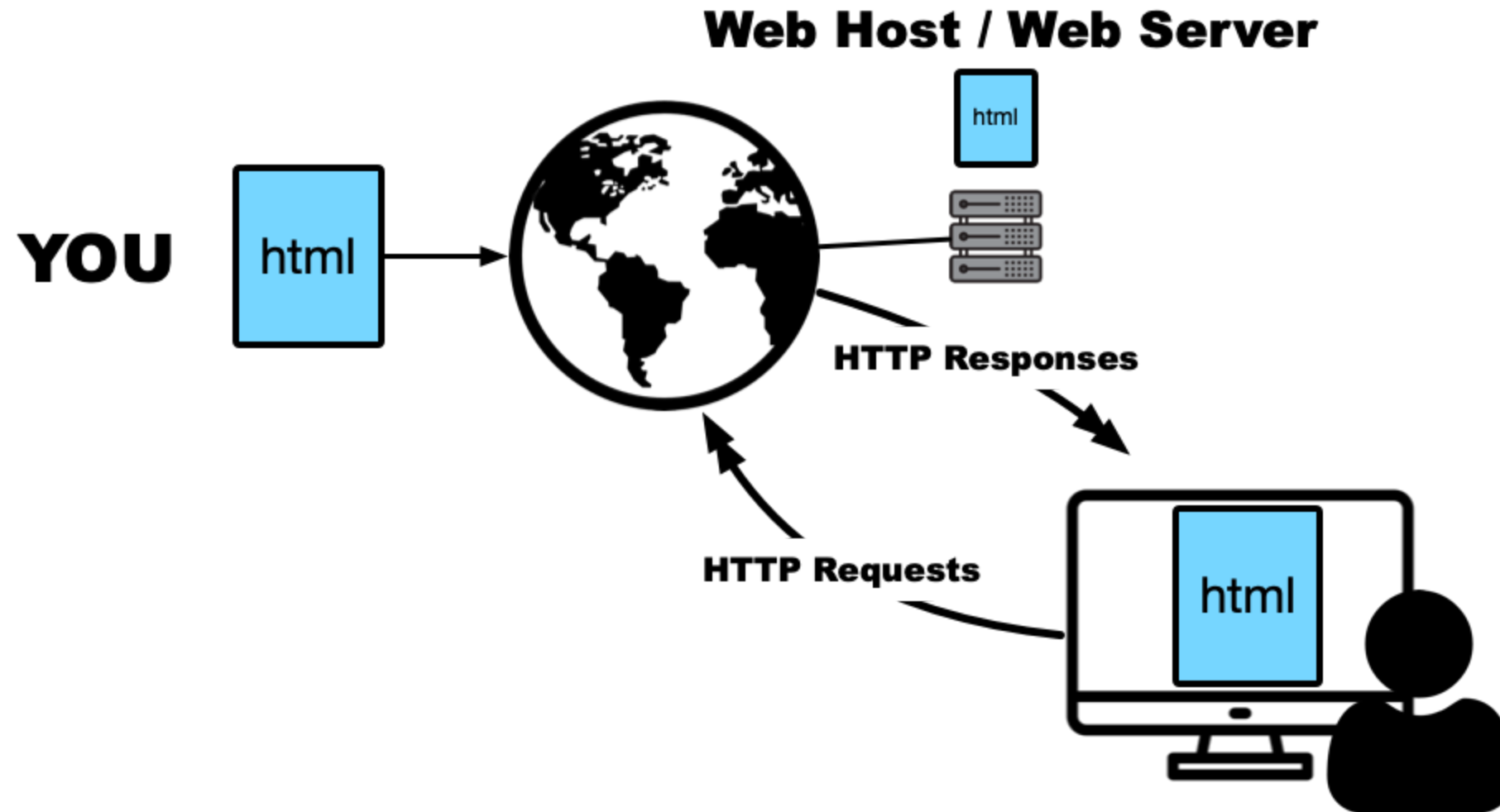
`index.qmd`

```
 1
 2  ---
 3  title: "myblog"
 4  listing:
 5    contents: posts
 6    sort: "date desc"
 7    type: default
 8    categories: true
 9    sort-ui: false
10    filter-ui: false
11  page-layout: full
12  title-block-banner: true
13  ---
```

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🌐 Publishing websites

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Web hosting

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Sharing on the web with Quarto Pub

- Go to https://quartopub.com/ and log in

- In the terminal, run

```
1  quarto publish quarto-pub
```

- The website will be published at
  `https://username.quarto.pub/mysite/` where

  - `username` is your Quarto Pub username

  - `mysite` is the site name

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⦿ Sharing on the web with GitHub Pages

```
1  usethis::use_git()
2  usethis::use_github() # or manually link with your local folder
```

1. Push your directory to your Github repo, say `mysite`.

2. Go to your GitHub repo settings and enable "GitHub Pages".

3. Your website will be available with url:
   http://username.github.io/mysite

Note: it may take 10 minutes or so to render the first time.

Alternatively use

```
1  quarto publish gh-pages
```

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◆ Sharing on the web with Netlify

1. Go to https://app.netlify.com and log in

2. Drag and drop your site folder which contains the `index.html` to:

<div style="text-align: center; color: gray;">
Want to deploy a new site without connecting to Git?
Drag and drop your site folder here
</div>
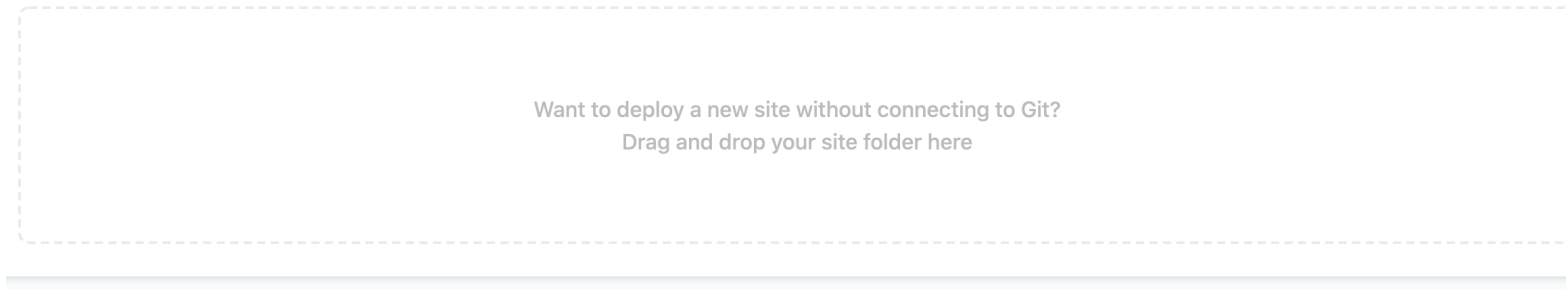
3. Do go to `Site settings > Change site name` for a more sensible domain name.

Alternatively use

```
1  quarto publish netlify
```

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Week 4 Lesson

> **① Summary**
>
> - We looked at a website structure
> - We built a website using the Quarto system
> - We learnt how to host websites using Quarto Pub, GitHub Pages or Netlify

> **💡 Resources**
>
> - Quarto: Creating a Blog
> - Quarto: Execution Options
> - Quarto: Article Layout
> - Quarto: Cross References
> - Quarto: Document Listings

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