R PACKAGE DEVELOPMENT AND VALIDATION

Elements of Validation

Welcome

- {valtools} infrastructure
- Elements of Validation
- Reports

THE SETUP

{valtools} infrastructure

- vt_use_validation()

- Create valdation folder
  - Create validation.yml
    - Working directory
    - Output directory
    - Users
    - Validation files

THE ELEMENTS

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

- Requirements
- Test Cases
- Test Code & Results

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Requirements - vt_use_req()

- Key Arguments
  - name,
  - username

- Name – requirement name
- Username – Person's name writing requirement

- Markdown document with proper roxygen headers
  - Editor
  - editDate
  - riskAssessment

Test Cases - vt_use_test_case()

- Key Arguments
  - name,
  - username

- Name – requirement name
- Username – Person's name writing test case

- Markdown document with proper roxygen headers
  - Editor
  - editDate
  - coverage

Test Code - vt_use_test_code()

- Key Arguments
  - name,
  - username

- Name – requirement name
- Username – Person's name writing test code

- Markdown document with proper roxygen headers
  - Editor
  - editDate

Users

- valtools tracks users and their roles in the validation.yml file

- If a user creates a file not seen before, prompted for their user information

- Manually add a person via **vt_add_user_to_config()**
  - Need: username, name, role, title

```
> vt_add_user_to_config(username = "ellis_h")
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
`ellis_h` and press `Enter`.
Name: Ellis Hughes

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

Please provide the role of the person for this validation associated with
the username `ellis_h` and press `Enter`:
Role: Validation Lead

User `ellis_h` added to validation config file.
```
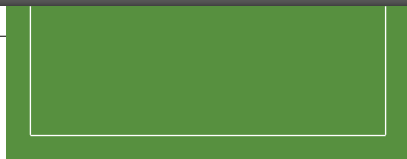
vt_use_* prompting

```
> 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'
>
```

REPORT

Creating the validation report Rmd

- vt_use_report()

- Creates report from template with suggested contents

- Adds dependencies to package DESCRIPTION

- Two types: full validation report and a requirements approval template

Report basics

- Rmarkdown

- Scrapes information saved across various files

- Produces kables

- Reads in the validation child files and parses them based on order in validation.yml

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Validation Report Helpers

- vt_path()
  - here::here(), but for validation contents

- vt_file()
  - Renders contents based on extensions
    - Rmd parsed
    - Test code executed and results captured
    - Any other file contents are printed

Child Files

- Validation Report intended to be dynamic

- Order of child files determined by validation.yml

- vt_add_file_to_config() & vt_drop_file_from_config()
  - Specify validation file (req, test case, test code)
  - Specify which file to add after/before using tidyselect syntax
  - Files added by default to the end by vt_use_*

Rendering Reports

- vt_validate_report() executes the Rmd and saves output

- Serves as "snapshot" in time

MATERIALS 04-E1

Materials/Materials-04-Introduction_to_Valtools/Materials-04-E01-Validation_Test_Code