Introduction to

Flask Micro Framework

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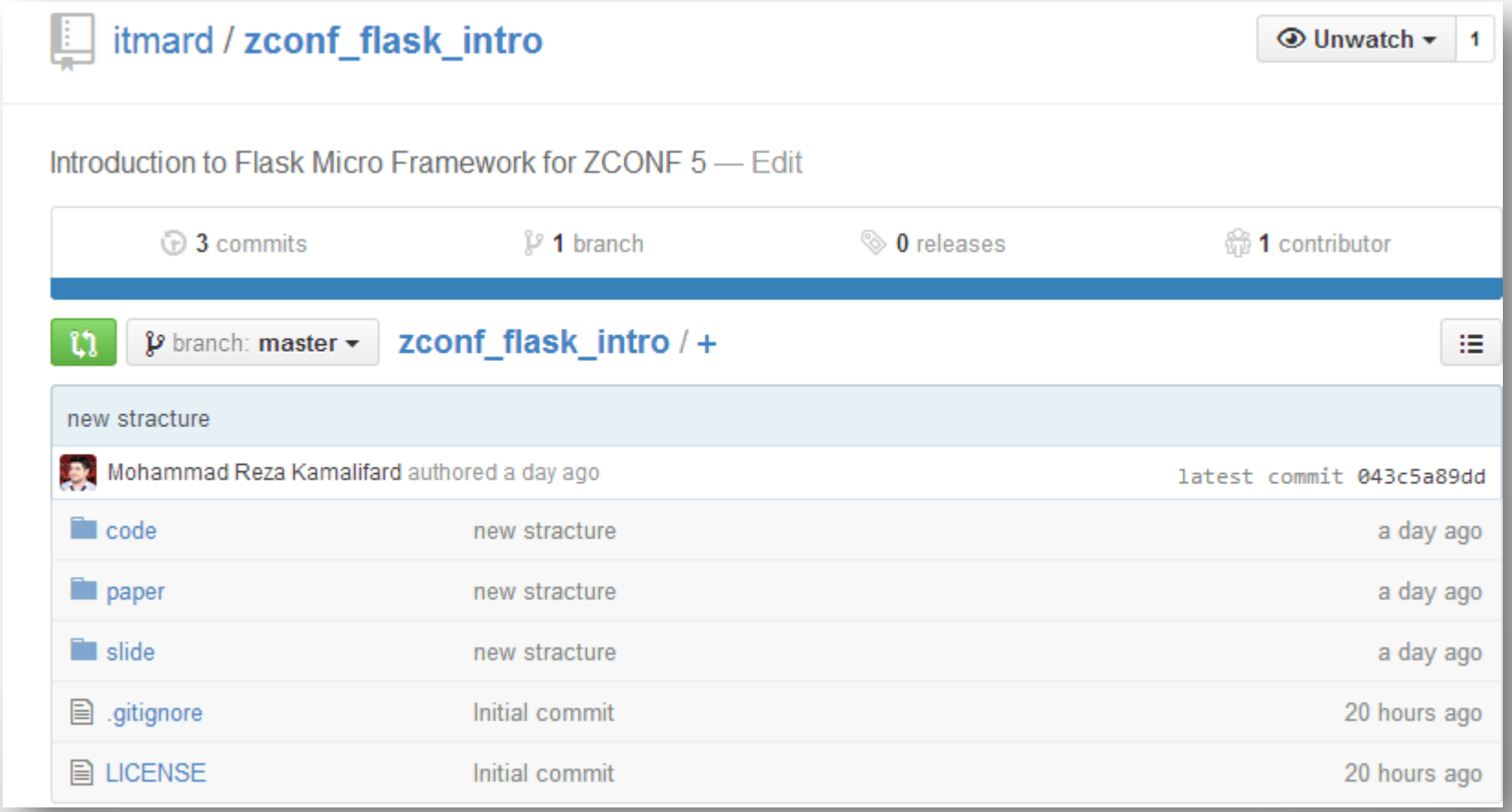
@itmard

Codes

https://github.com/itmard/zconf_flask_intro



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- Form Validation

Python for web development

Why Python?

- Python is an easy to learn
- Powerful
- Clean syntax and code readability
- Open Source
- Cross-platform
- Rich set of libraries
- Large Number of open source tools

Python web frameworks

- Django
- Flask
- Werkzeug
- Tornado
- Pyramid
- Bottle
- …

Flask

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- Provides a simple template for web development
- No ORM
- No Form validation
- Supports extensions

Simple Web Application with Flask

```
from flask import Flask
app = Flask(__name__)

@app.route("/")
def hello():
    return "Welcome to ZCONF 5"

if __name__ == "__main__":
    app.run()
```

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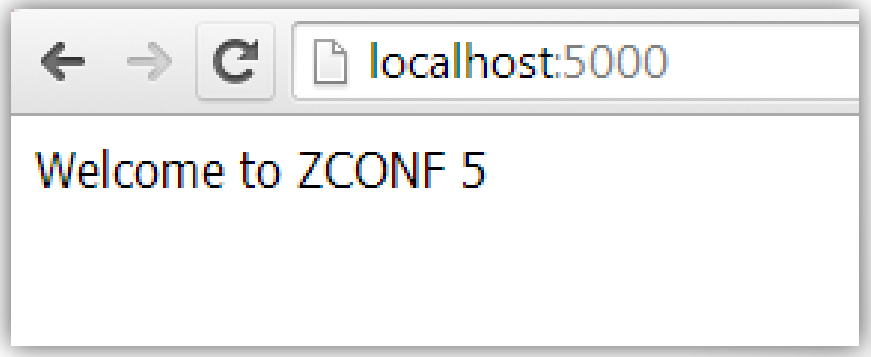

Features

- Built in development server and debugger
- Integrated unit testing support
- RESTful request dispatching
- Uses Jinja2 templating
- Support for secure cookies (client side sessions)
- 100% WSGI 1.0 compliant
- Unicode based
- Extensively documented

Flask Routing

- Modern web applications have beautiful URLs
- Routing using decorators
- route( ) decorator is used to bind a function to a URL
- Make certain parts of the URL dynamic
- Attach multiple rules to a function

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```
@app.route('/')
def index():
    return 'Index Page'

@app.route('/hello/')
def hello():
    return 'Hello World'
```

Variable Rules

- <variable_name>

```
@app.route('/user/<username>')
def show_user_profile(username):
      return 'User %s' % username
```

- <converter:variable_name>

```
@app.route('/post/<int:post_id>')
def show_post(post_id):
      return 'Post %d' % post_id
```

Request Object

- Easy way to access request data

```
@app.route('/login', methods=['POST', 'GET'])
def login():
    error = None
    if request.method == 'POST':
        if valid_login(request.form['username'],request.form['password']):
                return log_the_user_in(request.form['username'])
        else:
            error = 'Invalid username/password'
            return render_template('login.html', error=error)
```

Template Engine

- Jinja2 (default)

```
from flask import render_template
@app.route('/hello/')
@app.route('/hello/<name>')
def hello(name=None):
      return render_template('hello.html', name=name)
```

hello.html

```
<!doctype html>
<title>Hello from Flask</title>
{% if name %}
<h1>Hello {{ name }}!</h1>
{% else %}
<h1>Hello World!</h1>
{% endif %}
```

Development server and debugger

- Easy to use local development server
- Interactive Error page with debug mode

TypeError

TypeError: cannot concatenate 'str' and 'NoneType' objects

Traceback (most recent call last)

File *"/Users/mitsuhiko/Development/flask/flask.py"*, line *650*, in __call__

```
  return self.wsgi_app(environ, start_response)
```

File *"/Users/mitsuhiko/Development/werkzeug-main/werkzeug/wsgi.py"*, line *406*, in __call__

```
  return self.app(environ, start_response)
```

File *"/Users/mitsuhiko/Development/flask/flask.py"*, line *616*, in wsgi_app

```
  rv = self.dispatch_request()
```

File *"/Users/mitsuhiko/Development/flask/flask.py"*, line *535*, in dispatch_request

```
  return self.view_functions[endpoint](**values)
```

File *"/Users/mitsuhiko/Development/flask/test.py"*, line *8*, in index

```
  return 'Hello ' + name
```

```
[console ready]
>>> type(name)
<type 'NoneType'>
>>>
```

Database management

- No ORM inside flask
- Extensions:
  - SQLAlchemy
  - Peewee
  - Mongoengine
  - MongoKIT
  - PyMongo
  - MongoAlchemy
  - Flask-CouchDB
  - Flask-FluidDB
  - Flask-CouchDBKit
  - Flask-FluidDB

```
#sqlalchemy
from flask import Flask
from flask.ext.sqlalchemy import SQLAlchemy
app = Flask(__name__)
app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:////tmp/test.db'
db = SQLAlchemy(app)

class User(db.Model):
    id = db.Column(db.Integer, primary_key=True)
    username = db.Column(db.String(80), unique=True)
    email = db.Column(db.String(120), unique=True)

#peewee
import datetime
from peewee import *

class Note(db.Model):
    message = TextField()
    created = DateTimeField(default=datetime.datetime.now)
```

Form validation

- Flask WTForm

```
#class based forms
from flask_wtf import Form
from wtforms import StringField
from wtforms.validators import DataRequired
class MyForm(Form):
   name = StringField('name', validators=[DataRequired()])
#view
@app.route('/submit', methods=('GET', 'POST'))
def submit():
    form = MyForm()
    if form.validate_on_submit():
        return redirect('/success')
    return render_template('submit.html', form=form)
```

Architectural Pattern

- Single file application
- MVC , MV* patterns

project
—--apps
----------app1
----------models.py
----------views.py
----------forms.py
----------apis.py
—---statics
—---templates

-----models
-----views
-----forms
-----statics
-----templates

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Thank you :)

python

SQLAlchemy

Jinja

SQLite

ZCONF 5