Secure, performant websites with Python static site generators

Leon Stafford

Leon Stafford

Does:

- Open source, low resource computing, old hardware
- Founder, developer, support engineer @ wp2static.com

Doesn't:

- Microsoft, bloated software, shiny hardware

Uses:

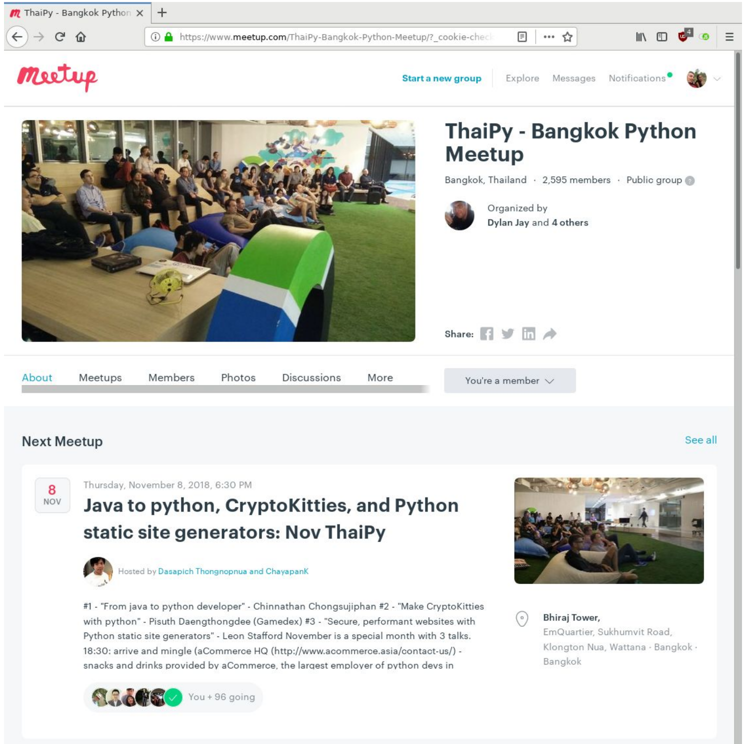
- OpenBSD, Vim, tmux, git
- bash, PHP, Ruby, Python; tries to learn Haskell every few years

What we'll be covering

- static websites - wtf/why
- Pythonic options
- Other pathways to static
- Take a look at Lektor

What is a static site?

static



ThaiPy - Bangkok Python Meetup

Bangkok, Thailand · 2,595 members · Public group

Organized by
Dylan Jay and 4 others

Next Meetup

8 NOV

Thursday, November 8, 2018, 6:30 PM

Java to python, CryptoKitties, and Python static site generators: Nov ThaiPy

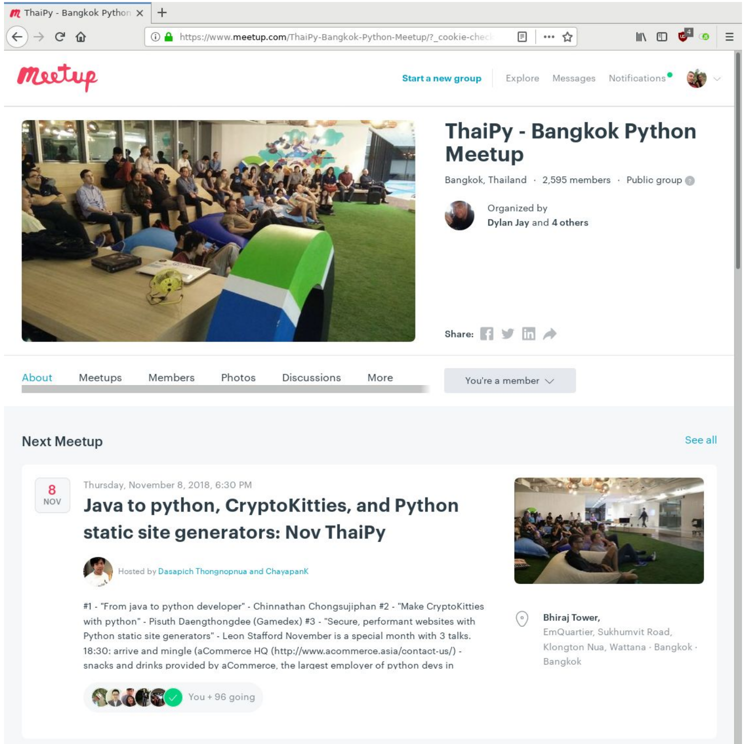
Hosted by Dasapich Thongnopnua and ChayapanK

#1 - "From java to python developer" - Chinnathan Chongsujiphan #2 - "Make CryptoKitties with python" - Pisuth Daengthongdee (Gamedex) #3 - "Secure, performant websites with Python static site generators" - Leon Stafford November is a special month with 3 talks. 18:30: arrive and mingle (aCommerce HQ (http://www.acommerce.asia/contact-us/) - snacks and drinks provided by aCommerce, the largest employer of python devs in

Bhiraj Tower,
EmQuartier, Sukhumvit Road,
Klongton Nua, Wattana · Bangkok · Bangkok

You + 96 going

dynamic



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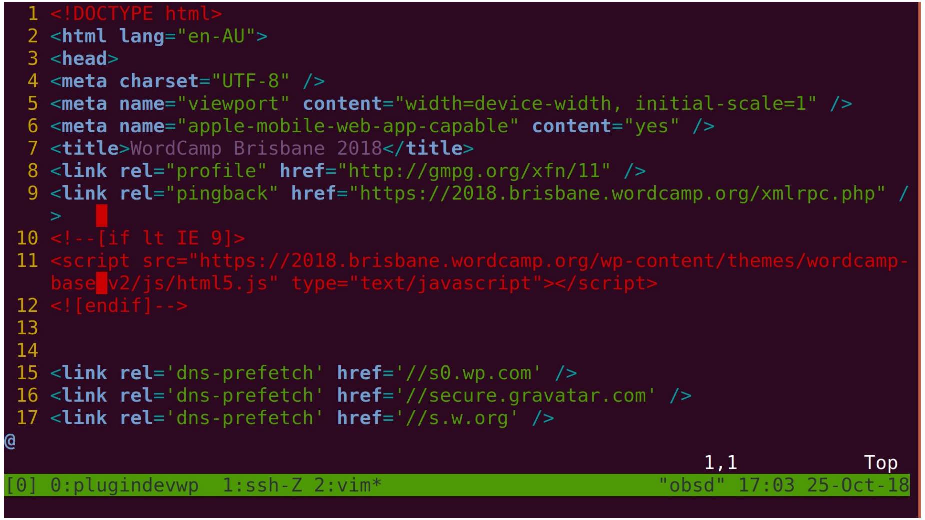
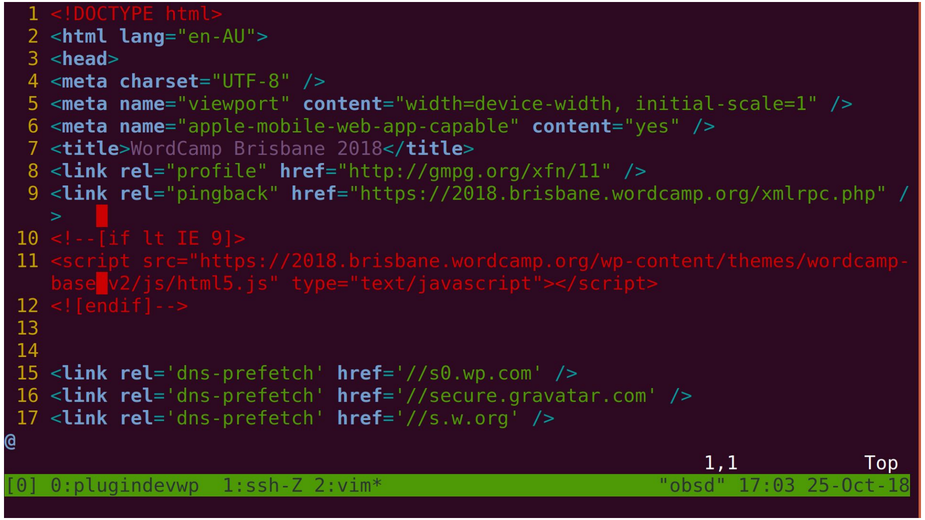


```
<!DOCTYPE html>
<html lang="en-AU">
<head>
<meta charset="UTF-8" />
<meta name="viewport" content="width=device-width, initial-scale=1" />
<meta name="apple-mobile-web-app-capable" content="yes" />
<title>WordCamp Brisbane 2018</title>
<link rel="profile" href="http://gmpg.org/xfn/11" />
<link rel="pingback" href="https://2018.brisbane.wordcamp.org/xmlrpc.php" />
<!--[if lt IE 9]>
<script src="https://2018.brisbane.wordcamp.org/wp-content/themes/wordcamp-base v2/js/html5.js" type="text/javascript"></script>
<![endif]-->


<link rel='dns-prefetch' href='//s0.wp.com' />
<link rel='dns-prefetch' href='//secure.gravatar.com' />
<link rel='dns-prefetch' href='//s.w.org' />
@
                                                            1,1           Top
[0] 0:plugindevwp  1:ssh-Z 2:vim*                 "obsd" 17:03 25-Oct-18
```

dynamic



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<title>WordCamp Brisbane 2018</title>
<link rel="profile" href="http://gmpg.org/xfn/11" />
<link rel="pingback" href="https://2018.brisbane.wordcamp.org/xmlrpc.php" />
<!--[if lt IE 9]>
<script src="https://2018.brisbane.wordcamp.org/wp-content/themes/wordcamp-base v2/js/html5.js" type="text/javascript"></script>
<![endif]-->


<link rel='dns-prefetch' href='//s0.wp.com' />
<link rel='dns-prefetch' href='//secure.gravatar.com' />
<link rel='dns-prefetch' href='//s.w.org' />
@
                                                            1,1           Top
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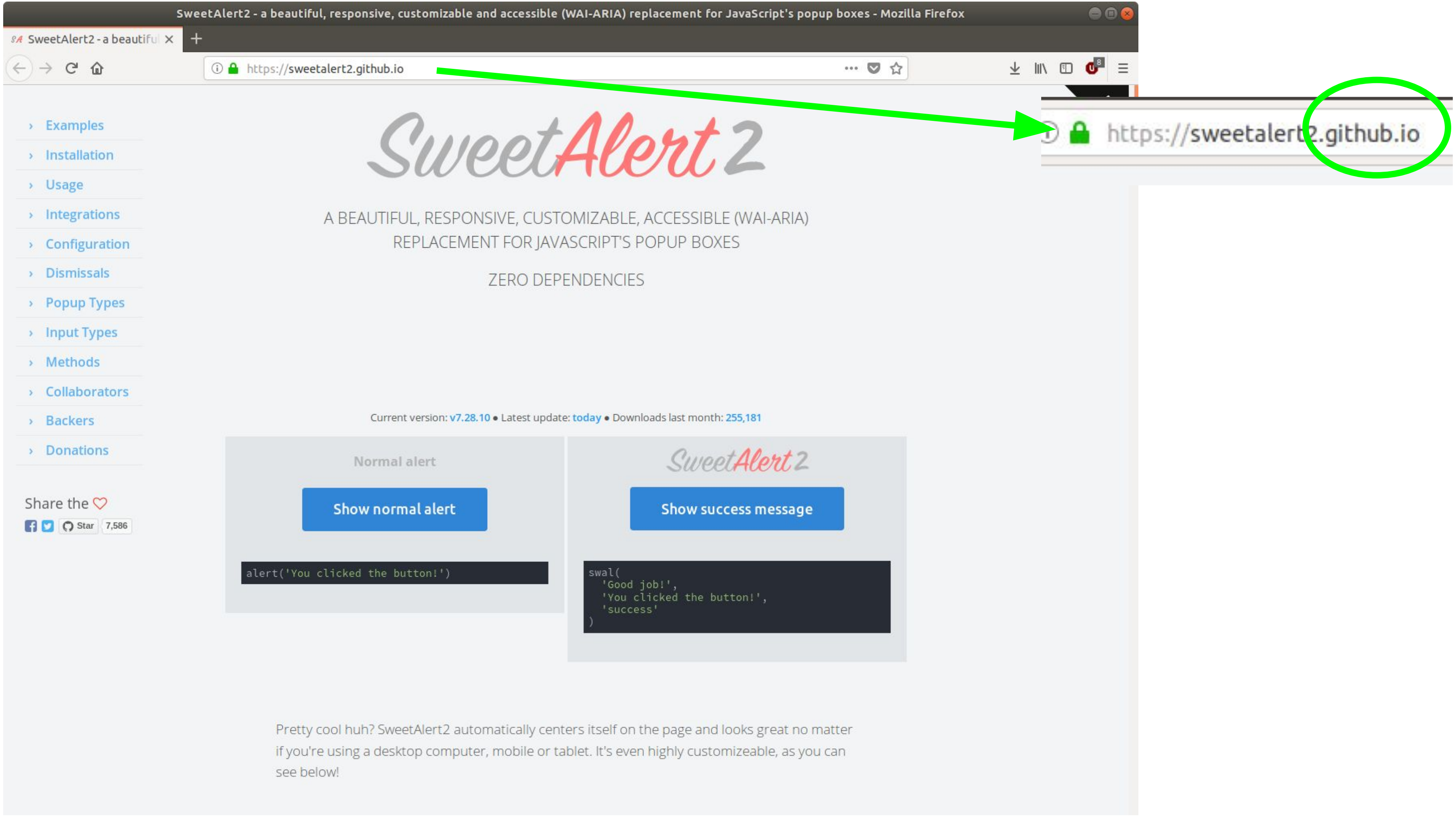


SweetAlert2 - a beautiful, responsive, customizable and accessible (WAI-ARIA) replacement for JavaScript's popup boxes - Mozilla Firefox

SweetAlert2 - a beautiful

https://sweetalert2.github.io

https://sweetalert2.github.io

- Examples
- Installation
- Usage
- Integrations
- Configuration
- Dismissals
- Popup Types
- Input Types
- Methods
- Collaborators
- Backers
- Donations

Share the ♡

Star 7,586

SweetAlert2

A BEAUTIFUL, RESPONSIVE, CUSTOMIZABLE, ACCESSIBLE (WAI-ARIA) REPLACEMENT FOR JAVASCRIPT'S POPUP BOXES

ZERO DEPENDENCIES

Current version: v7.28.10 • Latest update: today • Downloads last month: 255,181

Normal alert

Show normal alert

```
alert('You clicked the button!')
```

SweetAlert2

Show success message

```
swal(
  'Good job!',
  'You clicked the button!',
  'success'
)
```

Pretty cool huh? SweetAlert2 automatically centers itself on the page and looks great no matter if you're using a desktop computer, mobile or tablet. It's even highly customizeable, as you can see below!

So, what's the difference?

static	dynamic
● pre-generated	● compiled on the fly
● low-resource	● resource-intensive
● usable offline	● online only
● secure by default	● needs security

Why would I want a static site?

secure

fast

low-cost

Security

With no database, no server-side executable app code, there is very little attack vector left exposed

Performance

No such thing as a cache-miss

Cost effectiveness

Gratis

Netlify, GitHub/GitLab/BitBucket Pages, S3, Azure, GAE free tiers, Firebase, Neocities

Cheap

BunnyCDN, KeyCDN, OpenBSD Amsterdam

Cost to the environment

$nnn / month of hosting has to be paid by someone, selling something else, commuting to work, etc

Let's not waste energy on servers

Resilience

Activists / political refugees

Backends with benefits

Optionally, commit whole site snapshots under version control

When the fan gets dirty, instantly rollback while figuring out what went wrong

Website archival

Take a snapshot of a legacy client's site, keep hosting it for free (you're a good human!)

Forget about CMS updates / application vulnerabilities

Dynamic local dev / static production

Sweet setup - run locally, throw all your system resources into abusing the DB, scraping external content and what-not.

Publish the resulting static content.

Profit.

How to publish statically?

- wget
- Httrack
- JAMstack + consume Pythonic APIs
- App-specific tools
- SiteSucker

The JAMstack

JavaScript APIs Markup

Use Python backend as a data-source for a static site generator like gatsby.js

Purely static vs dynamic elements

- contact forms
- comments
- search
- e-commerce
- user accounts

algolia

FORMSPREE

SNIPCART

Static site generators de *Python*

- Pelican
- MkDocs
- Sphinx (pydocs)
- Hyde
- Cactus
- Lektor
- Nikola
- staticjinja

staticgen.com

Hi, you've already met (dependencies)

SSG - a minimal dependency shell script static site generator

Installation

```
$ mkdir -p bin
$ ftp -Vo bin/ssg3
https://www.romanzolotarev.com/bin/ssg3
$ chmod +x bin/ssg3
$ doas pkg_add lowdown
```

Usage

```
$ mkdir src dst
$ echo '# Hello, World!' > src/index.md
$ echo '<p><a href="/">Home</a></p>' > src/_header.html
$ echo '<p>2018 Roman Zolotarev</p>' > src/_footer.html
$ ftp -Vo src/_styles.css
https://www.romanzolotarev.com/_styles.css
$ bin/ssg3 src dst 'Test' 'https://www'
```

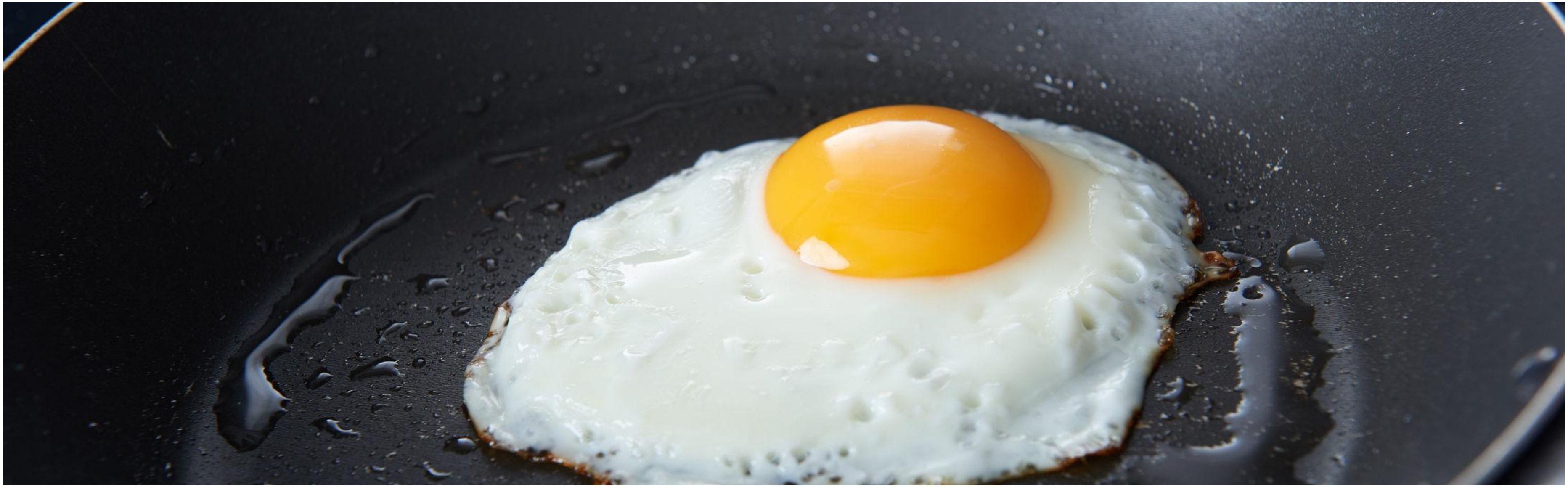
*lowdown(1) is optional. It's required only if there are any *.md files.*

https://www.romanzolotarev.com/ssg.html

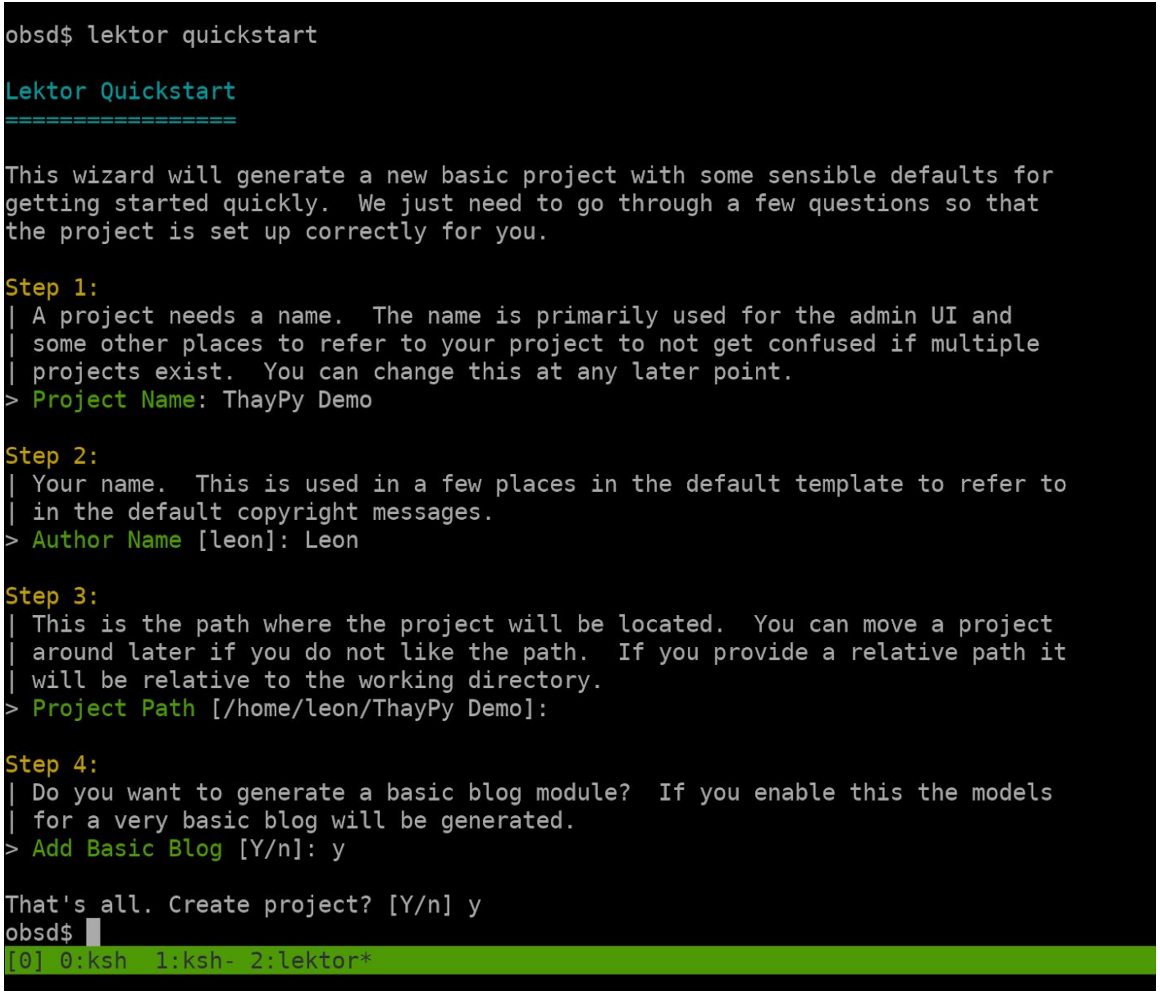
Why we're not all using SSGs

- Convenience of McWebsites
- Ease of collaboration
- Opinionated workflows
- Command line fear
- Site admins can live in the browser

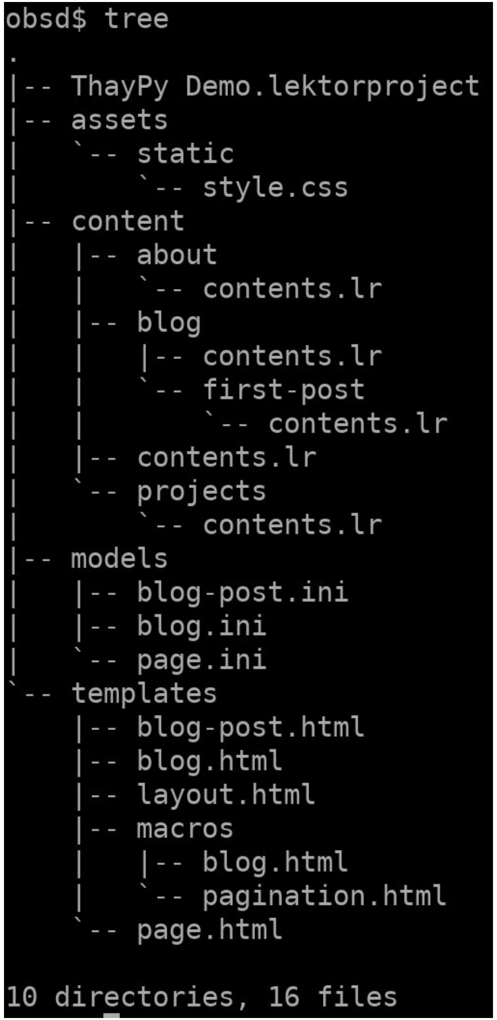
A look at Lektor



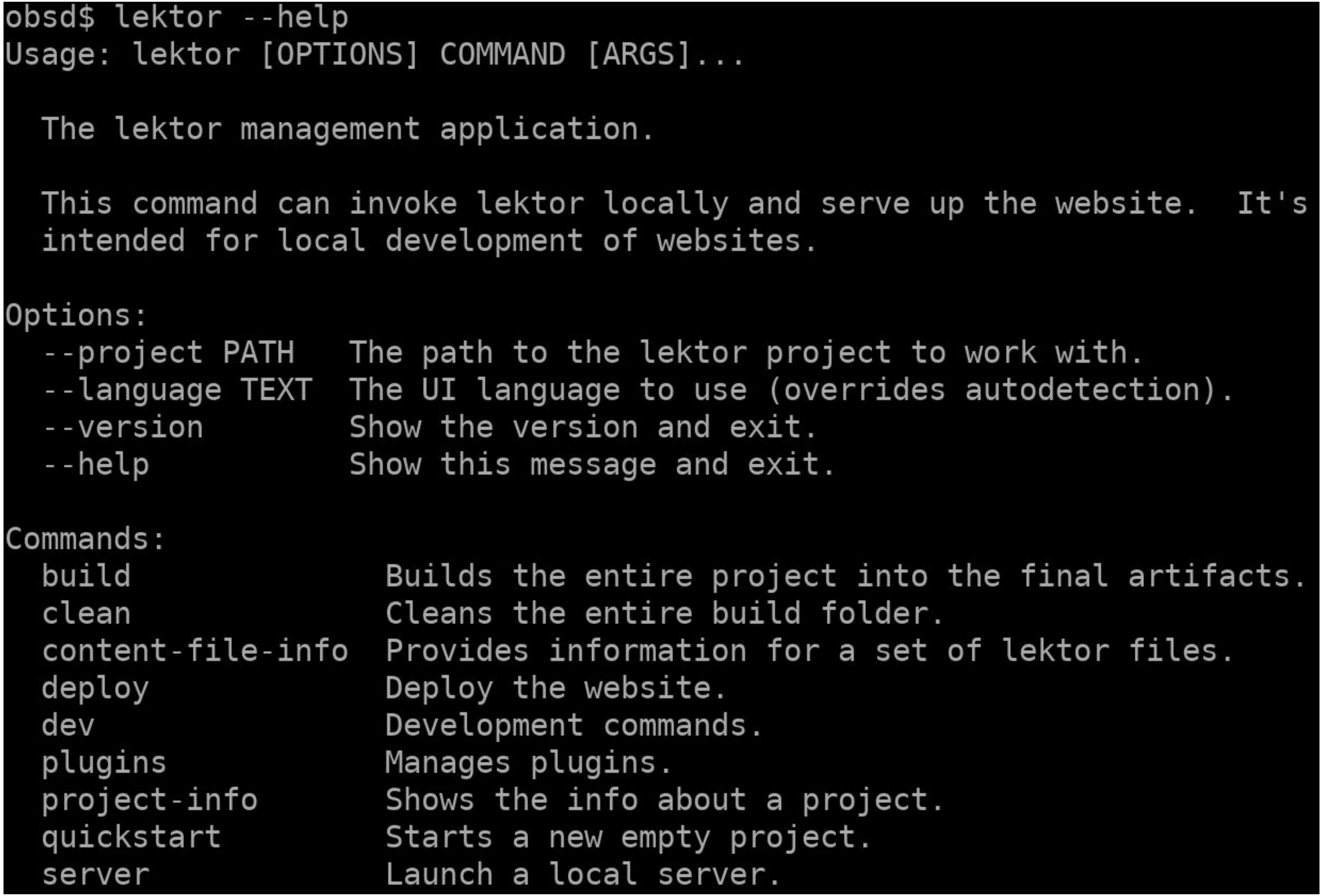
...yep!



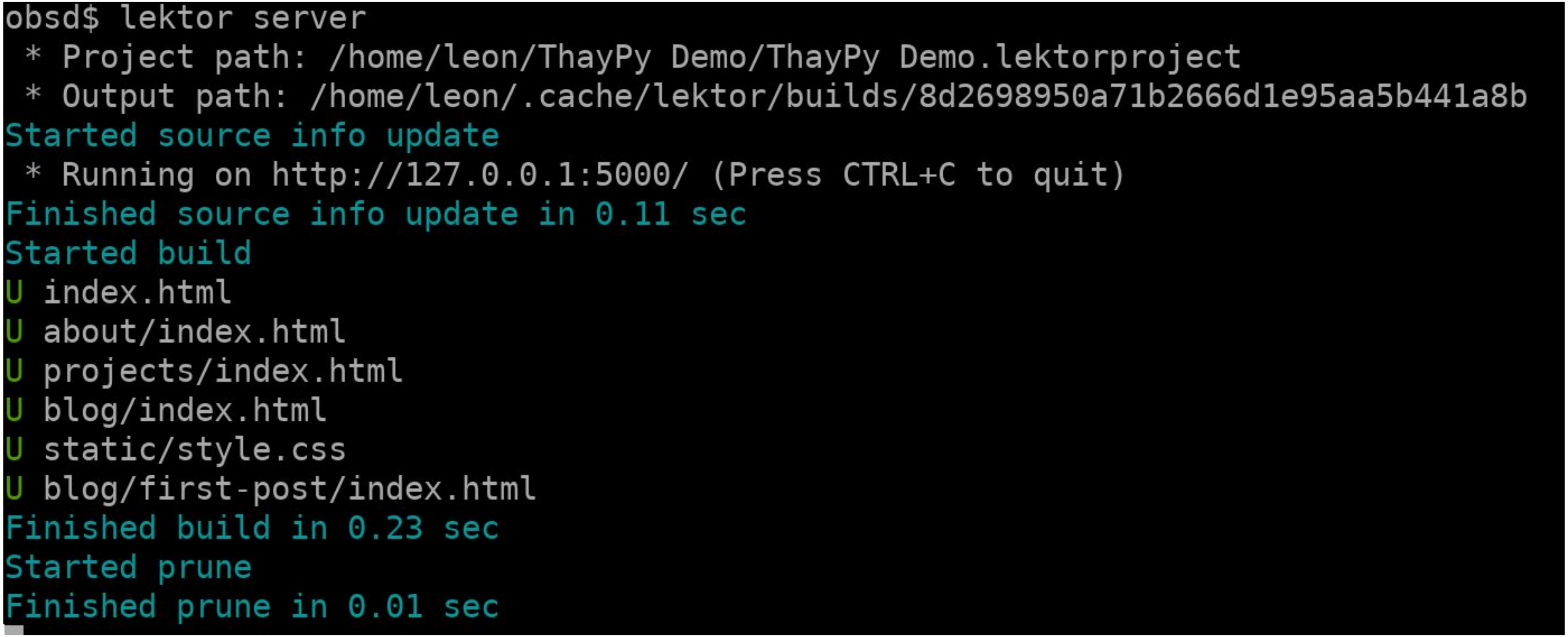
```
obsd$ lektor quickstart

Lektor Quickstart
=================

This wizard will generate a new basic project with some sensible defaults for
getting started quickly.  We just need to go through a few questions so that
the project is set up correctly for you.

Step 1:
| A project needs a name.  The name is primarily used for the admin UI and
| some other places to refer to your project to not get confused if multiple
| projects exist.  You can change this at any later point.
> Project Name: ThayPy Demo

Step 2:
| Your name.  This is used in a few places in the default template to refer to
| in the default copyright messages.
> Author Name [leon]: Leon

Step 3:
| This is the path where the project will be located.  You can move a project
| around later if you do not like the path.  If you provide a relative path it
| will be relative to the working directory.
> Project Path [/home/leon/ThayPy Demo]:

Step 4:
| Do you want to generate a basic blog module?  If you enable this the models
| for a very basic blog will be generated.
> Add Basic Blog [Y/n]: y

That's all. Create project? [Y/n] y
obsd$ 
[0] 0:ksh  1:ksh- 2:lektor*
```



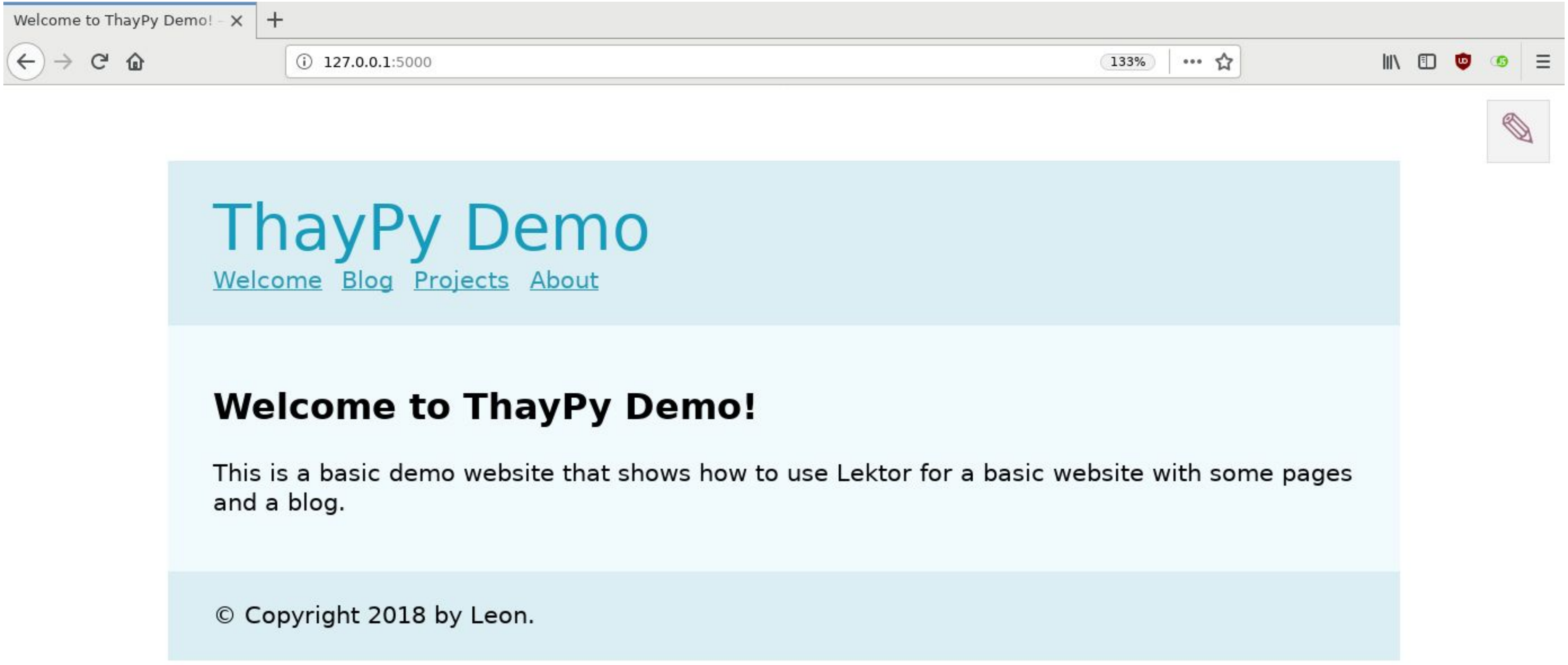
```
obsd$ tree
.
|-- ThayPy Demo.lektorproject
|-- assets
|   `-- static
|       `-- style.css
|-- content
|   |-- about
|   |   `-- contents.lr
|   |-- blog
|   |   |-- contents.lr
|   |   `-- first-post
|   |       `-- contents.lr
|   |-- contents.lr
|   `-- projects
|       `-- contents.lr
|-- models
|   |-- blog-post.ini
|   |-- blog.ini
|   `-- page.ini
`-- templates
    |-- blog-post.html
    |-- blog.html
    |-- layout.html
    |-- macros
    |   |-- blog.html
    |   `-- pagination.html
    `-- page.html

10 directories, 16 files
```



```
obsd$ lektor --help
Usage: lektor [OPTIONS] COMMAND [ARGS]...

  The lektor management application.

  This command can invoke lektor locally and serve up the website.  It's
  intended for local development of websites.

Options:
  --project PATH   The path to the lektor project to work with.
  --language TEXT  The UI language to use (overrides autodetection).
  --version        Show the version and exit.
  --help           Show this message and exit.

Commands:
  build              Builds the entire project into the final artifacts.
  clean              Cleans the entire build folder.
  content-file-info  Provides information for a set of lektor files.
  deploy             Deploy the website.
  dev                Development commands.
  plugins            Manages plugins.
  project-info       Shows the info about a project.
  quickstart         Starts a new empty project.
  server             Launch a local server.
```



```
obsd$ lektor server
 * Project path: /home/leon/ThayPy Demo/ThayPy Demo.lektorproject
 * Output path: /home/leon/.cache/lektor/builds/8d2698950a71b2666d1e95aa5b441a8b
Started source info update
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Finished source info update in 0.11 sec
Started build
U index.html
U about/index.html
U projects/index.html
U blog/index.html
U static/style.css
U blog/first-post/index.html
Finished build in 0.23 sec
Started prune
Finished prune in 0.01 sec
```



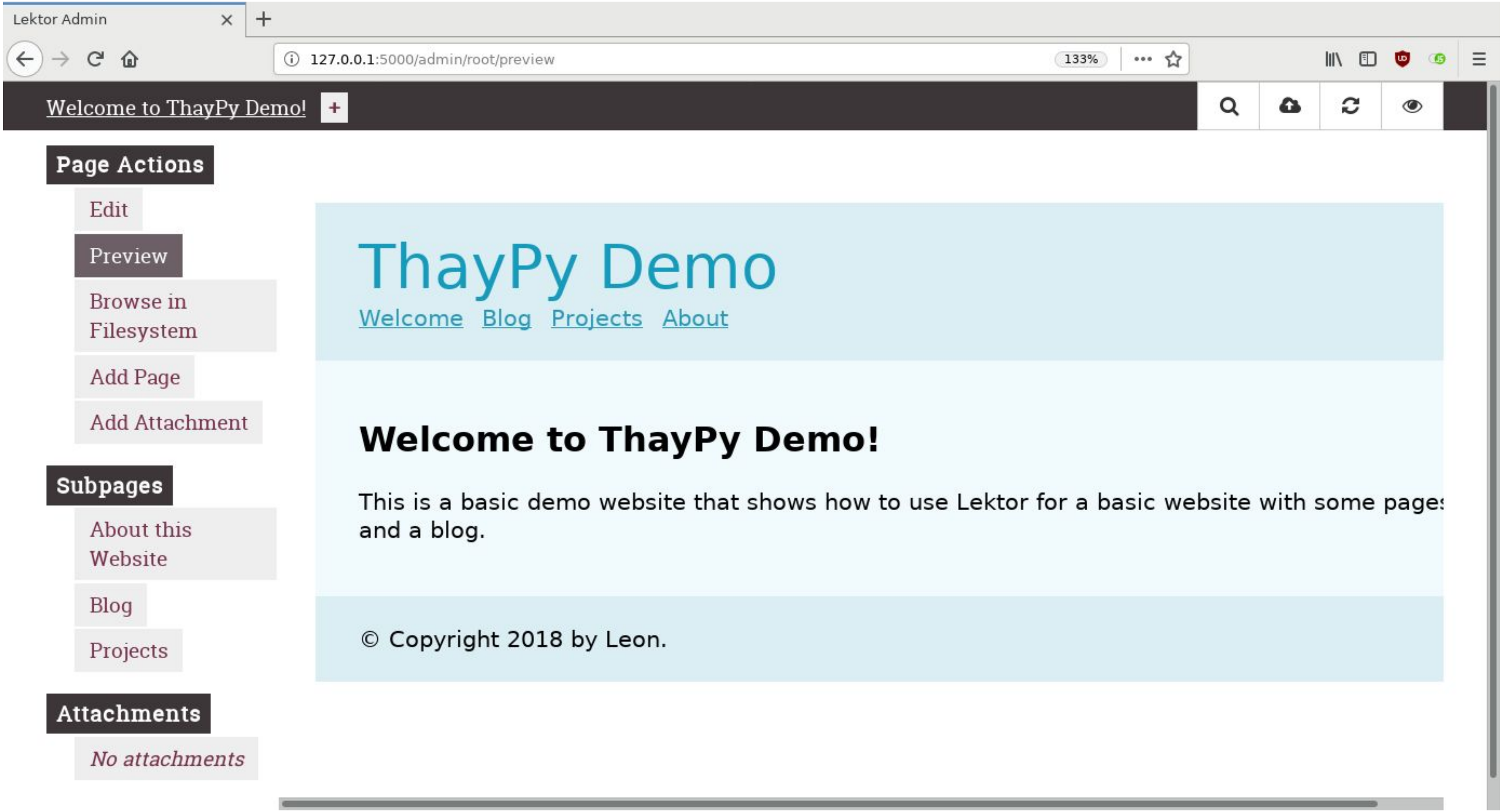
ThayPy Demo

Welcome Blog Projects About

Welcome to ThayPy Demo!

This is a basic demo website that shows how to use Lektor for a basic website with some pages and a blog.

© Copyright 2018 by Leon.



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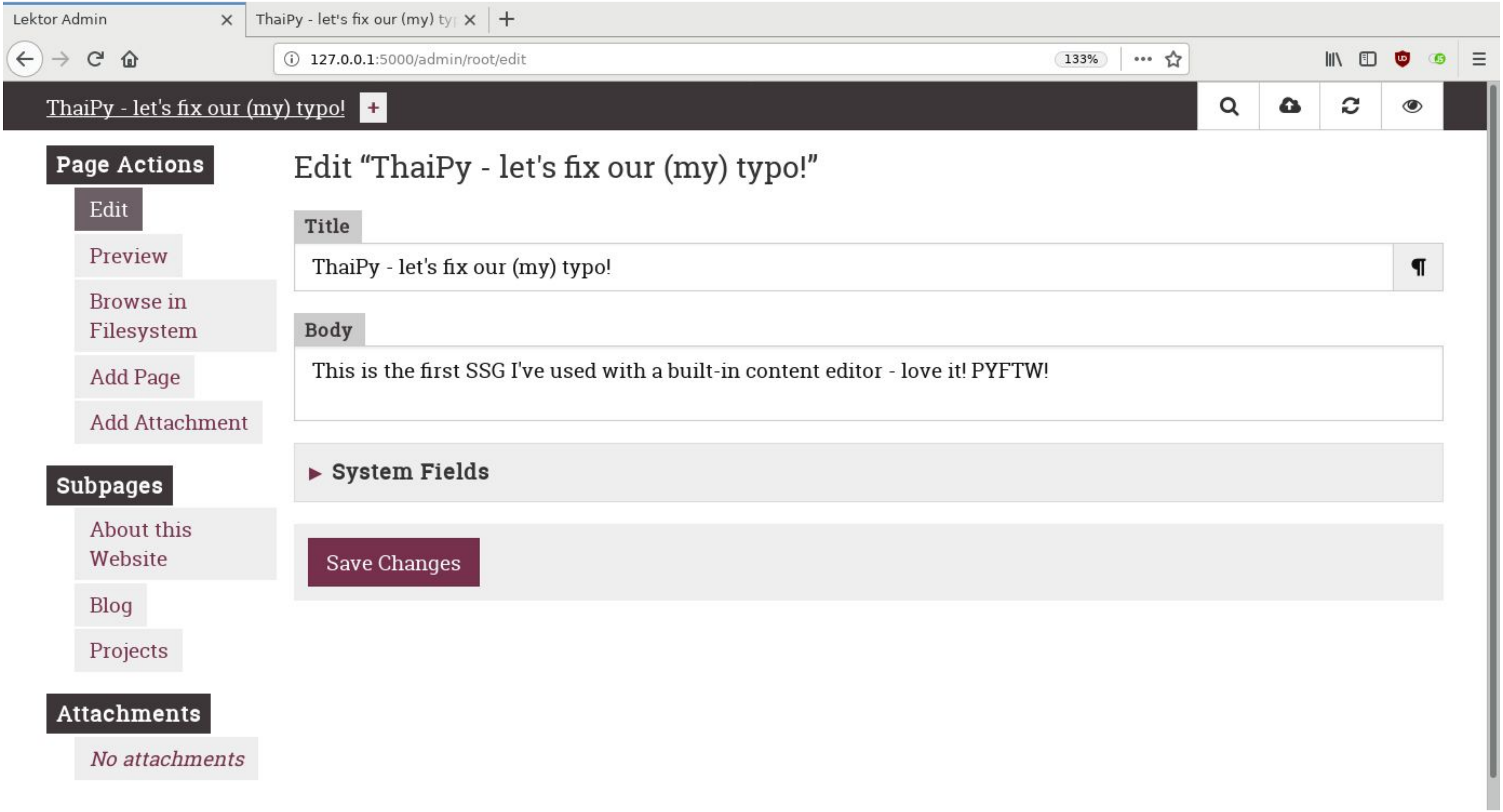


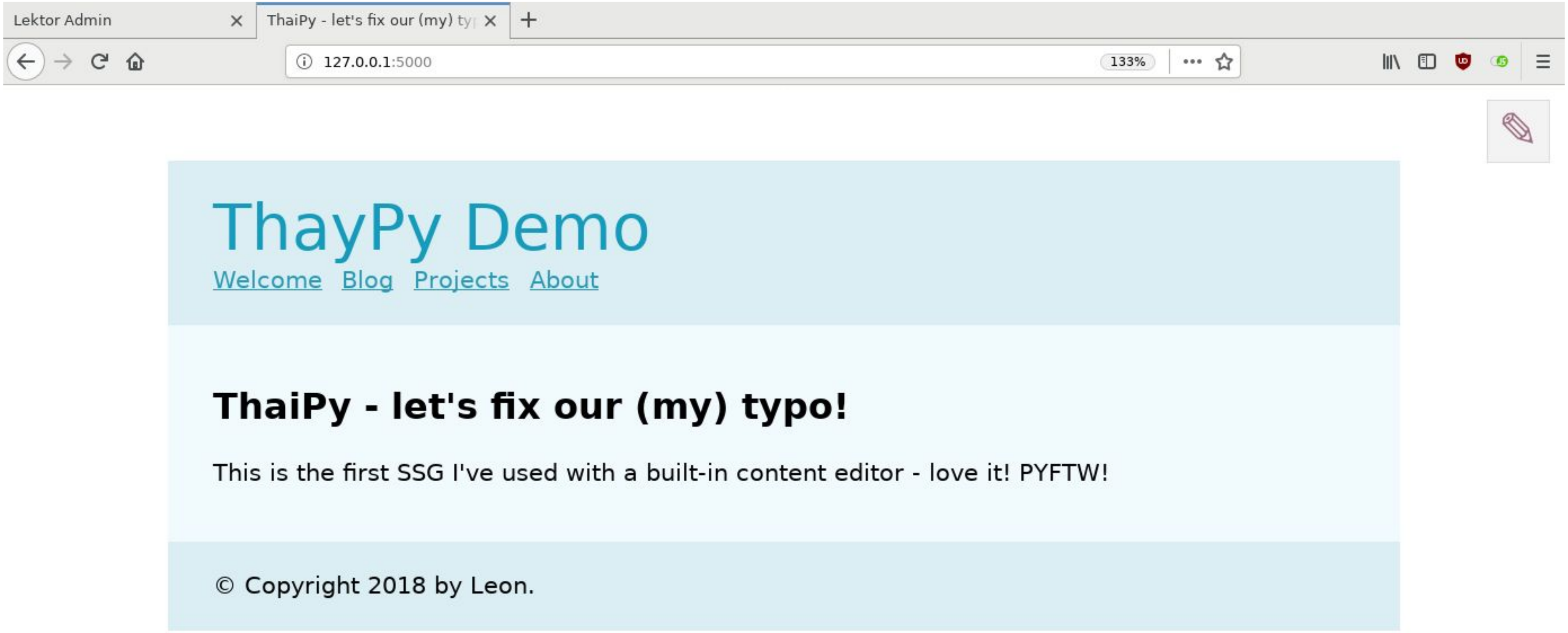
Edit “ThaiPy - let's fix our (my) typo!”

Title

ThaiPy - let's fix our (my) typo!

Body

This is the first SSG I've used with a built-in content editor - love it! PYFTW!



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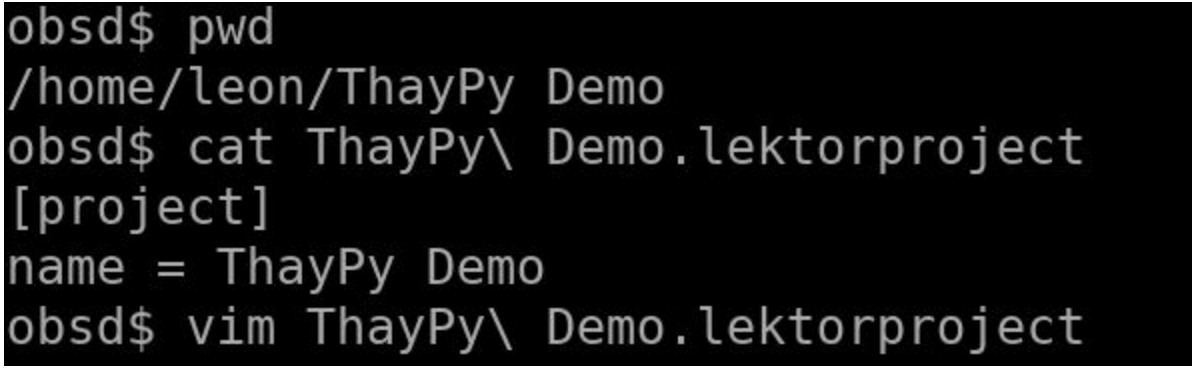
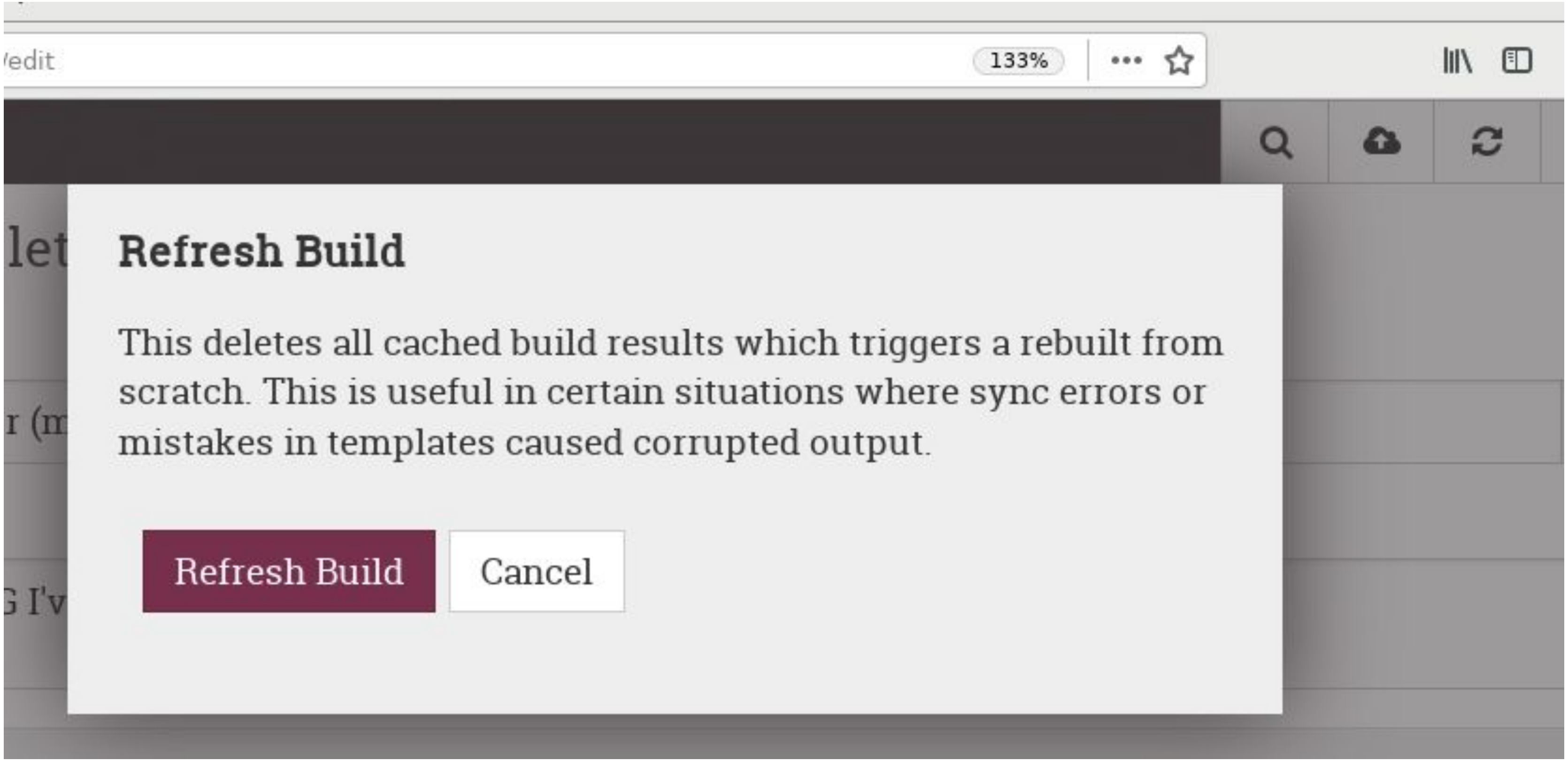
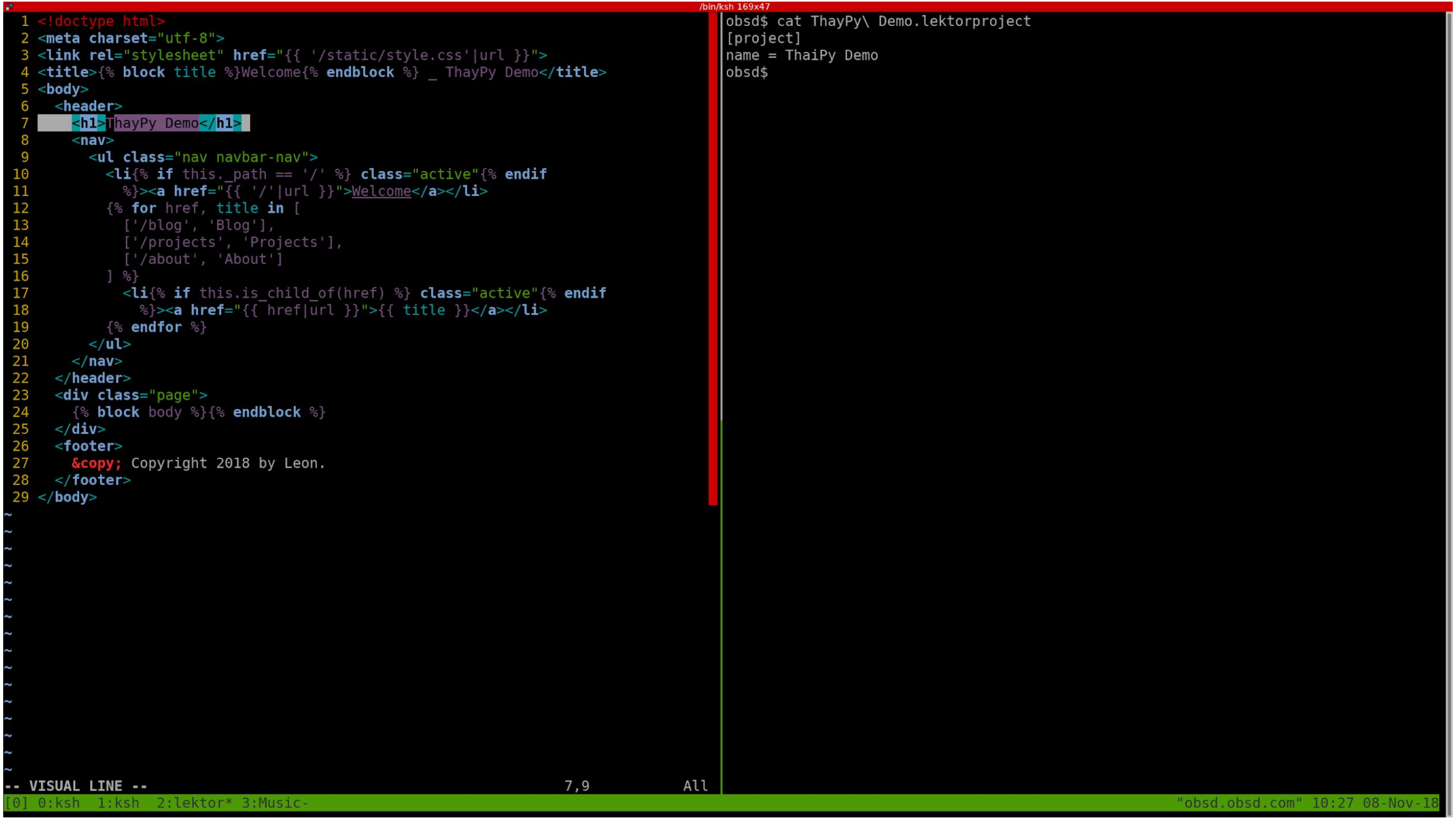


```
obsd$ pwd
/home/leon/ThayPy Demo
obsd$ cat ThayPy\ Demo.lektorproject
[project]
name = ThayPy Demo
obsd$ vim ThayPy\ Demo.lektorproject
```



Refresh Build

This deletes all cached build results which triggers a rebuilt from scratch. This is useful in certain situations where sync errors or mistakes in templates caused corrupted output.

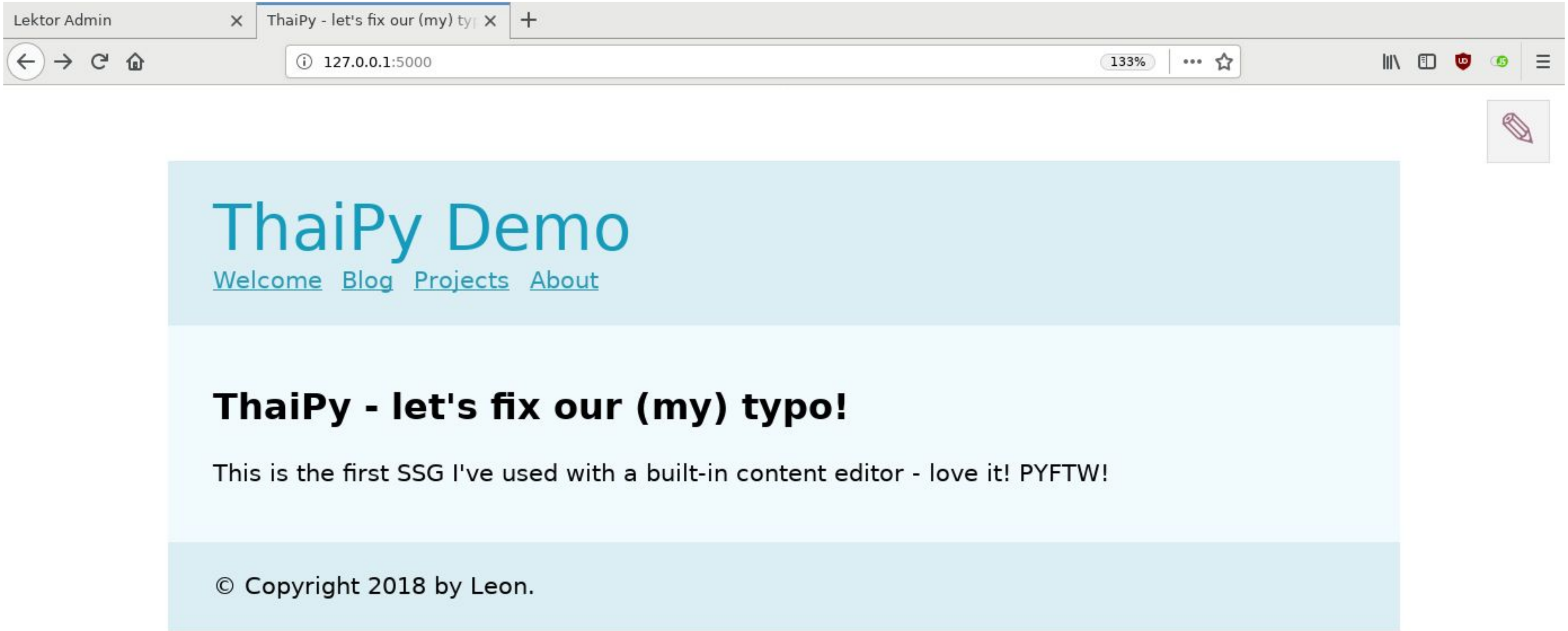


/bin/ksh 169x47

```
<!doctype html>
<meta charset="utf-8">
<link rel="stylesheet" href="{{ '/static/style.css'|url }}">
<title>{% block title %}Welcome{% endblock %} _ ThayPy Demo</title>
<body>
 <header>
  <h1>ThayPy Demo</h1>
  <nav>
   <ul class="nav navbar-nav">
    <li{% if this._path == '/' %} class="active"{% endif
     %}><a href="{{ '/'|url }}">Welcome</a></li>
    {% for href, title in [
     ['/blog', 'Blog'],
     ['/projects', 'Projects'],
     ['/about', 'About']
    ] %}
     <li{% if this.is_child_of(href) %} class="active"{% endif
      %}><a href="{{ href|url }}">{{ title }}</a></li>
    {% endfor %}
   </ul>
  </nav>
 </header>
 <div class="page">
  {% block body %}{% endblock %}
 </div>
 <footer>
  &copy; Copyright 2018 by Leon.
 </footer>
</body>
~
-- VISUAL LINE --                                  7,9           All
```

```
obsd$ cat ThayPy\ Demo.lektorproject
[project]
name = ThaiPy Demo
obsd$
```

```
[0] 0:ksh  1:ksh  2:lektor* 3:Music-                "obsd.obsd.com" 10:27 08-Nov-18
```



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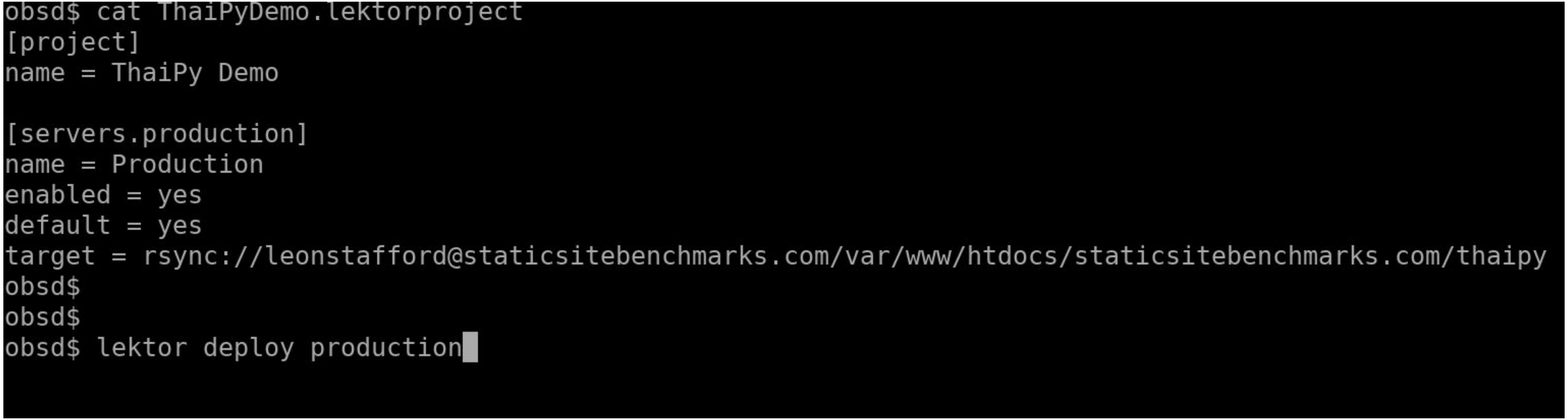
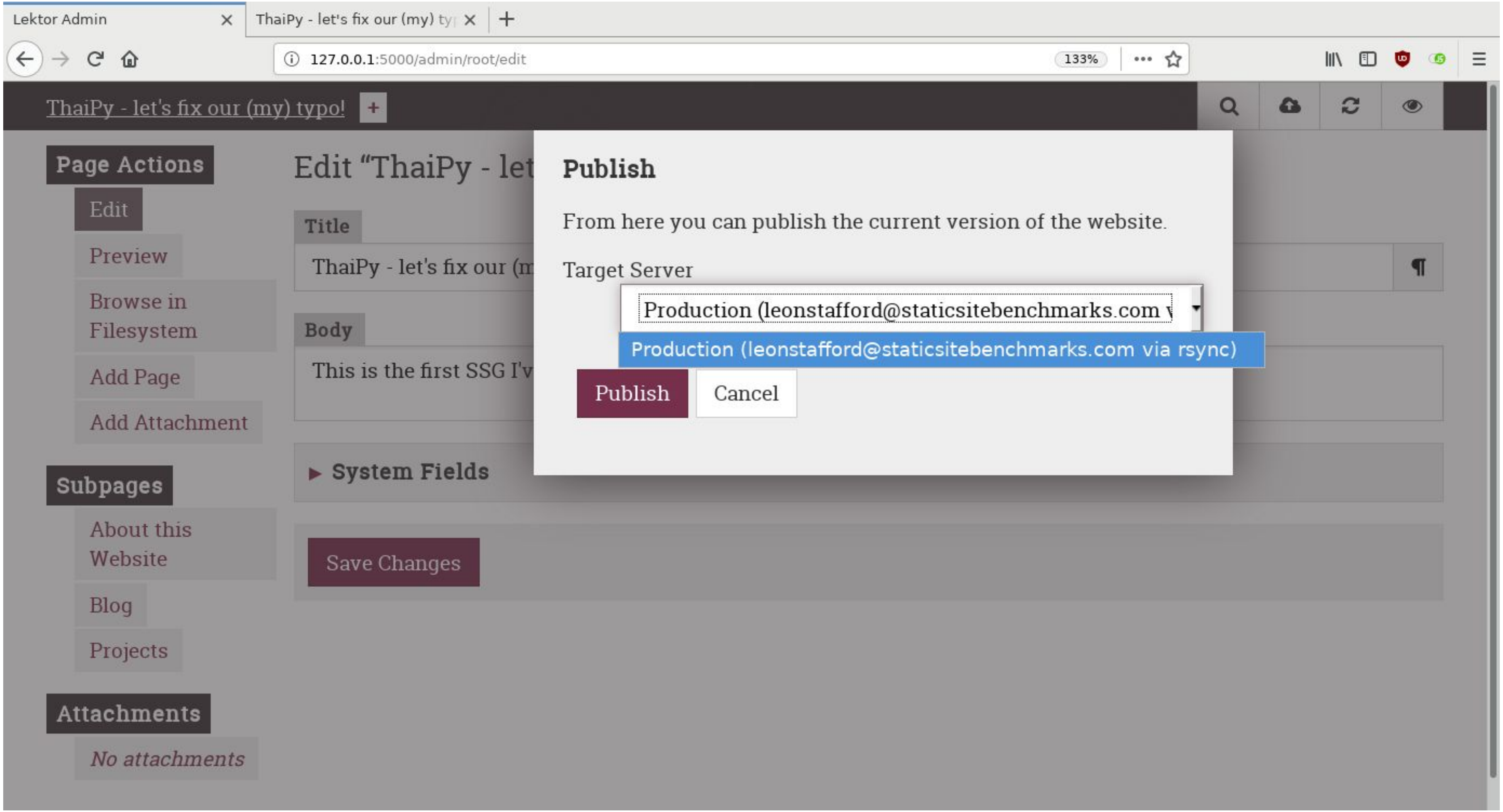


```
obsd$ cat ThaiPyDemo.lektorproject
[project]
name = ThaiPy Demo

[servers.production]
name = Production
enabled = yes
default = yes
target = rsync://leonstafford@staticsitebenchmarks.com/var/www/htdocs/staticsitebenchmarks.com/thaipy
obsd$
obsd$
obsd$ lektor deploy production
```



Edit "ThaiPy - let

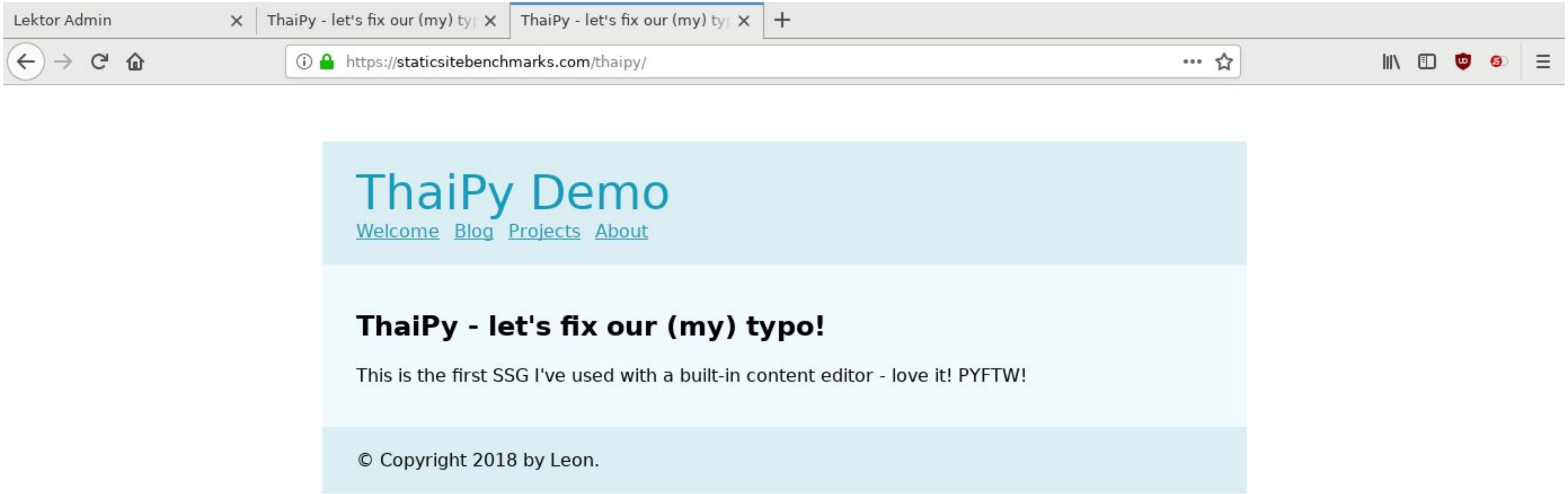
Title: ThaiPy - let's fix our (m

Body: This is the first SSG I'v

Publish

From here you can publish the current version of the website.

Target Server: Production (leonstafford@staticsitebenchmarks.com via rsync)


Lektor Admin
ThaiPy - let's fix our (my) ty
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https://staticsitebenchmarks.com/thaipy/

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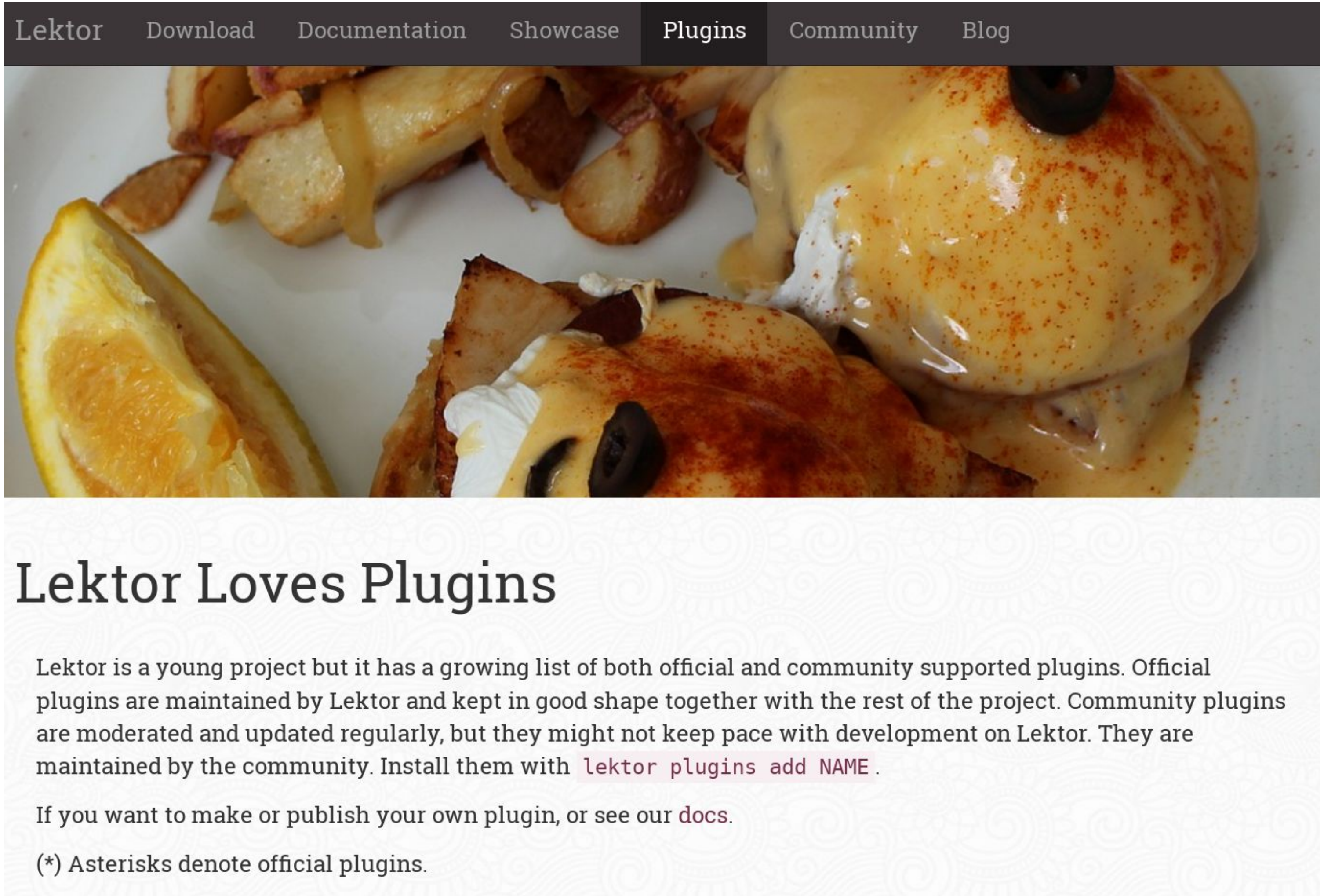
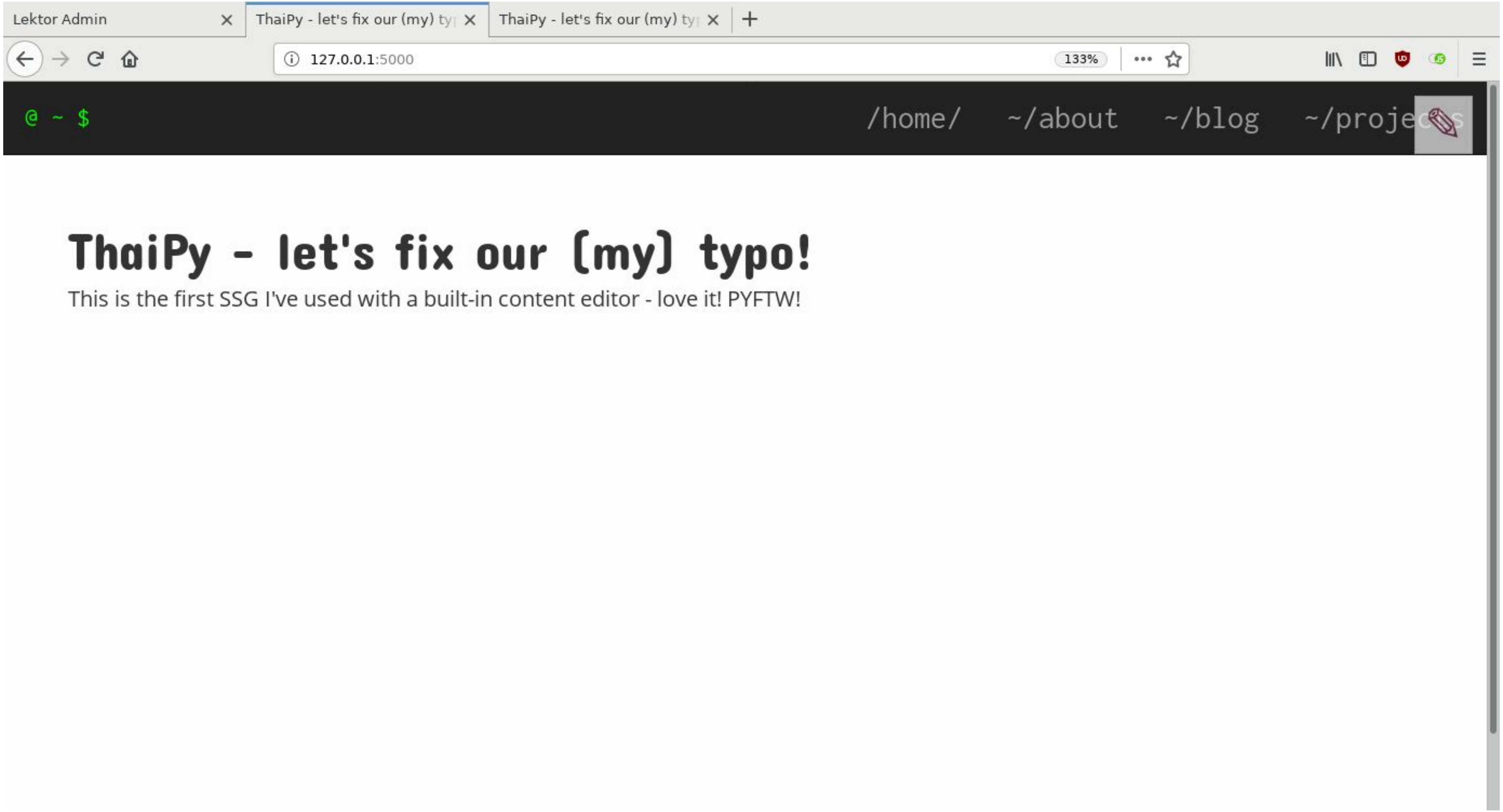


Lektor Loves Plugins

Lektor is a young project but it has a growing list of both official and community supported plugins. Official plugins are maintained by Lektor and kept in good shape together with the rest of the project. Community plugins are moderated and updated regularly, but they might not keep pace with development on Lektor. They are maintained by the community. Install them with `lektor plugins add NAME`.

If you want to make or publish your own plugin, or see our docs.

(*) Asterisks denote official plugins.



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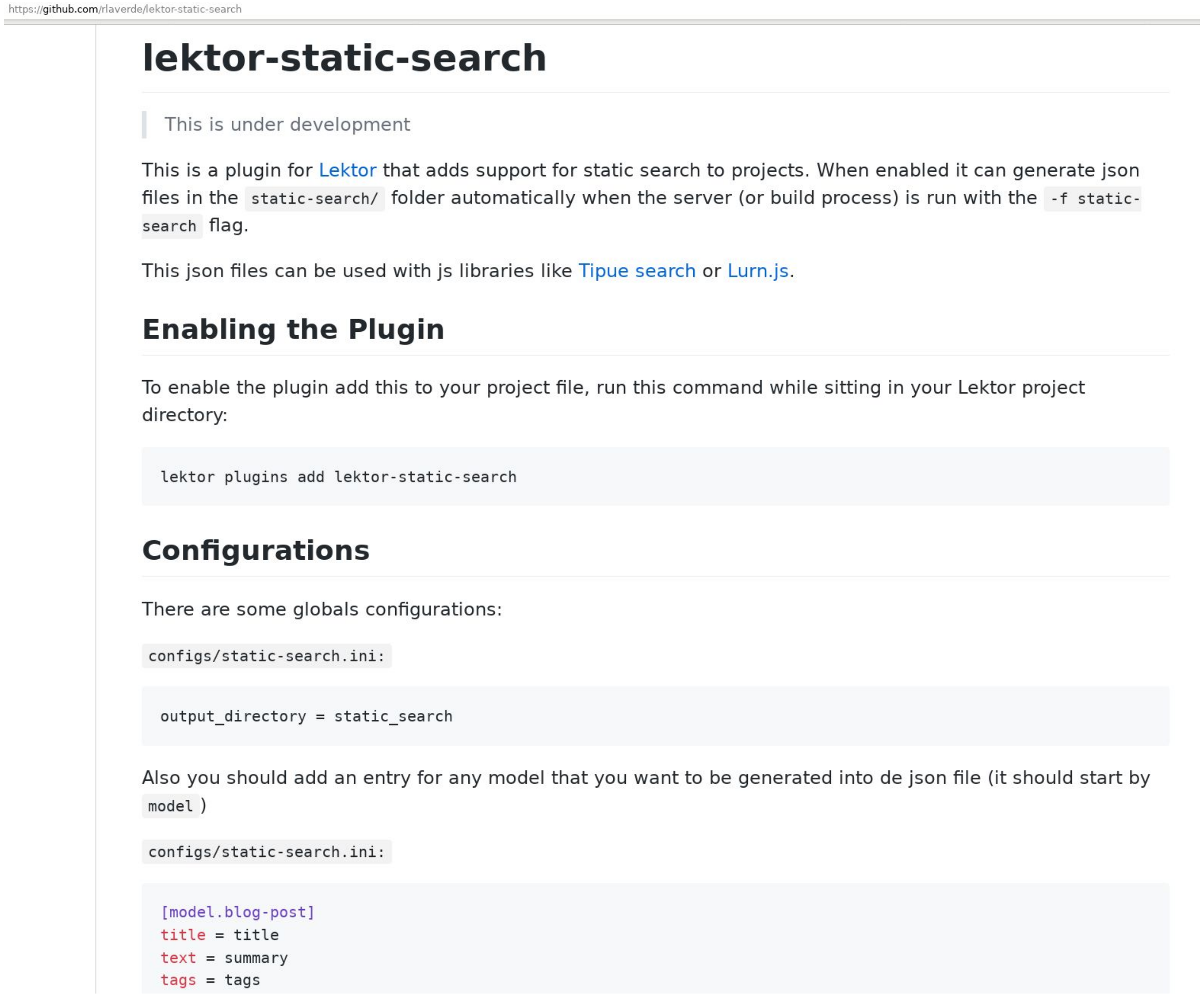


https://github.com/rlaverde/lektor-static-search

lektor-static-search

> This is under development

This is a plugin for Lektor that adds support for static search to projects. When enabled it can generate json files in the `static-search/` folder automatically when the server (or build process) is run with the `-f static-search` flag.

This json files can be used with js libraries like Tipue search or Lurn.js.

Enabling the Plugin

To enable the plugin add this to your project file, run this command while sitting in your Lektor project directory:

```
lektor plugins add lektor-static-search
```

Configurations

There are some globals configurations:

`configs/static-search.ini:`

```
output_directory = static_search
```

Also you should add an entry for any model that you want to be generated into de json file (it should start by `model`)

`configs/static-search.ini:`

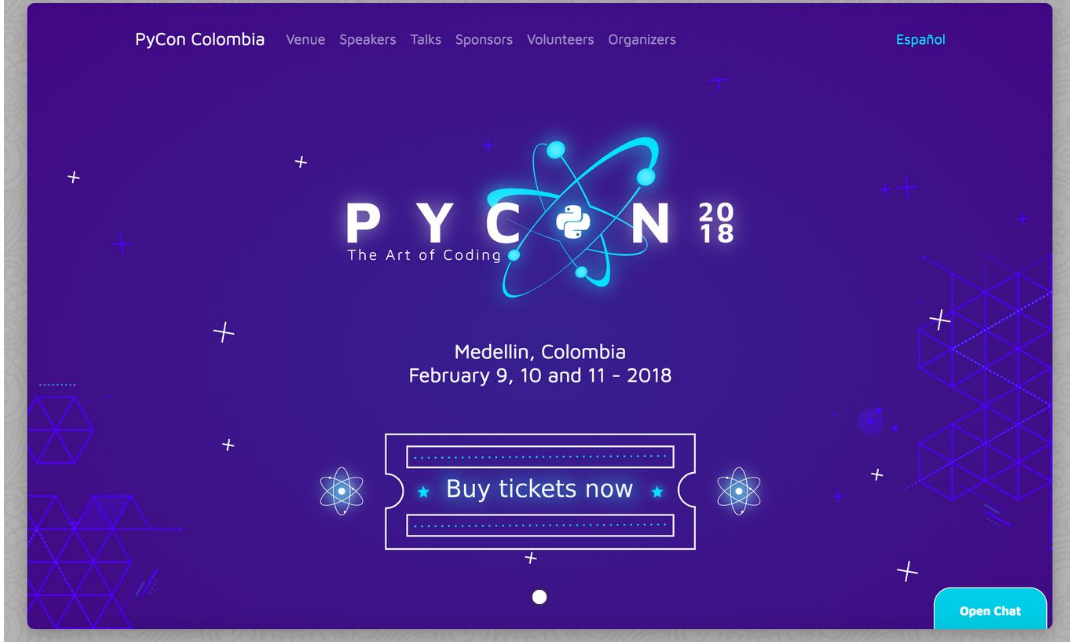
```
[model.blog-post]
title = title
text = summary
tags = tags
```

« Back to Showcase

PyCon Colombia 2018

www.pycon.co

This is the website for the Python Colombia Conference (PyCon Colombia) for the year 2018



Medellin, Colombia
February 9, 10 and 11 - 2018

Help on your static journey

Leon is active in several communities around static sites and may be found at meetups, conferences and is down with OPP (other people's podcasts)

leonstafford.github.io
@leonvolunteers