

A

SimLab for testing labs

SimLab is a testing tool used to simulate a user performing a lab. It utilizes the `xdotool` utility to generate keyboard input and window selections. The SimLab tool is driven by a sequence of directives stored in a file at this location:

```
labtainer/simlab/<labname>/simthis.txt
```

The `simlab` directory is at the same level as `$LABTAINER_DIR`, i.e. at `$LABTAINER_DIR/./simlab`. Note that `simlab` files are not in the github repository. These files essentially contain lab solutions, and thus should not be openly published. files essentially contain lab solutions, and thus should not be openly published. ²⁵

With SimLab, you can fully automate the performance of a lab, including the use of GUIs. This facilitates regression testing, and the initial development of labs – particularly the debugging of automated assessment.

Full automation of regression testing is achieved using the `smoketest.py` utility described below in [A.5](#)

A.1 Preparations Before Running SimLab

- Ensure that you have 'xdotool' install. Run this to install if you haven't :
`sudo apt-get install xdotool`
- Ensure your system's `$PATH` includes `$LABTAINERS_DIR/testsets/bin`
- Ensure the saved email used for each lab is 'frank@beans.com'. You can do this by modifying `~/.local/share/labtainers/email.txt` with only 'frank@beans.com' at the top.

A.2 Running SimLab

This is all run from the `'../scripts/labtainer-student'` directory.

1. Start targeted lab with the redo flag, 'r'.
2. Run `SimLab.py` on targeted lab.
3. Do not click or type anything on the computer. This will disrupt the simulation.
4. The process ends when the user prompt comes back. If the simulation hangs up, 'ctrl + C' and run `stoplab`.

A.3 SimLab Directives

Directives within a `simthis.txt` file name windows to select, (i.e., gain focus), and keystrokes to generate as described in the list below. The SimLab utility includes limited synchronization features to pause the input stream. These currently include a directive to wait until some named process has completed execution; and a directive to wait until network connections with a given host have terminated.

The SimLab directives are as follows:

²⁵If you require `simlab` files for existing labs, contact me and try to convince me you actually need them (mfthomps@nps.edu).