How to Vim - An Algebraic Approach to Understanding Modal Text Editors

Graduate

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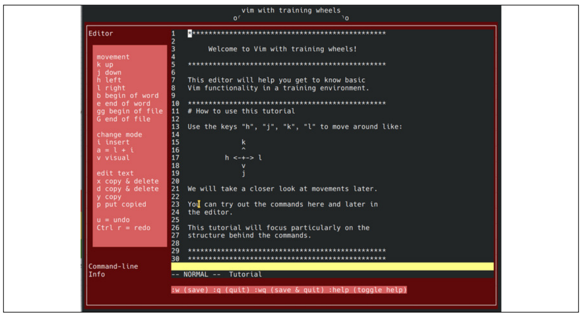
Initial Situation: Learning to use a modal editor is counterintuitive for today's GUI-spoiled computer users. This makes the entry into the world of modal editors rather hard. There are only few tutorials and learning by doing can be especially frustrating, as every command has to be looked up and it needs time to get used to the workflows. After a dissuasive first experience many users turn back to their more familiar editors. While experienced users have internalized the structure of combining commands, there is no simple guide for beginners and the structure needs to be discovered by oneself. There is need for a user-friendly, encouraging tutorial.

Approach: The idea was to not only implement a tutorial but a whole beginner-friendly editor. The tutorial should focus especially on the structure of combining commands, to understand and not just memorize. The usage and functionality of vim keybindings were analyzed to be able to imitate them. Since Vim's commands can be combined like building blocks, they are well suited for using an algebraic approach. Algebra-Driven-Design and Haskell are used to implement the editor, by defining an algebra for editing text and then mapping keys to combinations of the algebra functions. The editor should use more visual feedback and help texts to remember commands relevant to the current mode.

Result: The editor "Vim with training wheels" lives up to it's name, it supports the user with additional feedback of what is happening. The current mode is made obvious using different colors. This helps a user to get accustomed and remember to change into the required mode for a task. Vim on training wheels supports a basic set of functions to move the cursor, edit text, undo and redo an edit. The tutorial is a file to read and navigate through directly using vim with training wheels. The tutorial focuses on explaining the modes and combination of commands to help understand the structure rather than only what different commands exist.

Vim with training wheels in normal mode,
keyboard input is directed to the command-line (yellow)
Own presentment



```
vim with training wheels
o´                     `o

Editor

movement
k up
j down
h left
l right
b begin of word
e end of word
gg begin of file
G end of file

change mode
i insert
a = l + i
v visual

edit text
x copy & delete
d copy & delete
y copy
p put copied

u = undo
Ctrl r = redo

Command-line
Info
```

```
************************************************

     Welcome to Vim with training wheels!

************************************************

This editor will help you get to know basic
Vim functionality in a training environment.

************************************************
# How to use this tutorial

Use the keys "h", "j", "k", "l" to move around like:

             k
             ^
         h <-+-> l
             v
             j

We will take a closer look at movements later.

You can try out the commands here and later in
the editor.

This tutorial will focus particularly on the
structure behind the commands.

************************************************
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-- NORMAL --  Tutorial

:w (save) :q (quit) :wq (save & quit) :help (toggle help)
```
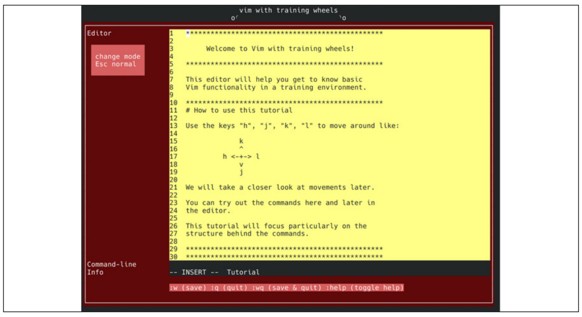

Vim with training wheels in insert mode,
keyboard input is directed to the editor (yellow)
Own presentment



```
vim with training wheels
o´                     `o

Editor

change mode
Esc normal

Command-line
Info
```

```
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         h <-+-> l
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-- INSERT --  Tutorial

:w (save) :q (quit) :wq (save & quit) :help (toggle help)
```
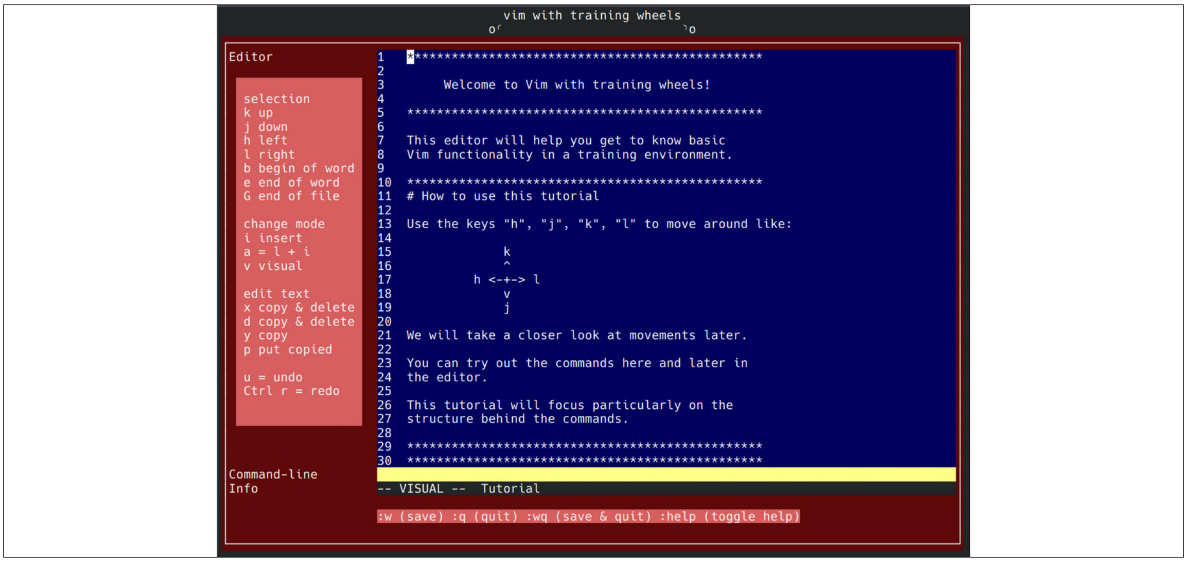

Vim with training wheels in visual mode,
keyboard input is directed to the command-line (yellow)
Own presentment



```
vim with training wheels
o´                     `o

Editor

selection
k up
j down
h left
l right
b begin of word
e end of word
G end of file

change mode
i insert
a = l + i
v visual

edit text
x copy & delete
d copy & delete
y copy
p put copied

u = undo
Ctrl r = redo

Command-line
Info
```

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structure behind the commands.

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-- VISUAL --  Tutorial

:w (save) :q (quit) :wq (save & quit) :help (toggle help)
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