Building reusable web resources with Python and Flask

https://github.com/zaczap/flask_workshop

outline

- installation
- introduction to web computing
- writing basic HTML
- writing a basic server
- building an interactive website

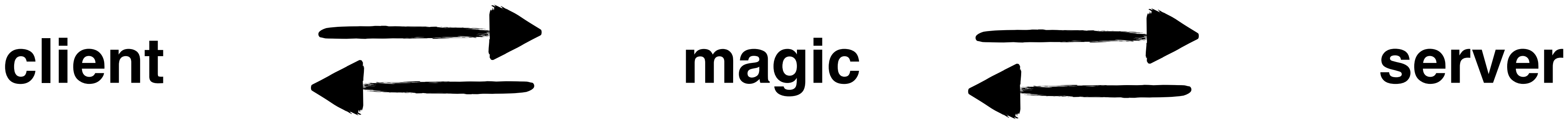
installation

- Open your Terminal/Command Prompt and run:
    - `$ pip install Flask`

Flask

web development,
one drop at a time

web computing

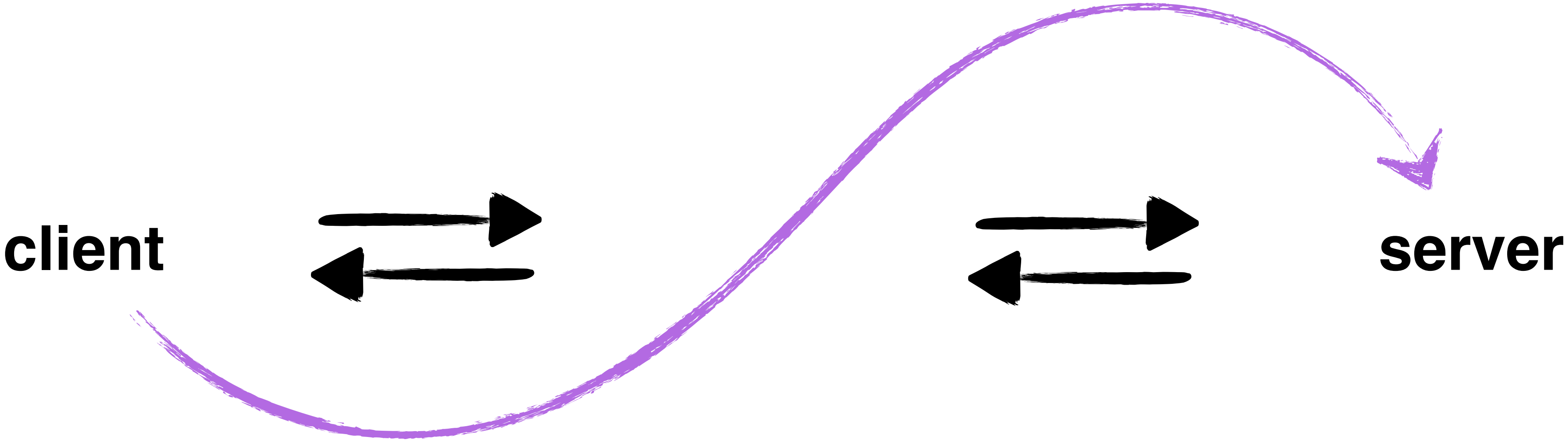


client

magic

server

sending a **request**



client

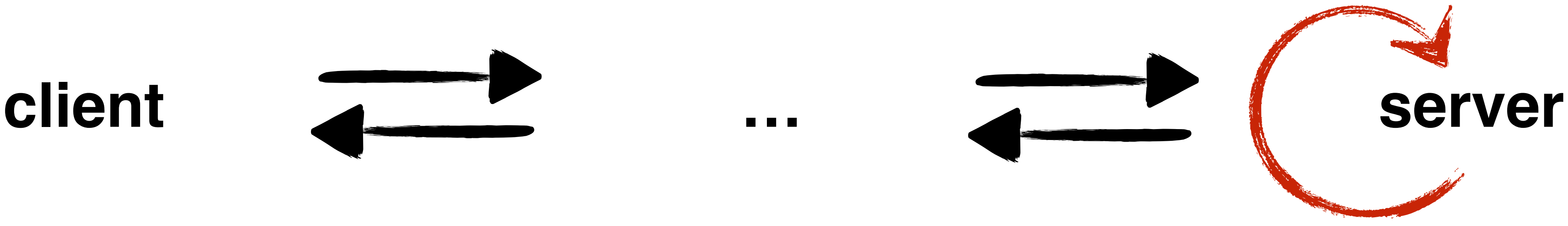
server

http://www.sitename.com/specific

Protocol — **Host** — **Question**

URL = “universal” resource locator

computation / processing



client

...

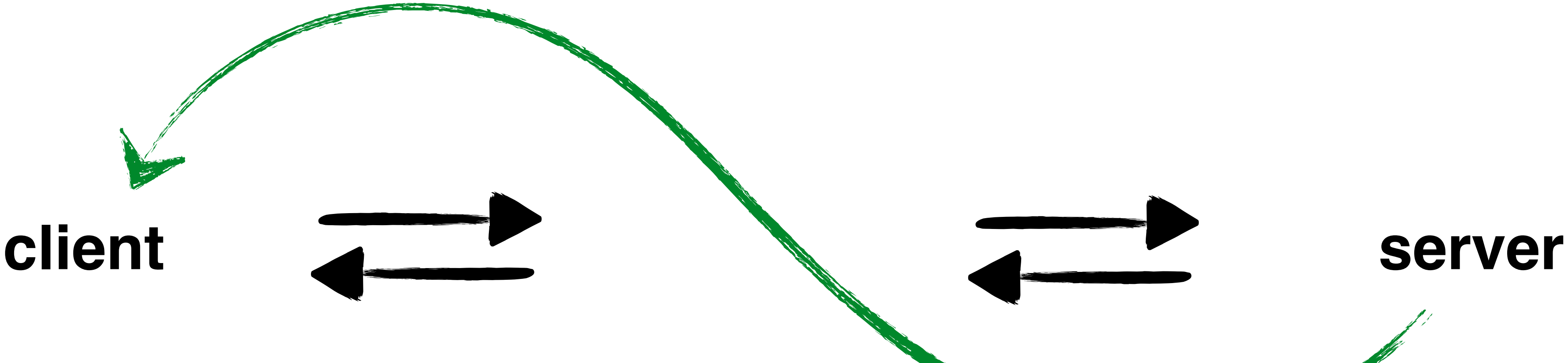
server

search

compute

save

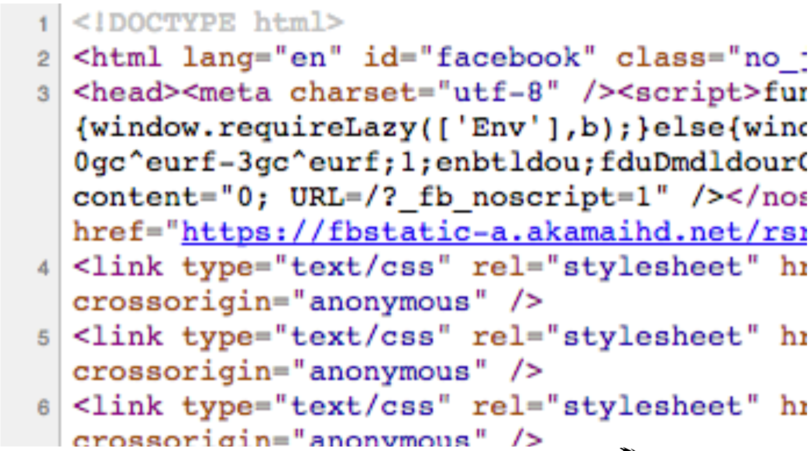
receiving a **response**



```
<!DOCTYPE html>
<html lang="en" id="facebook" class="no
<head><meta charset="utf-8" /><script>fu
{window.requireLazy(['Env'],b);}else{win
0gc^eurf-3gc^eurf;1;enbtldou;fduDmdldour
content="0; URL=/?_fb_noscript=1" /></nos
href="https://fbstatic-a.akamaihd.net/rs
<link type="text/css" rel="stylesheet" h
crossorigin="anonymous" />
<link type="text/css" rel="stylesheet" h
crossorigin="anonymous" />
<link type="text/css" rel="stylesheet" h
crossorigin="anonymous" />
```

HTML, image data, etc.

client **handles** a response



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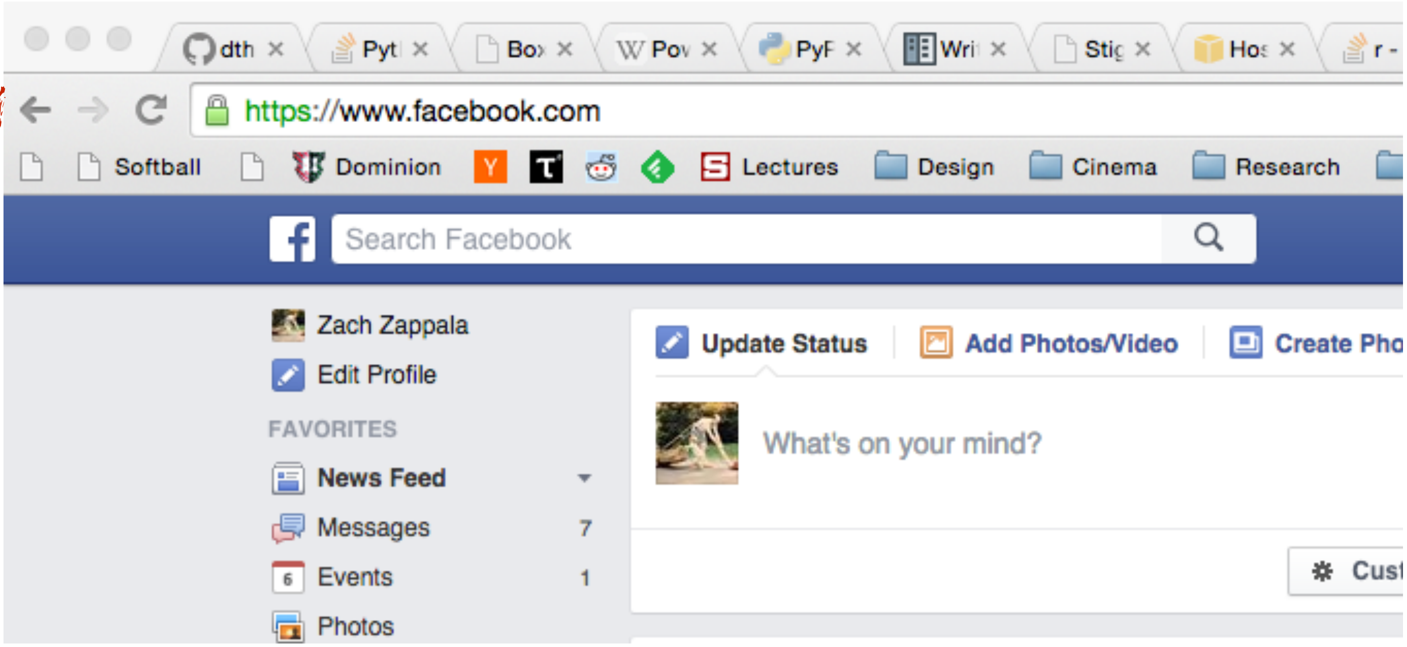
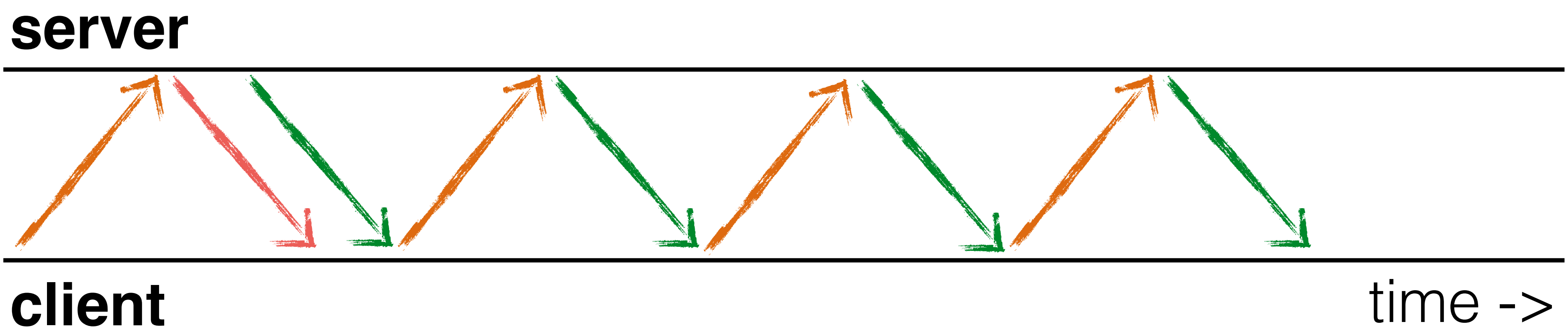
crossorigin="anonymous" />
<link type="text/css" rel="stylesheet" hr
crossorigin="anonymous" />
<link type="text/css" rel="stylesheet" hr
crossorigin="anonymous" />
```

client
server



a session



server

client

time ->

HTML

- **HyperText Markup Language**
  - Describes how a website is arranged
  - Also can describe how it looks but is frowned upon
- **We need some basics, but making websites look AMAZING takes a lot of time**
  - Web designers exist for a reason
  - But making things look decent isn't too hard!

HTML

- Is a series of **nested “tags”**
  - **`<tag>`** *`content`* **`</tag>`**
  - **`<tag>`** **`<tag>`** *`content`* **`</tag>`** **`</tag>`**
  - **`<tag>`**
    - *`content`*
    - **`<tag>`** *`content`* **`</tag>`**
  - **`</tag>`**

00_basic/index.html

```
<html>
 <head>
  <title>My website’s title</title>
 </head>
 <body>
  <h1>My website!</h1>
  <p>Some basic text</p>
  <input type=‘text’ name=‘value’ />
  <input type=‘submit’ />
 </body>
</html>
```

programming a **server**

- a server **generates HTML documents** in response to a **query**

- similar to how your **program** takes **arguments**

anatomy of a server

```
# server.py

# do an infinite loop
while True:

 # accept incoming connections
 client, request = wait_for_incoming_message()

 # perform computation on the request
 response = handle_request(request)

 # send the response back to the client
 send(client, response)
```

01_hello_world/server.py

```python
from flask import Flask

# create the 'app' object: this is the server application
app = Flask(__name__)

# handle basic route
@app.route("/")
def hello():
    html_response = "<html>Hello, world!</html>"
    return html_response

# launch the application with the debug messages
if __name__ == "__main__":
    app.run(debug=True)
```