Lesim-mode: Edit Learning Simulator scripts in Emacs

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Lesim-mode is an Emacs major mode to write and run Learning Simulator scripts. To learn more about the Learning Simulator, see this short article and the online documentation.

Lesim-mode helps to ensure that a script is correct by highlighting common errors, like misspelled keywords and stimulus elements.[1]

You can run Learning Simulator scripts directly from lesim-mode buffers. Errors are reported in the minibuffer and highlighted in the script buffer.

For integration with org-mode, see ob-lesim mode.

1 Installing

Install from MELPA, then add `(require 'lesim-mode)` to your Emacs init file (e.g., `.emacs.d/init.el`).

2 Using

Syntax highlighting is enabled automatically.

`C-c C-c` runs the script in the Learning Simulator, highlighting any error.

Even without running a script, some common errors are highlighted (not 100% accurate).

Hovering on an error with the mouse pops up a description. `C-c C-n` moves to the next error, displaying a description in the minibuffer.

`TAB` and `Shift-TAB` in move between fields in phase blocks, and by word elsewhere. They also align phase blocks at | signs and parameter blocks at = signs.

`C-c C-t` inserts a template script (see 3).

`C-c C-l` re-highlights the whole script, in case something looks funny.

3 Configuration

Using `M-x customize-group lesim` you can configure:

---

[1]However, lesim-mode does not understand the full Learning Simulator syntax. That is a job for Superman, that is, Learning Simulator chief software architect Markus Jonsson.

```
# title:   A test script for lesim-mode
# author:  Stefano Ghirlanda
# date:    2023-05-03
# summary: Just to show off. Contains errors and won't run.

n_subjects        = 1 # end of line comment
mechanism         = sr
behaviors         = response, no_response
stimulus_elements = background, stimulus, reward
start_v           = 0.1
start_w           = 0.1
alpha_v           = 0.1
u                 = reward:10, default:0
beta              = 1x # invalid value


###
Highlighted typos in @phase blocks:
###
@phase training stop: stimulus==500
START_TRIAL  stimulus,background | reponse: REWARD(.5) | NO_REWARD
REWARD       rewar       | START_TRIAL
NO_REWARD    background | START_TRIA

# these are wrong:
@run xtraining
@run my_run xtraining

# these are correct:
@run training
@run my_run training

@figure v(stimulus->response)
@subplot 111 {'xlabel':'exposures to stimulus', 'ylabel':'v-value'}
@vplot stimulus->response


-:---   test-err.les   All of 960  L14   Git:main  (Les)
Error on line 14: Expected 'x->y:value' or 'default:value' in 'beta', got '1x'.
```

Figure 1: Sample screenshot

- The command used to run the Learning Simulator (default: `lesim.py`).

- The key bindings mentioned in the previous section.

- Whether to insert a template script when opening an empty `.les` file (default: `nil`).

4   Bugs and planned features

Please use issues on Github for bug reports and feature requests.