**R SCRIPTS**

This document explains how to use the different R scripts to create individual datasets, questions and feedbacks for students’ tasks.

Below, we explain what each R script does, the required inputs for each script and (in some cases an extended explanation on) how to get the required inputs.

* In general, you can adapt the R scripts by setting your folders (both on W:drive and on local machine) to correspond to the ones used here. Then you only need to change the PersonID variable in the individual R files
  + The questions for each task should also be adapted accordingly

1. ***0\_source\_taak#.R (#*** *refers to the task number: 0\_source\_taak0.R for Task 0, 0\_source\_taak1.R for Task 1 etc.****)***

Contains the following functions:

1. **getDATA** : reads data from a folder containing data for each individual
2. **getSOL:** fits models and outputs solutions for every question in the respective task
3. **comp:** compares the answers from students with the solutions from **getSOL()**
4. **gradingTOOL:** provides a grade for each question. The grade is 1 if the answer by the student matches the correct solution, else the grade is 0.

1. ***1\_geneer individuele codes en datasets.R***

The first R script to be run. It creates random codes and datasets for each individual. To run this script, the following datasets are required:

1. ***User info data***

Contains the student names, usernames and columns related to feedbacks for the respective Gradebook item. To download this data;

* Go to the course page on Toledo -> Gradebook -> Click on Download Gradebook icon to the right of the page -> Select the instruction item to download e.g. TASK#-instructions -> Check the *Include feedback for the selected item option ->* Choose the excel format (csv) -> click on download
* Locate the downloaded file on the computer, rename it to ***olduser\_info\_TASK#.csv*** and save it in the **FILES** folder for the respective task#.

1. ***Group\_info data***

Contains the group information for the students. To download this data;

* Go to the course page on Toledo -> Groups -> Click on the three dots (**…**) on the relevant Group Set -> Click on Export -> Under Create, select Members only -> Click on Export File -> Click on the three dots (**…**) of the relevant Group Set again -> Click on Export -> Click on the Export tab -> Click on the topmost file to download
* Locate the downloaded file on the computer, rename it to ***group info\_TASK#.csv*** and save it in the **FILES** folder for the respective task#.

1. **Data file**

Read a data file if it is available. The data can also be simulated in which case this step is unnecessary.

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Copies of the individual datafiles generated are saved on both the **W:drive** (*W:\\TASK#\\1.DATA*) and on **OneDrive-KU Leuven** (*2.INDIVIDUAL\\1.DATA\\* folder of the working directory for *TASK#*).

1. ***2\_genereer\_test\_vragen\_en\_antwoorden.R***

The second R script to run. It randomly assigns questions and generates solutions for each individual’s questions. It is dependent on the **0\_source\_taak#.R** and **1\_genereer individuele codes en datasets.R** files.

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Copies of the individual questions generated are saved on both the **W:drive** (*W:\\TASK#\\2.QUESTIONS*) and on **OneDrive-KU Leuven** (*2.INDIVIDUAL\\2.QUESTIONS\\* folder of the working directory for *TASK#*). A file with solutions and questions each for all students is saved in the FILES folder of the respective task#..

1. ***3\_correct\_HI\_taak#.R***

To be run once students have accessed the questions and data and provided their responses. It creates the feedback files for each individual using the **gradingTOOL()** function from **0\_source\_taak#.R**. Ideally run last. It requires:

1. **Responses data**

Contains responses from students using the individual questions and datasets. To download the responses data;

* Go to the course page on Toledo -> Gradebook -> Under Markable Items, click on the three dots (**…**) on the relevant responses item (TASK#-Your responses) to the right of the page -> Select Download Results -> Choose the File Type/excel format (xls) -> Check *By question and participant* option under Format of Results -> click on Download
* Locate the downloaded file on the computer, rename it to ***responses\_test\_TAAK#.xlsx*** and save it in the **FILES** folder for the respective task#.

1. **Solutions file**

Created from the ***2\_genereer\_test\_vragen\_en\_antwoorden.R***

1. **User info with coding file**

From **1\_genereer individuele codes en datasets.R**

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Copies of the individual feedbacks generated are saved on both the **W:drive** (*W:\\TASK#\\3.FEEDBACK*) and on **OneDrive-KU Leuven** (*2.INDIVIDUAL\\3.FEEDBACK\\* folder of the working directory for *TASK#*). A file with student details, questions assigned, responses, solutions and grades for all students is saved in the FILES folder of the respective task# as *overallgrades\_all\_taak#.xlsx.*

1. ***4\_CHECKUPLOAD.R***

Provides the links to the data, questions and feedbacks for each student.

* This scripts requires the **olduser\_info\_TASK#.csv** file which has relevant feedback columns to be filled in with the questions/data/feedback links.
* After running this script, a file – **CHECKUPLOADFILE\_TASK#.csv** – is saved in the FILES folder of the respective task#. This file is uploaded on Toledo as follows:
  + Go to the course page on Toledo -> Gradebook -> Click on Upload Gradebook icon to the right of the page -> Select the file to be uploaded e.g. CHECKUPLOADFILE\_TASK#.csv -> click on Upload
* To be run twice:
  + First, to create links to the questions and data for each student both of which are available on the W:drive
  + Second, to create the feedback link for each student after the responses for the tasks have been provided.

**CREATING INSTRUCTIONS AND RESPONSE ITEMS ON TOLEDO**

Every task has two items on Toledo:

1. **TASK#-instructions**

Contains the links to the data, questions and feedback (after students have provided their responses) for each student. The links are provided as part of the Feedback for participants (both when data & questions are initially provided, and when the actual feedback containing the grades is provided in the second phase).

To create TASK#-instructions;

* Go to the course page on Toledo -> Gradebook -> Hold the curser pointer against one of the horizontal lines. A plus sign (**+**) shows up -> Click on the plus sign -> Click the *Add Item* option -> Provide the name, specify *Due date, Maximum points, Mark Category (instructions)* -> Click Save

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* When created via Gradebook, the downloaded file (to be renamed as ***olduser\_info\_TASK#.csv*** for R scripts as explained at the start of this document) will contain user information data and feedback columns to be populated with the data/questions/feedback links.
* Ensure the links/URLs do not have spaces

1. **TASK#-Your responses**

Provides a platform for which students can enter their responses to questions using data (both available in the links provided in TASK#-instructions).

To create TASK#-Your responses;

* Go to the course page on Toledo -> Content -> Under Organization Content, Click on the relevant section (PART #) -> Hold the curser pointer against one of the horizontal lines. A plus sign (**+**) shows up -> Click on the plus sign -> Click the *Create* option -> Click on *Test* under the Assessment section -> Provide the name of the test -> Click on the plus sign (**+**) under *Content and Settings* -> Click on *Add Calculated Numeric question* -> After writing the question text and specifying the points*,* Click Save
* More questions can be added after saving preceding questions by the same procedure:
  + Click on the plus sign (**+**) under *Content and Settings* -> Click on *Add Calculated Numeric question* -> After writing the question text and specifying the points*,* Click Save
* Here, you can specify the number of attempts allowed, Due Date and Marking category

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* When created via Content, the task will contain the C*ontent and Settings* tab below which responses to the questions can be collected from students. Students’ responses can then be downloaded as described in (**a.** **Responses data**).