



# Livereload

The secret to preserving  
your F5 key

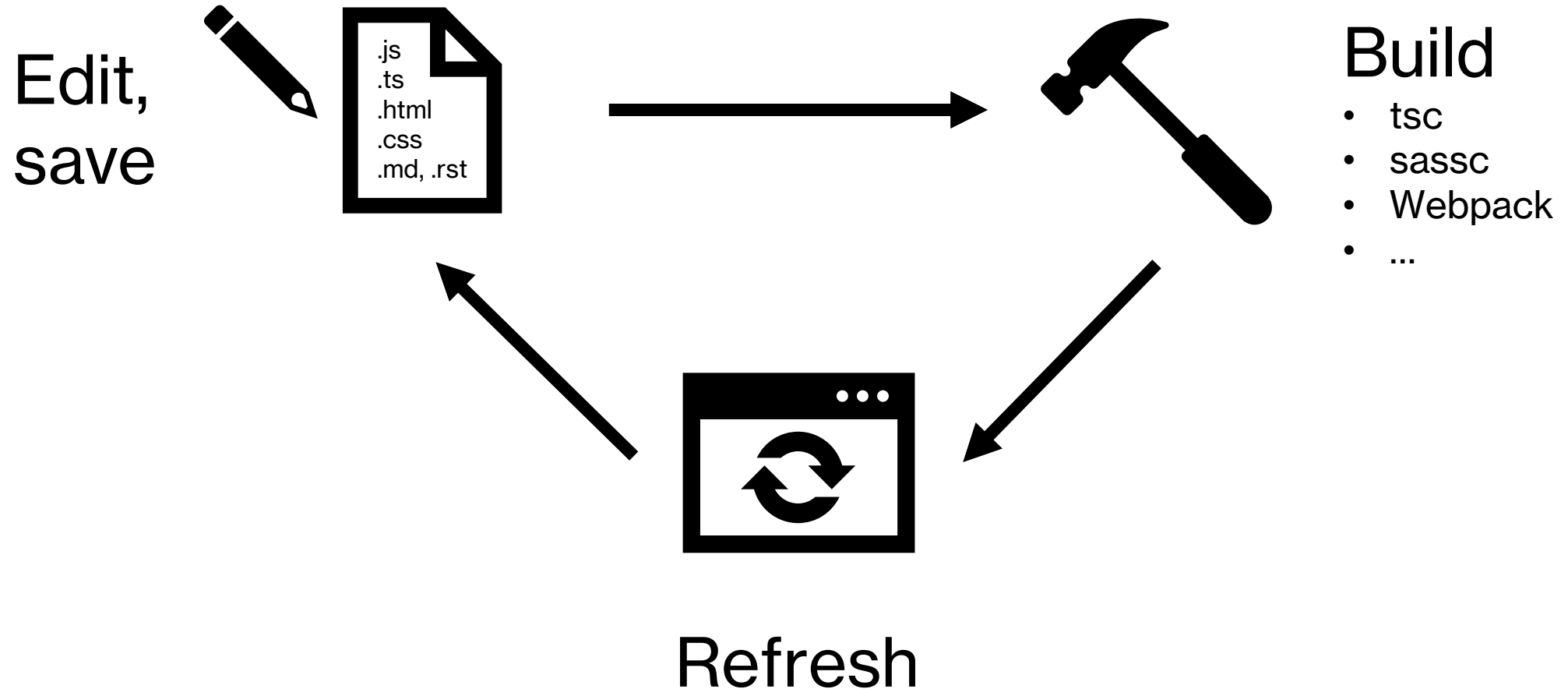
**Martin Cejp**

CERN, SY-EPC-CCS

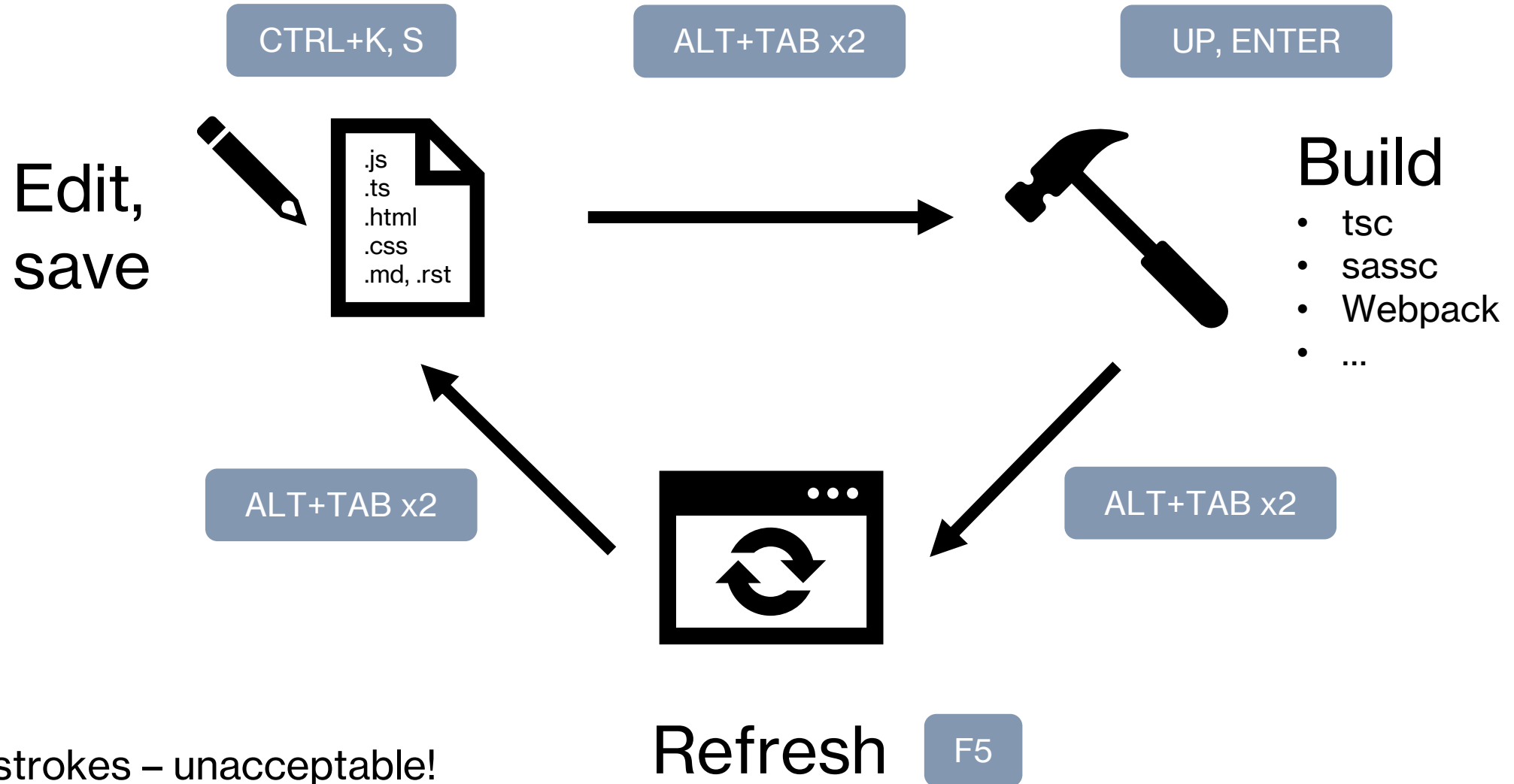
CERN IT Lightning Talks #23

11 November 2022

# A typical web development workflow

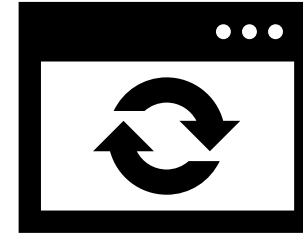


# A typical web development workflow



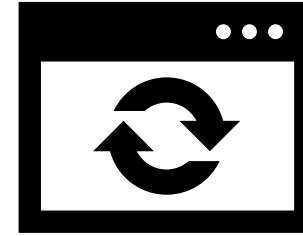
~11 keystrokes – unacceptable!

# Livereload ecosystem



- Something watching the files
- Something in the browser

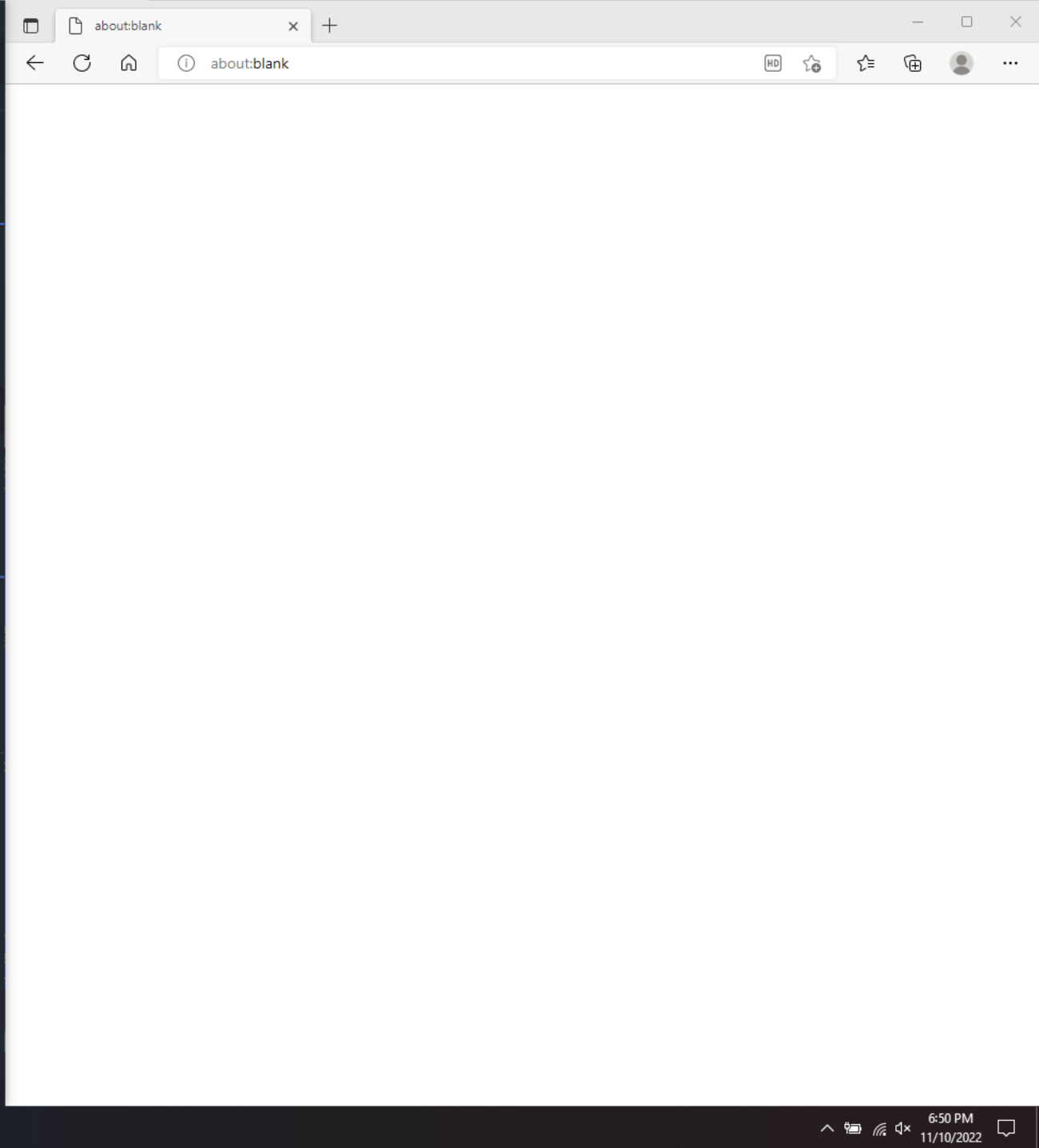
# Livereload ecosystem



- Something watching the files
  - original Windows/Mac app
  - **python-livereload**
  - grunt plugin
  - gulp plugin
  - Sublime Text plugin
  - node-livereload
- Something in the browser
  - browser extension
  - **<script> tag in page head**

← TODAY →

**DEMO #1**



index.md

```
## Instructions
One should exclusively use Matplotlib for publication-grade plotting.
Please submit your manuscripts, in LaTeX and PDF format, by Monday **19
December, 06:00** Geneva time.
The scientific committee will review your submission within 900 days.
```

demo.py

```
from liveload import Server, shell
server = Server()
server.watch("index.md", shell(
    "pandoc index.md -o index.html --self-contained"))
server.serve()
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
mce@carbon:~/Lightning_Liveload/DemoMd$ python3 demo.py
[I 221110 18:52:11 server:335] Serving on http://127.0.0.1:5500
[I 221110 18:52:11 handlers:62] Start watching changes
[I 221110 18:52:11 handlers:64] Start detecting changes
[I 221110 18:52:13 handlers:135] Browser Connected: http://127.0.0.1:5500/
```

WSL: Ubuntu master\* 0 0 0 Ln 9, Col 1 Spaces: 4 UTF-8 LF Python

## SOURCE FILE

## LIVERELOAD SCRIPT

Server started

index

127.0.0.1:5500

# Instructions

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index.md

```
## Instructions
1  ## Instructions
2
3  One should exclusively use Matplotlib for publication-grade plotting.
4
5  Please submit your manuscripts, in LaTeX and PDF format, by Monday **19
6  December, 06:00** Geneva time.
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demo.py

```
1  from livereload import Server, shell
2
3  server = Server()
4
5  server.watch("index.md", shell(
6      "pandoc index.md -o index.html --self-contained"))
7
8  server.serve()
9
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
python3
mce@carbon:~/Lightning_Livereload/DemoMd$ python3 demo.py
[I 221110 18:52:11 server:335] Serving on http://127.0.0.1:5500
[I 221110 18:52:11 handlers:62] Start watching changes
[I 221110 18:52:11 handlers:64] Start detecting changes
[I 221110 18:52:13 handlers:135] Browser Connected: http://127.0.0.1:5500/
```

index

127.0.0.1:5500

# Instructions

Obvious mistake – to be fixed

One should exclusively use Matplotlib for publication-grade plotting.

Please submit your manuscripts, in LaTeX and PDF format, by Monday **19 December, 06:00** Geneva time.

The scientific committee will review your submission within 900 days.

6:52 PM 11/10/2022

index.md

```
## Instructions
1  ## Instructions
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demo.py

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1  from livereload import Server, shell
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3  server = Server()
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5  server.watch("index.md", shell(
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8  server.serve()
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

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python3 demo.py
[I 221110 18:52:11 server:335] Serving on http://127.0.0.1:5500
[I 221110 18:52:11 handlers:62] Start watching changes
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[I 221110 18:52:13 handlers:135] Browser Connected: http://127.0.0.1:5500/
```

index

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# Instructions

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index.md M X

index.md > ## Instructions

```
1  ## Instructions
2
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```

demo.py X

demo.py

```
1  from livereload import Server, shell
2
3  server = Server()
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6      | | | | "pandoc index.md -o index.html --self-contained"))
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

python3

```
mce@carbon:~/Lightning_Livereload/DemoMd$ python3 demo.py
[I 221110 18:52:11 server:335] Serving on http://127.0.0.1:5500
[I 221110 18:52:11 handlers:62] Start watching changes
[I 221110 18:52:11 handlers:64] Start detecting changes
[I 221110 18:52:13 handlers:135] Browser Connected: http://127.0.0.1:5500/
[I 221110 18:53:04 watcher:110] Running task: run_shell (delay: None)
[E 221110 18:53:04 server:94] b'[WARNING] This document format requires a nonempty <title> el
ement.\n Defaulting to \'index\' as the title.\n To specify a title, use \'title\' in metad
ata or --metadata title="..."'
[I 221110 18:53:04 handlers:92] Reload 1 waiters: index.md
[I 221110 18:53:04 handlers:135] Browser Connected: http://127.0.0.1:5500/
```

WSL: Ubuntu master\* 0 0 0 Ln 3, Col 32 Spaces: 4 UTF-8 LF Markdown

## SOURCE FILE

Save changes

## LIVERELOAD SCRIPT

index

127.0.0.1:5500

# Instructions

Webpage refreshes immediately

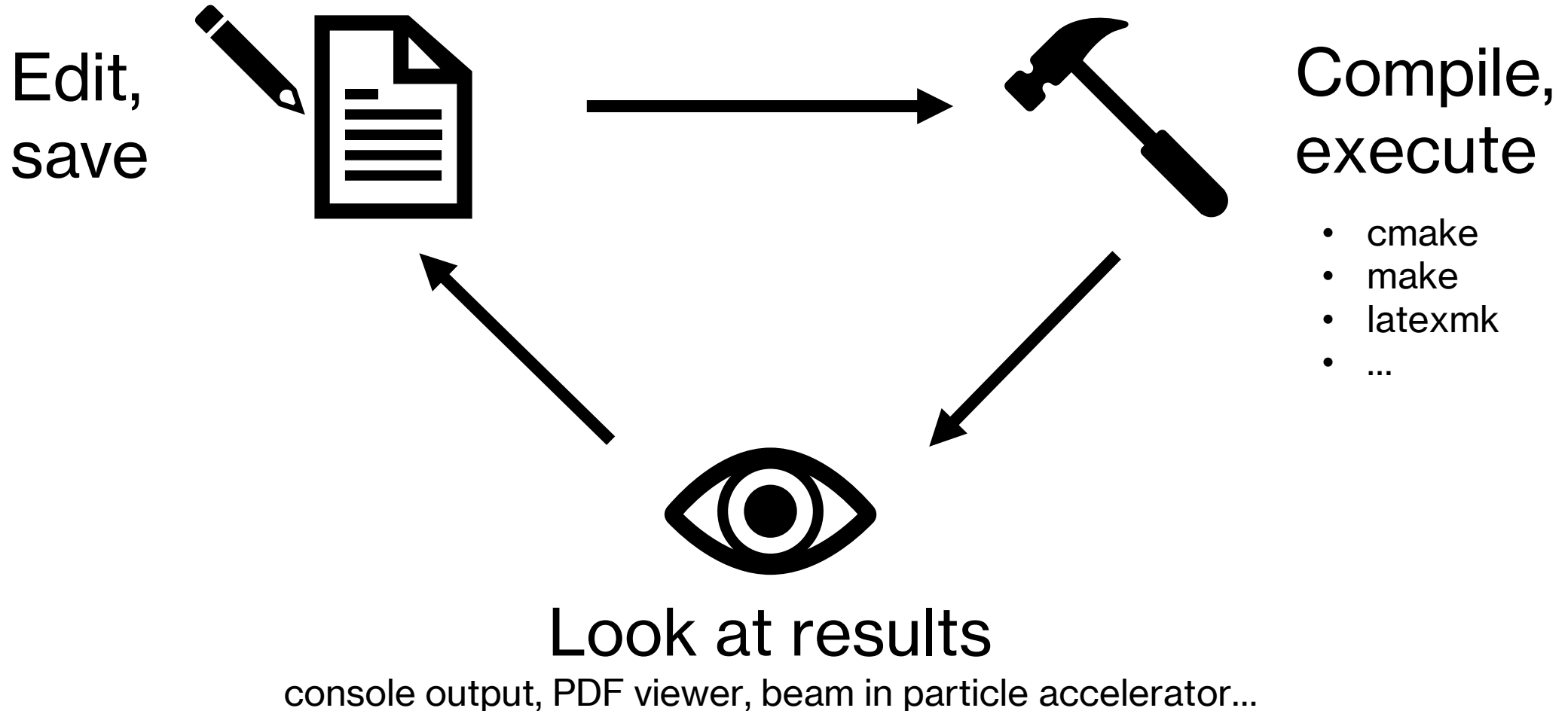
One should exclusively use ROOT for publication-grade plotting.

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6:53 PM 11/10/2022

# What about non-web workflows?



# DEMO #2

FileEditSelectionViewGoRunTerminalHelpmain.cpp - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt ×

main.cpp M ×

Input

C++ program to transform to uppercase

input.txt

main.cpp

1 I'd just like to interject for a moment.

2

3 What you're referring to as Linux, is in fact, GNU/Linux,

4 or as I've recently taken to calling it, GNU plus Linux.

5 Linux is not an operating system unto itself, but rather

6 another free component of a fully functioning GNU system

7 made useful by the GNU corelibs, shell utilities and vital

8 system components comprising a full OS as defined by POSIX.

9

10

1 #include <algorithm>

2 #include <cctype>

3 #include <iostream>

4

5 std::string to\_upper(std::string str) {

6 std::transform(str.begin(), str.end(), str.begin(), ::tolower);

7

8 return str;

9 }

10

11 int main() {

12 std::string line;

13

14 while (std::getline(std::cin, line)) {

15 std::cout << to\_upper(line) << std::endl;

16 }

17 }

18

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

mce@carbon:~/Lightning\_Liveload/DemoC++\$

bash + v [ ] [ ] ^ X

WSL: Ubuntu master\*+ 0 0 0 Ln 18, Col 1 Spaces: 4 UTF-8 LF C++

File Edit Selection View Go Run Terminal Help

main.cpp - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt

Input

main.cpp M

C++ program to transform to uppercase

input.txt

main.cpp

1 I'd just like to interject for a moment.

2

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1 #include <algorithm>

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4

5 std::string to\_upper(std::string str) {

6     std::transform(str.begin(), str.end(), str.begin(), ::tolower);

7

8     return str;

9 }

10

11 int main() {

12     std::string line;

13

14     while (std::getline(std::cin, line)) {

15         std::cout << to\_upper(line) << std::endl;

16     }

17 }

18

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

mce@carbon:~/Lightning\_LivereLoad/DemoC++\$ ls main.cpp input.txt | entr sh -c "g++ -o main main.cpp && ./main <input.txt"

i'd just like to interject for a moment.

what you're referring to as linux, is in fact, gnu/linux,

or as i've recently taken to calling it, gnu plus linux.

linux is not an operating system unto itself, but rather

another free component of a fully functioning gnu system

made useful by the gnu corelibs, shell utilities and vital

system components comprising a full os as defined by posix.

Output almost correct – but lowercase instead of uppercase

WSL: Ubuntu

master\*+

0 0 0

Ln 6, Col 66 Spaces: 4 UTF-8 LF C++

File Edit Selection View Go Run Terminal Help • main.cpp - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt × **Input**

input.txt

```
1 I'd just like to interject for a moment.
2
3 What you're referring to as linux, is in fact, GNU/Linux,
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8 system components comprising a full OS as defined by POSIX.
9
10
```

main.cpp M • **C++ program to transform to uppercase**

```
1 #include <algorithm>
2 #include <cctype>
3 #include <iostream>
4
5 std::string to_upper(std::string str) {
6     std::transform(str.begin(), str.end(), str.begin(), ::toupper);
7
8     return str;
9 }
10
11 int main() {
12     std::string line;
13
14     while (std::getline(std::cin, line)) {
15         std::cout << to_upper(line) << std::endl;
16     }
17 }
18
```

**Fix obvious bug**

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
mce@carbon:~/Lightning_LivereLoad/DemoC++$ ls main.cpp input.txt | entr sh -c "g++ -o main main.cpp && ./main <input.txt"
i'd just like to interject for a moment.

what you're referring to as linux, is in fact, gnu/linux,
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system components comprising a full os as defined by posix.
```

**Output almost correct – but lowercase instead of uppercase**

WSL: Ubuntu master\*+ 0 0 0 Ln 6, Col 66 Spaces: 4 UTF-8 LF C++

File Edit Selection View Go Run Terminal Help main.cpp - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt × **Input** ... main.cpp M × C++ program to transform to uppercase

input.txt

```
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main.cpp

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11 int main() {
12     std::string line;
13
14     while (std::getline(std::cin, line)) {
15         std::cout << to_upper(line) << std::endl;
16     }
17 }
18
```

Save changes

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

made useful by the gnu corelibs, shell utilities and vital system components comprising a full os as defined by posix.

I'D JUST LIKE TO INTERJECT FOR A MOMENT.

WHAT YOU'RE REFERRING TO AS LINUX, IS IN FACT, GNU/LINUX, OR AS I'VE RECENTLY TAKEN TO CALLING IT, GNU PLUS LINUX. LINUX IS NOT AN OPERATING SYSTEM UNTO ITSELF, BUT RATHER ANOTHER FREE COMPONENT OF A FULLY FUNCTIONING GNU SYSTEM MADE USEFUL BY THE GNU CORELIBS, SHELL UTILITIES AND VITAL SYSTEM COMPONENTS COMPRISING A FULL OS AS DEFINED BY POSIX.

Result visible immediately

WSL: Ubuntu master\*+ 0 0 0 Ln 6, Col 66 Spaces: 4 UTF-8 LF C++

File Edit Selection View Go Run Terminal Help

• input.txt - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt

Input

main.cpp

1 I'd just like to interject for a moment?

2

3 What you're referring to as Linux, is in fact, GNU/Linux,

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9

10

C++ program to transform  
to uppercase

1 #include <algorithm>

2 #include <cctype>

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4

5 std::string to\_upper(std::string str) {

6     std::transform(str.begin(), str.end(), str.begin(), ::toupper);

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8     return str;

9 }

10

11 int main() {

12     std::string line;

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14     while (std::getline(std::cin, line)) {

15         std::cout << to\_upper(line) << std::endl;

16     }

17 }

18

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

made useful by the gnu corelibs, shell utilities and vital  
system components comprising a full os as defined by posix.

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MADE USEFUL BY THE GNU CORELIBS, SHELL UTILITIES AND VITAL  
SYSTEM COMPONENTS COMPRISING A FULL OS AS DEFINED BY POSIX.

WSL: Ubuntu

master\*+

0 0 0

Ln 1, Col 41 Spaces: 4 UTF-8 LF Plain Text

File Edit Selection View Go Run Terminal Help input.txt - DemoC++ [WSL: Ubuntu] - Visual Studio Code

input.txt M × **Input**

input.txt

```
1 I'd just like to interject for a moment?
2
3 What you're referring to as Linux, is in fact, GNU/Linux,
4 or as I've recently taken to calling it, GNU plus Linux.
5 Linux is not an operating system unto itself, but rather
6 another free component of a fully functioning GNU system
7 made useful by the GNU corelibs, shell utilities and vital
8 system components comprising a full OS as defined by POSIX.
9
10
```

Input file also being watched for changes

main.cpp M × **C++ program to transform to uppercase**

main.cpp

```
1 #include <algorithm>
2 #include <cctype>
3 #include <iostream>
4
5 std::string to_upper(std::string str) {
6     std::transform(str.begin(), str.end(), str.begin(), ::toupper);
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8     return str;
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11 int main() {
12     std::string line;
13
14     while (std::getline(std::cin, line)) {
15         std::cout << to_upper(line) << std::endl;
16     }
17 }
18
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL**

MADE USEFUL BY THE GNU CORELIBS, SHELL UTILITIES AND VITAL SYSTEM COMPONENTS COMPRISING A FULL OS AS DEFINED BY POSIX.

I'D JUST LIKE TO INTERJECT FOR A MOMENT?

WHAT YOU'RE REFERRING TO AS LINUX, IS IN FACT, GNU/LINUX, OR AS I'VE RECENTLY TAKEN TO CALLING IT, GNU PLUS LINUX. LINUX IS NOT AN OPERATING SYSTEM UNTO ITSELF, BUT RATHER ANOTHER FREE COMPONENT OF A FULLY FUNCTIONING GNU SYSTEM MADE USEFUL BY THE GNU CORELIBS, SHELL UTILITIES AND VITAL SYSTEM COMPONENTS COMPRISING A FULL OS AS DEFINED BY POSIX.

Result visible immediately

WSL: Ubuntu master\*+ 0 0 0 Ln 1, Col 41 Spaces: 4 UTF-8 LF Plain Text

# FAQ + References

- Q: Doesn't Webpack, vue-cli, \_\_\_\_\_ already do this out of the box?
- A: Yes, and probably better (google: "Live Module Reload") – but not everyone is using those tools.
- <https://rtpg.co/2021/02/15/livereload.html>  
– main inspiration for this talk
- <https://github.com/livereload/livereload-js>
- <https://github.com/lepture/python-livereload>
- <https://anarc.at/blog/2019-11-20-file-monitoring-tools/>