



R PACKAGE VALIDATION WORKSHOP

Elements of
Validation

Welcome

- {valtools} setup
- Elements of Validation
- Reports



THE SETUP

{valtools} Packets

- vt_create_packet()
 - Location
 - Target of validation

{valtools} Packets

```
> valtools::vt_create_packet(  
+   path = "packet_folder",  
+   target = "Purpose of Packet"  
+ )  
✓ Setting active project to 'F:/Documents/packet_folder'  
✓ Writing 'packet_folder.Rproj'  
✓ Adding '.Rproj.user' to '.gitignore'  
✓ Setting active project to '<no active project>'  
✓ Adding '!*' to 'packet_folder/./validation/.gitignore'  
✓ Setting active project to '<no active project>'  
Created ./validation in package structure  
validation config file created. Add user information through `vt_add_user_to_config()`  
Created validation packet  
✓ Opening 'packet_folder/' in new RStudio session  
> |
```

{valtools} infrastructure

- Validation folder
 - Validation Elements
 - validation.yml
- R Markdown Report located at the root directory
 - Not created by default

```
· | - validation
· |   | - requirements/
· |   | - test_cases/
· |   | - test_code/
· |   | - validation.yml
· |   | - change_log.md
· |   | - .gitignore
· |   ·
· | - validation.Rmd
```



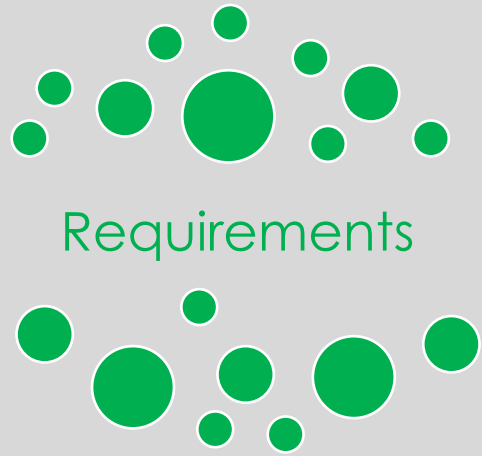
THE ELEMENTS - REQUIREMENTS-

Validation Components

“confirmation by examination and provision of objective evidence that software specifications conform to user needs and intended uses, and that the particular requirements implemented through software can be consistently fulfilled.”

Validation Components – what needs to be authored?

- Requirements
- Test Cases
- Test Code



Record the expectations, goals, and risks of project



Test Cases

Describes how code meets specifications



Test Code

Implementation of the test cases in code



Combines all prior content into report documenting proof that code meets specifications

Requirements - vt_use_req()

- **Key Arguments**

- **name** – Name of the new requirement. Automatically adds an ``md`` extension if not provided. ``md`` and ``Rmd`` acceptable extensions
- **username** – Name of the person creating the requirement

** interactive prompting

```
> vt_use_req("requirement_001")
Item created:requirements/requirement_001.md
User `ehhughes` does not exist in the config file
Add user to config file?
[Y/n]: Y
Please supply some information for recording users within the package.
Note, that this information can be updated at any time though
`vt_add_user_to_config()`

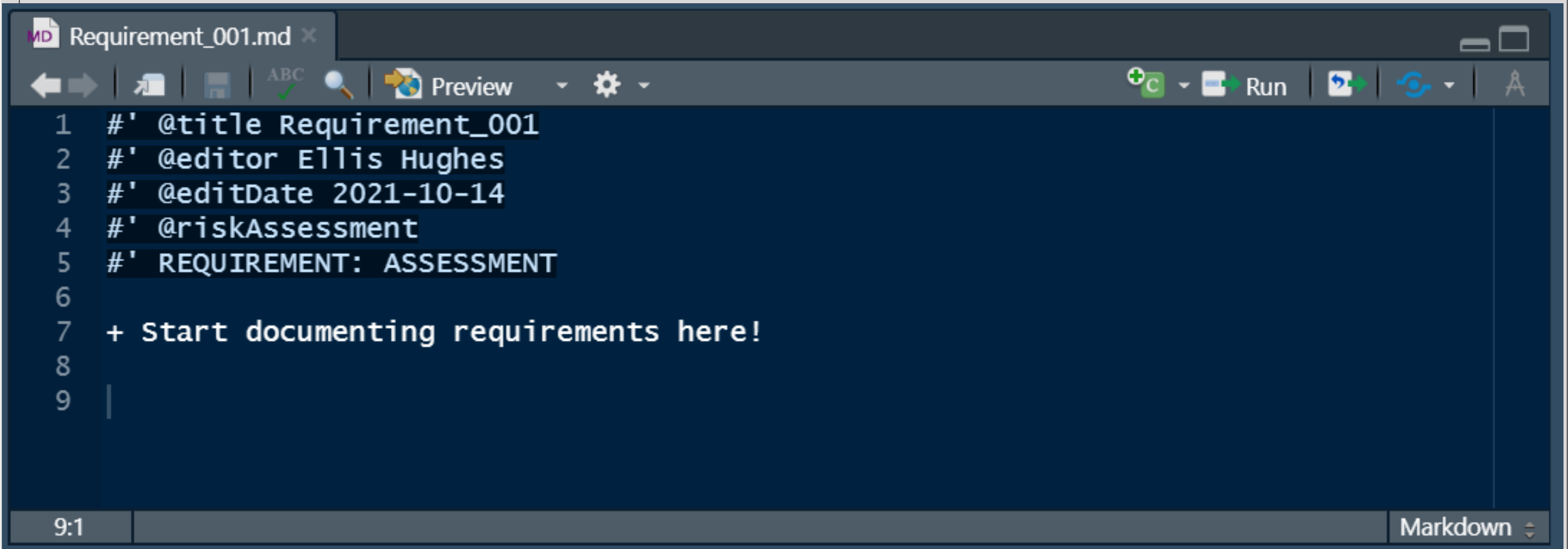
Please provide the name of the person associated with the username
`ehhughes` and press `Enter`.
Name: Ellis Hughes

Please provide the title of the person associated with the username
`ehhughes` and press `Enter`.
Title: Programmer

Please provide the role of the person for this validation associated with
the username `ehhughes` and press `Enter`:
Role: Requirements writer

User `ehhughes` added to validation config file.
Filename(s): requirement_001.md added to validation config file.
* Modify 'C:/Users/ehhughes/Documents/Projects/R PACKAGE VALIDATION FRAMEWORK/test1234/vig
nettes/validation/requirements/requirement_001.md'
> |
```

Requirements - vt_use_req()



The screenshot shows a markdown editor window titled 'Requirement_001.md'. The editor has a dark blue background and a light gray toolbar at the top. The toolbar includes icons for undo, redo, save, search, and a 'Preview' button. On the right side of the toolbar, there are icons for a code editor, a 'Run' button, and a 'Markdown' dropdown menu. The main editing area contains the following text:

```
1 #' @title Requirement_001
2 #' @editor Ellis Hughes
3 #' @editDate 2021-10-14
4 #' @riskAssessment
5 #' REQUIREMENT: ASSESSMENT
6
7 + Start documenting requirements here!
8
9 |
```

The status bar at the bottom left shows '9:1' and the status bar at the bottom right shows 'Markdown'.



REQUIREMENTS REPORT

{valtools} infrastructure

```
· | - validation
· | · | - requirements/
· | · | - test_cases/
· | · | - test_code/
· | · | - validation.yml
· | · | - change_log.md
· | · | - .gitignore
· | ·
· | - validation.Rmd
```

Report Helper – vt_file

Key Arguments

file – path to the file to render

- Strips roxygen header and renders file into markdown
- Vectorized

```
24 ▾ ``{r requirement_1}
25
26 vt_file(file.path("validation", "requirements", "req1.md"))
27
28 ▴ ``
```




COMPLETE

EXERCISE 4

Navigate to
Materials/Materials-04-Requirements_Report