WDL Workflows

September 16, 2022

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# Overview

This book introduces WDL Workflows on AnVIL.



## Skills Level

*Genetics*  
**Novice**: No genetics knowledge needed

*Programming skills*  
**Novice**: No programming experience needed

## Learning Objectives

* Understand when WDL Workflows are the right tool
* Run a Workflow on AnVIL
* Write a WDL using Broad Methods Repository
* Bring your own data to analyze
* Customize your Docker environment
* Join the conversation

## AnVIL Collection

Please check out our full collection of AnVIL resources below!

# 1 Introduction

This lecture module introduces several basic concepts when working with WDL Workflows. It highlights several considerations when using Docker container technology and provides an overview of the main sections in an example WDL workflow. These slides are adapted from the [WDL 101 Workshop](https://support.terra.bio/hc/en-us/articles/8693717360411). More information can be found in [this presentation](https://zenodo.org/record/7062397#.YyM-vy1h1qu) hosted by Bioinformática UFMG.

**Learning Objectives**

1. Four parts of WDL Workflows on Terra
2. How Docker improves reproducibility
3. Overview of basic WDL syntax
4. Find and configure Workflows

You can view and download the Google Slides [here](https://docs.google.com/presentation/d/1Dioe_Qd3hdJ0UAP4LA6gJsm07Lr1wRpax5FLYr6xU3M).

# 2 Run Workflow

This tutorial demonstrates how to run a WDL Workflow on AnVIL. It uses the fun and accessible [WDL puzzles](https://support.terra.bio/hc/en-us/articles/360056599991) workspace to run a “Hello, World!” style workflow. By showcasing how input parameters are specified and where output files can be found, this exercise helps provide context before writing your own WDL Workflow.

**Learning Objectives**

1. Import WDL by cloning a Workspace
2. Run Workflow using AnVIL
3. Examine Output to appreciate data flow

You can view and download the Google Slides [here](https://docs.google.com/presentation/d/1FbTgCnAZTgVzp-lPwOVqOqU4Kw19nu825dMngfyc-Nw).

# 3 Write Workflow

# 4 Localize Files

# 5 Customize Docker

# 6 Join Discourse

# About the Authors

These credits are based on our [course contributors table guidelines](https://github.com/jhudsl/DaSL_Course_Template_Bookdown/wiki/How-to-give-credits).

| Credits | Names |
| --- | --- |
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| Content Contributor(s) (include section name/link in parentheses) - make new line if more than one section involved | Wrote less than a chapter |
| Content Editor(s)/Reviewer(s) | Checked your content |
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| Content Consultants (include chapter name/link in parentheses or word “General”) - make new line if more than one chapter involved | Gave high level advice on content |
| Acknowledgments | Gave small assistance to content but not to the level of consulting |
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| Figure Artist(s) | Created figures/plots for course |
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| Audiography Editor(s) | Edited audio recordings |
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| Funding Staff | Staff members who help with funding |

## ─ Session info ───────────────────────────────────────────────────────────────  
## setting value   
## version R version 4.0.2 (2020-06-22)  
## os Ubuntu 20.04.3 LTS   
## system x86\_64, linux-gnu   
## ui X11   
## language (EN)   
## collate en\_US.UTF-8   
## ctype en\_US.UTF-8   
## tz Etc/UTC   
## date 2022-09-16   
##   
## ─ Packages ───────────────────────────────────────────────────────────────────  
## package \* version date lib source   
## assertthat 0.2.1 2019-03-21 [1] RSPM (R 4.0.3)   
## bookdown 0.24 2022-02-15 [1] Github (rstudio/bookdown@88bc4ea)   
## callr 3.4.4 2020-09-07 [1] RSPM (R 4.0.2)   
## cli 2.0.2 2020-02-28 [1] RSPM (R 4.0.0)   
## crayon 1.3.4 2017-09-16 [1] RSPM (R 4.0.0)   
## desc 1.2.0 2018-05-01 [1] RSPM (R 4.0.3)   
## devtools 2.3.2 2020-09-18 [1] RSPM (R 4.0.3)   
## digest 0.6.25 2020-02-23 [1] RSPM (R 4.0.0)   
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## htmltools 0.5.0 2020-06-16 [1] RSPM (R 4.0.1)   
## knitr 1.33 2022-02-15 [1] Github (yihui/knitr@a1052d1)   
## lifecycle 1.0.0 2021-02-15 [1] CRAN (R 4.0.2)   
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## processx 3.4.4 2020-09-03 [1] RSPM (R 4.0.2)   
## ps 1.3.4 2020-08-11 [1] RSPM (R 4.0.2)   
## purrr 0.3.4 2020-04-17 [1] RSPM (R 4.0.3)   
## R6 2.4.1 2019-11-12 [1] RSPM (R 4.0.0)   
## remotes 2.2.0 2020-07-21 [1] RSPM (R 4.0.3)   
## rlang 0.4.10 2022-02-15 [1] Github (r-lib/rlang@f0c9be5)   
## rmarkdown 2.10 2022-02-15 [1] Github (rstudio/rmarkdown@02d3c25)  
## rprojroot 2.0.2 2020-11-15 [1] CRAN (R 4.0.2)   
## sessioninfo 1.1.1 2018-11-05 [1] RSPM (R 4.0.3)   
## stringi 1.5.3 2020-09-09 [1] RSPM (R 4.0.3)   
## stringr 1.4.0 2019-02-10 [1] RSPM (R 4.0.3)   
## testthat 3.0.1 2022-02-15 [1] Github (R-lib/testthat@e99155a)   
## usethis 2.1.5.9000 2022-02-15 [1] Github (r-lib/usethis@57b109a)   
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##   
## [1] /usr/local/lib/R/site-library  
## [2] /usr/local/lib/R/library

# References