v2022-03

Operations Manual

Innsbruck econlab

Lab specifications

The Innsbruck econlab is a computer laboratory with 24 desktop workstations with a screen resolution of 1920 × 1080px. The lab is equipped with air conditioning, a dual-screen server, and a projector. The lab is pre-configured to support experiments using web browsers or up to four z-Tree servers operating simultaneously.

If you notice any hard- and/or software malfunctions or if you have any feature requests regarding hard- and/or software, please contact the directors of lab operations via econlab@uibk.ac.at.

Conducting experiments in the econlab

To set up an experiment, log-in to the server using the user account "Experimenter" (no password required). Note, that you are not authorized to modify the setup of any computer in the lab – neither of the workstations nor of the server – without prior approval by the directors of lab operations. This includes changing system settings, installing new software, saving or modifying files outside your personal folder, etc.

Please create a personal folder "LastName FirstName" in `C:\_Experimenters\` (e.g., `C:\_Experimenters\MustermannMax\`) and copy all files related to your experiment into this folder. A shortcut to the "Experimenters" directory can be found on the server's desktop.

Note that any files outside your personal folder will be deleted without prior notice at regular intervals. Your personal folder, however, will not be modified or deleted by the lab management.

If you wish to use the projector, please ask for the remote control from the ZID (the university IT service next to the laboratory). By default, the projector shows the contents of the server's secondary (left) screen. If needed, you can connect a laptop using the VGA cable and switch between the server and laptop screen using selector provided at the experimenter desk.

Using Veyon (lab management software)

The Innsbruck econlab is equipped with the lab-management software Veyon. It allows for controlling all client PCs via the server, without having to physically interact with the client PCs. Specifically, Veyon allows you to remotely boot (and automatically log-in) all clients, start-up applications, switch off all clients, etc.

To start Veyon, double-click the "Veyon Master" icon on the server's desktop. You will then see the main window of Veyon which displays icons for all 24 clients in the laboratory. If no client icons are displayed at start-up, please make sure that the check boxes for the room "EconLab" (and all client computers) in the "Computer rooms" pane on the left are ticked.

Power on the client workstations by clicking the "Power on" button in the menu bar. Once the PCs have been booted, they are automatically logged-in to the user account "EconLab Client" (without password) and connected to the server.

To trace what a particular participant is doing, simply double-click the respective client's icon in Veyon's main window. Alternatively, select the particular client and click the "Remote view" button in the menu bar. A new window will open, where you can observe the subject's screen in real time. If you click the *"Remote control"* button in the symbol bar, you can handle the respective client PC remotely.

In addition to remote view and remote control capabilities, Veyon offers several neat features: (i) Fullscreen demo / Window demo: the server's screen will be mirrored on client PCs for demonstration purposes; (ii) Lock: client PCs can be locked (i.e., input devices are locked and screens are blackened); (iii) Text message: text messages can be distributed to client PCs (displayed in pop-up windows); (iv) Run program: `cmd` commands can be called remotely via "Custom Program"; (v) Open website: any webpage can be opened via the standard browser (Chrome); (iv) Screenshot: the tool allows to save screenshots of client PCs as `*.jpg`-files on the servers hard drive (please note that this feature is particularly handy if you notice any bugs; the shortcut "Veyon Screenshots" on the server's desktop directly points you to the folder containing the image files).

Note: Veyon's user interface is largely self-explanatory. Hovering over the buttons in the menu bar will show tooltips providing clear-cut information. Note however, that some of the functions – in particular, power on/down, reboot, logout, text message, run program, and open website – in the menu bar refer to *all* clients, regardless whether or not they are selected in the main window. If a particular function should only be run on certain workstations, select the respective clients and call the function via the right-click context menu instead.

At the end of the session, shut down all clients by clicking the "Power down" button in the menu bar. Close all windows on the server and shut it down manually.

Using z-Tree

The currently supported z-Tree versions are 3.6.7, 4.1.6., and 4.1.11. The different z-Tree releases are organized in folders on the server's desktop, labeled with the corresponding version number.

To set up an experiment using z-Tree, we suggest copying all experiment-related files to your personal folder at `C:\_Experimenters\` on the server. Copy all files which need to be accessible by z-Leaf (e.g., bitmaps) to the local z-Tree folders on the client PCs under `C:\_z-Tree\Release\#.#.#`. To make copying to these local folders easier, the directory `C:\_Clients` contains shortcuts to the local z-Tree folder of each client. This allows you to copy the files from the server directly onto the client PCs without having to physically access them. Note that client PCs also have access to the content on the network drive `Z:\_Shared\`.

Start z-Tree on the server by double-clicking the "z-Tree_#.#.#_%" shortcut on the server's desktop, where "#.#.#" denotes the z-Tree release (e.g. 4.1.11) and "%" indicates the channel number. Note that all z-Tree output files are saved into subfolders corresponding to z-Tree's channel in the directory `C:\_z-Tree\Data\`. Thus, for multi-server experiments start up to four servers using "z-Tree_#.#.#_1" through "z-Tree_#.#.#_4" on the desktop; the corresponding output files are then stored in the folders "Channel1" through "Channel4".

Start z-Leaf (in the correct channel) for your experiment on each client PC; by default this is `z-Leaf_#.#.#_1`, where the `#.#.#` stands for the z-Tree version. Make sure you have started the corresponding z-Tree instance on the server PC beforehand. You can start z-Leaves manually on the client PCs or use Veyon by clicking "z-Leaf_#.#.#_%" via "Run program" in Veyon's menu bar or the right-click context menu. Make sure to start the correct z-Leafs on the particular client PCs, e.g., if you want client AR1-NB17 to connect to z-Tree via channel 3, start `z-Leaf_#.#.#_3`, etc. The custom program "_ResetAll", available via "Run Program" in Veyon, forces all z-Leaf instances to shut down (in case you need to restart them).

All output files generated by z-Tree (`.xls`, `.adr`, `.sjb`, etc.) will be stored in the folder `C:\z-Tree\Data\Channel%`, where `"%"` denotes the particular channel number, which are linked via the shortcut "z-Tree Data" on the server's desktop.

Move the contents of the folder(s) "Channel1" (through "Channel4") to your personal folder in `C:\Experimenters\` on the server. Please make sure that the results folder in `C:\zTree\Data\` are empty when leaving the lab — the next experimenter will be grateful. The batch file "z-Tree Reset" on the server's desktop deletes all files in `C:\zTree\Data\`; thus, use it carefully.

Using oTree

Before conducting your first experimental session using oTree, we recommend going through oTree's documentation on server setup (windows server) in detail. Note that the server in the econlab is already configured just as described in the documentation (incl. Redis and a PostgreSQL database).

To run oTree via the local server environment and to effectively store your data, your oTree project needs to be linked to the PostgreSQL database installed on the server. Once the PostgreSQL database location is defined in `settings.py`, oTree will automatically use it instead of the default SQLite database. To do so, simply set `DATABASE_URL = 'postgres://postgres@localhost/django_db'` in your project's `settings.py` file. In addition, you will typically want to set the variable `ADMIN_PASSWORD` to some arbitrary string, `DEBUG = False`, and `AUTH_LEVEL = STUDY`.

On the server's desktop, you will find shortcuts to all relevant software applications (PyCharm, PowerShell, PoEdit, and pgAdmin) and directories for conducting local server experiments in the laboratory. The shortcut "oTree Deploys" will point you to `C:\_oTree\`, the directory recommended to copy your personal oTree project to. Access Pycharm's terminal or Windows' PowerShell to use common command line prompts just as in case of local development.

Before launching your experiment, ensure that the most recent (or a dedicated) version of oTree is installed using `pip3 install -U otree [==#.#.#]`. Further, make sure that all packages imported in your apps but not included in oTree (e.g. numpy, pandas, etc.) are installed in the required versions on the server.

Launch pgAdmin and sequentially click on *Servers (1)*, *PostgreSQL 9.6*, *Databases (2)*, and *django_db* in the "Browser" pane on the left hand side of pgAdmin's main window. None of these items should eventually be marked with a red "x". Remember to initiate the database by calling `otree resetdb` via the command line before running the server.

To run the server, call `otree runprodserver` in your terminal. oTree's admin interface can be accessed via the server's IP address, followed by the port 8000, i.e. `192.168.137.1:8000`, in any web browser. The program "oTree (Localhost)", predefined in Veyon, allows accessing oTree admin interface on client workstations.

To connect clients using single-use links, we strongly recommend using oTree's "Rooms" feature. For doing so, create a room named "EconLab" in your project's `settings.py`. Create a session via your room in oTree's admin interface. Then, in Veyon, click on "oTree (Room: EconLab)" to launch your experiment on all client PCs (and enter subjects' identifiers if you are linking a participant label file to your room) to access the experiment in Chrome's kiosk mode.

- If you want to access an experiment hosted on a webserver such as Heroku or AWS, we recommend opening the particular URL in Chrome's kiosk mode via Veyon's custom program functionality. To do so, open the "Custom program" function via "Run program" and enter `"C:\Program Files(x86)\Google\Chrome\Application\chrome.exe" –kiosk –incognito http://url.com`.
- All data will be stored in the PostgreSQL database and can be accessed the very same way as when running a development server. That is, access the "Data" tab in oTree's admin interface to download your data in `.csv` or `.xlsx` format.
- After your experimental session, please make sure to reset the database and delete the folders you created in the "oTree Deploys" directory — the next experimenter will be grateful.