

Quarto

YAML, rendering and parameters

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1 Moving from different formats to Quarto

1.1 Migrating from RMarkdown

Quarto is quite new. It's enough similar to RMarkdown to make most of the uses convertible. How?

From a regular R script:

Step 1) Run `knitr::convert_chunk_header(input = "RMD_class_1_cut.Rmd", output = "QMD_class_1_cut.qmd")`

Step 2) Edit the YAML options (in notepad, through R, etc.)

RMD	Quarto
output:	format:
output: html_document	format: html
output: pdf_document	format: pdf
output: word_document	format: docx
output: xaringan	format: revealjs
output: ioslides	format: ioslides
: Other :	

Done!

1.2 Turning your Notebook into a Quarto document

Step 1) insert a YAML header in a *raw* block

For example:

```
---  
---
```

Done! You don't even need to switch to *.qmd!

But if you want embedded code chunks, you should switch to .qmd.

You can convert a *.ipynb file to a *.qmd file and *vice versa* with: `quarto convert notebook.ipynb (to qmd)` `quarto convert notebook.qmd (to ipynb)`

Or [use Jupyter](#) to have both (synced).

2 To add a (refreshable) preview

From terminal run:

```
quarto preview file.qmd
```

or

```
quarto preview notebook.ipynb
```

(You can preview in pdf by adding `--to pdf`)

3 Need a recap?

Remember you can [check the documentation](#) - there's many more options than we covered.

For example, let's check here for some more info on [figures](#) or [diagrams](#) or other [neat tricks](#).

4 So what is YAML?

YAML = **Y**AML **A**in't **M**arkup **L**anguage

As Wikipedia puts it: “a human-readable data-serialization language”.

If that’s not clear, ChatGPT makes it clearer:

- 1) a way to represent computer data in a format that is easily understood by humans, allowing for easier interpretation and modification of data without needing specialized software or tools
 - 2) these languages are commonly used in web development, data exchange between different systems, and configuration files for applications.
-

5 YAML in Quarto - options

5.1 Basics

5.1.1 The syntax

YAML requires indentation for options and suboptions (accordingly with the hierarchy). Examples from least complex to most complex:

```
---
```

```
---
```

Now with html-specific options: ---

```
---
```

5.1.2 Banners

You can highlight the title with a banner: `title-block-banner: true`

or include an image for a background: `title-block-banner: images/banner.jpeg`

5.1.3 Dates

Change the date format and make it dynamic:

```
date: today date-format: short
```

5.1.4 Setting default chunk options

Within the `execute` key you can set default options for code blocks. They can be overridden within the specific code chunks.

Example:

```
--- execute: echo: fenced warning: false cache: true freeze: true ---
```

`freeze` specifies a more general approach for caching when rendering a bunch of files or a whole project. `true` to not recompute generated computational output during a whole project render. `false` to always recompute (default). `auto` to recompute when a source file changed.

5.1.5 Switching formats

Let's try pdf and docx.

[For all available formats check here.](#)

5.2 HTML options

The html format is the most flexible as it enables dynamic and interactive elements.

To get an html final output, code in .qmd gets evaluated and the output is saved to .md (regular markdown). This is then translated using pandoc to html.

5.2.1 Table of Contents

```
---
```

```
---
```

`toc-depth` describes the levels included (default 3).

`toc-expand` how many should be expanded from the start (`true` if all, default `false` for none).

`toc-title` to add a caption.

`toc-location` to move the ToC (`left`, `right` or `body`)
`smooth-scroll: true` to enable smooth scrolling.

5.2.2 Section numbering

`number-sections: true`
`number-depth: 3` Number of levels for numbering.

5.2.3 Global code-chunk options

`code-fold` to make it **optional** whether to display code. `true` to start with collapsed, `false` to not include, `show` to start with shown but collapsable.
`code-summary` specify text for collapsed code.

5.2.4 Including html elements

E.g.:

5.2.5 Styling

You can use `css` for styling:

5.2.6 Themes

You can do a quick swap of the whole theme by using one of 25 themes from [Bootswatch](#).
Try:

```
theme: lumen
theme: solar
theme: superhero
```

You can also provide a dark and light option:

5.2.7 Some others (not all)

Disable the default special features with:
`minimal: true`

5.2.8 Divs and Spans

You can use classes and define ‘div’ regions (as in html nodes), by indicating the start and end of a region with :::.

For example:

5.2.9 Putting your stuff in tabs

For example:

6 Lists

6.0.0.1 Ordered

1. Item 1
 2. Item 2
 2. Item 3 # Note the error in numbering
1. Item 1
 2. Item 2
 3. Item 3 # It's fine here though

6.0.0.2 Unordered

- * Item
 - * Another item
- Item
 - Another item

6.0.0.3 Subitems

- 1. Item 1
 - Item 2
 - Item 3
- 1. Item 1
 - Item 2
 - Item 3

6.0.1 Creating a self-contained Html

6.1 PDF options

Many of the options for the pdf and docx formats look the same. Main differences:

- 1) no dynamic elements (e.g. no floating table of content)
- 2) no direct html support
- 3) TeX support (e.g. you can use document classes, etc.)

6.1.1 Troubleshooting

Getting from markdown to pdf requires a TeX installation. Quarto will propose installing `tinytex` via its tools. You can try that.

If it's not working, troubleshooting usually goes through some reinstallation.

You can also try adding:

`latex-tinytex: false`

this will force Quarto to use what you have installed in the system instead of the Quarto installation.

6.1.2 Including elements

Instead of html files and code, you may attach .tex files and TeX writing:

```
---  
---
```

6.1.3 Lists of tables and figures

```
lof: true  
lot: true
```

6.2 Combining formats

You can also render several formats and link them together.

For example:

```
---  
---
```

Or if the file extensions overlap:

```
---  
---
```

6.3 Getting an .md file

We might be interested in getting a pure .md file (for example for a readme.md file for GitHub).

.md is a byproduct of the rendering process, usually deleted by the end of the process.

To keep it:

```
keep-md: true
```

Try it for the QMD_class_1_cut.qmd file and compare QMD with MD.

7 Exporting YAML

We've been editing YAML before. We can actually put the info from YAML in a separate file that will be automatically considered for all qmd documents.

It's helpful when:

- there's several documents that we want to have similar settings.
- we work with a team and want everyone to use the same settings.

We have several options here:

`_quarto.yml` file keeps information at a project level

`dir/_metadata.yml` file keeps information at a directory level (e.g. within a project)

`dir/document.qmd` is just what we put in the document header.

Document overrides `_metadata.yml` which overrides `_quarto.yml`.

You can create the `.yml` files in notepad.

Mostly the options are merged rather than overwritten (so bundled together).

8 Rendering

You can render Quarto MD files from your scripts or terminal. To do so, use:

8.1 Terminal

For a whole project:

`quarto render` in current folder or `quarto render myproject` for the `myproject` project.

For a file:

`quarto render document.qmd`

For a folder:

`quarto render directory/`

8.2 From the level of R

```
library(quarto) quarto_render()
```

You can specify options for the rendering, including:

`output_format`, `output_file`, `use_freezer`, `execute_params`, etc.

Parameters will let you specify data inputs at the document's conception.

9 Assignment

Get your TV show description file from the previous week. Modify it using what we've learned today:

- 1) Render it into at least two different formats in an automated way (e.g. using YAML options or a script).
- 2) Add some features for the .html output, e.g.: add a table of contents and change the theme.
- 3) Put the YAML options in a separate file.
- 4) Include tabs.
- 5) Browse through the documentation and pick additional configuration options on your own.

Note: if you didn't finish the assignment last week, you can work with the `Assignment.Rmd` file. You'll have to convert it to `.qmd` first though (use what we've learned today for that!)