WAT-E2090
Water and People in a Changing World – Spring 2021
Pre-assignment

1. Introduction

The Water and People course consists of lectures, hands-on sessions, workshops, and independent project work. Computation using R over RStudio is in the core of the hands-on parts of the course. There are two ways to complete the course exercises remotely;

- either you can install the computing environment in your own computer or
- use the Aalto-provided virtual desktop infrastructure (VDI) that has everything pre-installed already.

The benefit of using your own computer is that it may have more computing power and personalised environment, but some additional work is required for the setup. Regarding performance, the Aalto VDI computers are sufficient. In the demo sessions, the Aalto VDI is used because it is equally available to everyone.

Please, do make the choice whether using the Aalto VDI or your own computer already now, and keep using the same environment throughout the course to avoid many issues.

The following instructions outline the steps to be taken in order to set up the environment and get started with the pre-assignment. **The goal of the pre-assignment is to get everyone's computing environment up and running already before the first exercise**; this way, we can concentrate on the exercise topic rather than spend a lot of time solving technical issues.

2. Setting up the environment in your own computer (optional)

We need three main components to be installed for the exercises:

- **R language** itself
    - Windows: https://cran.r-project.org/bin/windows/base/
    - macOS: https://cran.r-project.org/bin/macosx/
    - Linux distributions: https://cran.r-project.org/bin/linux/
- **Git** version control software to distribute exercises
    - https://git-scm.com/downloads
- **RStudio** for writing and running the code neatly.
    - https://rstudio.com/products/rstudio/download/

If you already have an R installation on your computer, it is **highly recommended to update it to 4.0.4 or 4.0.5** since the exercises have been tested with these R versions. Older versions of R (< 4.0.4) might work but have not been tested. There's plenty of guides available on how to install R & RStudio, see for example here if you want a more graphical instruction.

In installing Git, you will need to make sure that Git and RStudio can communicate. To do this, make sure that in the Git installation step *"Adjusting your PATH environment"* , the option *"Git from the command line and also from 3rd-party software"* is selected.

The defaults for all installation options should work fine.

After you've installed the software, proceed to the pre-assignment outlined the next section of this instruction. During the pre-assignment, we will check the installation status of required packages and test if the environment is working.

If you run into issues at any point of the installation process, please contact the course personnel and we'll set up a time to fix it in a one-to-one call.

3. Completing the pre-assignment

To get started with the pre-assignment, please see the videos below on how to get going.

The first video demonstrates how to connect to Aalto VDI (Aalto Virtual Desktop infrastructure). Even if you are planning to use your own computer, it's good to watch it since the VDI provides an easy and graphical way of accessing your Aalto filesystem and software.

We will use the more powerful VDI service (MFAVDI) throughout the course:

https://mfavdi.aalto.fi/

The MFAVDI requires a two-step authentication from the user: 1) Aalto credentials and 2) your choice of the second authentication step (either Microsoft Authenticator app or text message).

Video: Connecting to MFAVDI

The second video demonstrates how to set up the course project from Aalto version control system that is used in distributing the exercise code. This step is the same in VDI and your own computer, and requires Git to be installed. The repository address is given below.

https://version.aalto.fi/gitlab/wdrg/wp-course-2021/

Video: Setting up the project

The third video demonstrates how to write and run code in rmd (R-markdown) files that will be used throughout the course. Instructions on what to do in the pre-assignment are attached to the code. Please read and run the code chunk by chunk and compose the plots to be returned. After doing that, return to these instructions and watch the remaining videos on customizing RStudio, finishing up the pre-assignment with a commit, and videos with useful tips and tricks.

Video: Getting started with the pre-assignment

Customizing RStudio makes the coding experience a lot better. At minimum, you should disable console hiding after running chunks as instructed in the video.

Video: Customizing RStudio

The final video demonstrates how to create a *commit* **after a working session in RStudio.** The commit can be considered as a "checkpoint" that must be created each week before a new exercise is released. Please watch this video carefully, since **fetching new exercise material from the course repository is not possible if the commit has not been done**.

Video: Finishing up the pre-assignment with a commit

4. Additional instructions

First, there's a video on doing the package check on your own computer and updating existing packages. If you're missing some packages, this video will guide you how to install those. In addition, if you already have an environment set up in your computer, it is highly recommended to update packages as instructed in the video. This way, errors from incompatible and outdated packages can be avoided. **This step is not needed if you're using the Aalto VDI**.

[Video: Doing package check and update on home computer](#)

Here are some additional videos that can be helpful when working with the pre-assignment. First, there's a **short video on working with VDI and on how the connection is maintained**.

[Video: Working with the VDI](#)

Finally, **there are a couple of practical ways of moving files between the Aalto file system and your local machine**. This can be useful if you want to do some parts of your work in the VDI but some others with your own computer.

[Video: Moving files between VDI and your local machine](#)

5. Getting help

As mentioned, **the goal of the pre-assignment is to set up the computing environment ready for everyone before the first exercise** – be it in Aalto VDI or on your own computers. If you get stuck with the instructions and can't get something to work, we'll help you. We will host three timeslots during which we can set up one-to-one meetings with you to resolve issues.

It is expected that Aalto VDI should be easier to set up and get running than your own computers. However, the benefits of using your own computers are obvious and therefore we can provide assistance also in setting up the environment in your own devices.

Help session timeslots hosted in https://aalto.zoom.us/j/63612060640:

Wednesday, April 14th from 12 to 14

Thursday, April 15th from 15 to 17

Friday, April 16th from 13 to 15

To set up an individual meeting to resolve installation and start-up issues, please send an e-mail or a Teams message to Vili Virkki (vili.virkki@aalto.fi), also describing the problem shortly. We will organize the one-to-one calls depending on the number of cases and estimated time to resolve them. However, you can propose your preferred time of call within these timeslots.