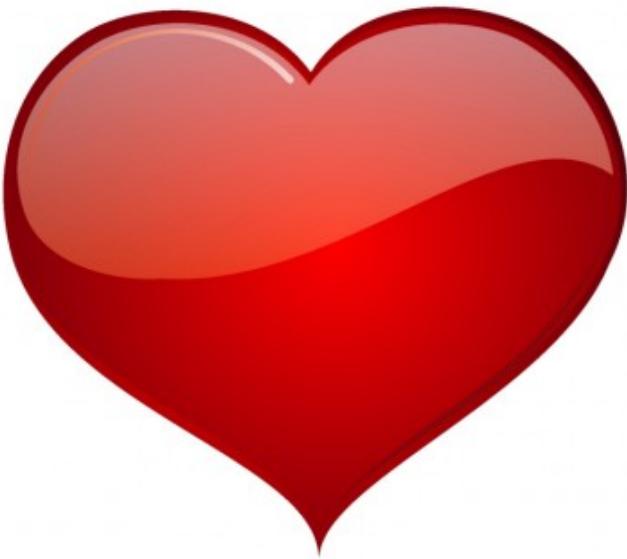
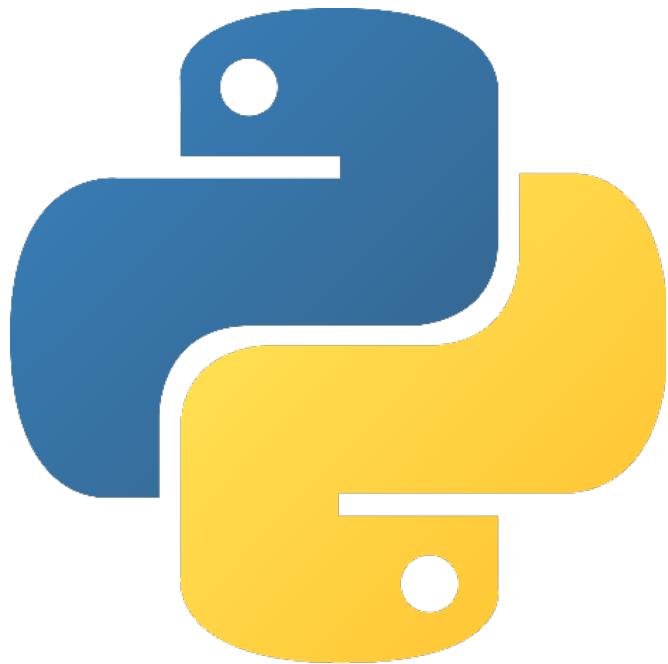


A long time ago, in a galaxy far,  
far away....









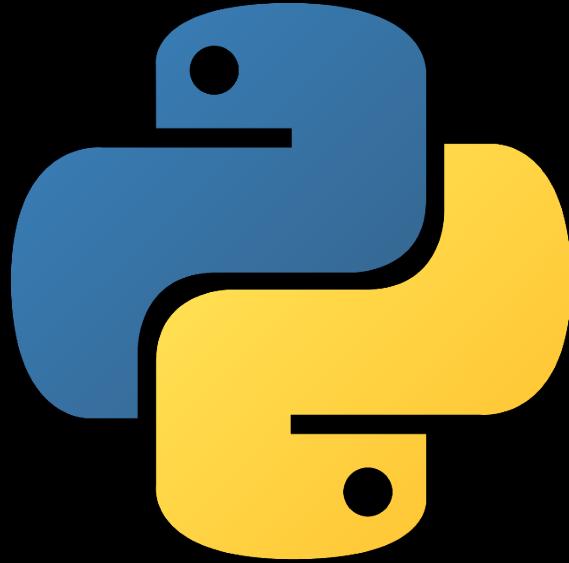
## Applikationer

populära tillämpningarna för Python. Det passar bra som fördjupning efter programmeringen i modul 1-5.

och bibliotek webbprogrammering med Python. Alla delar det liga uppgifter samt att ge en struktur att bygga sitt program efter.

ket på grund av enkelheten i att installera och komma igång. Det snabbaste om deras [webbplatser](#) till din projektmapp. Därefter kan du använda Bottle

kt, kan även installeras globalt på systemet med hjälp av så kallade



# Episode X: The Python Way Of The Force

May the web be with you



**"This is a new day, a new beginning."**

- AHSOKA TANO,  
*STAR WARS REBELS: "FIRE ACROSS THE GALAXY"*

**"This is a new day, a new beginning."**

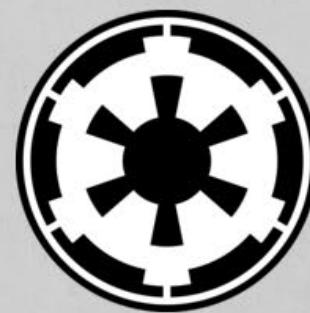
- AHSOKA TANO,  
STAR WARS REBELS: "FIRE ACROSS THE GALAXY"



# STAR WARS - VOTE

Please choose side

Empire



Rebels



Vote

Current standing

Empire

14

Rebels

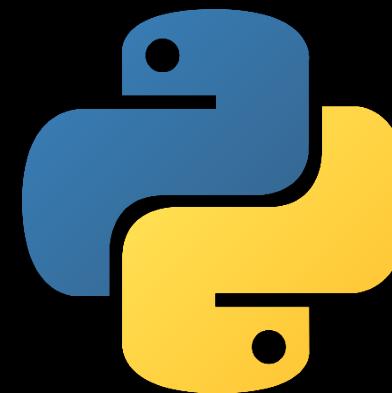
12



Build our web site, you will

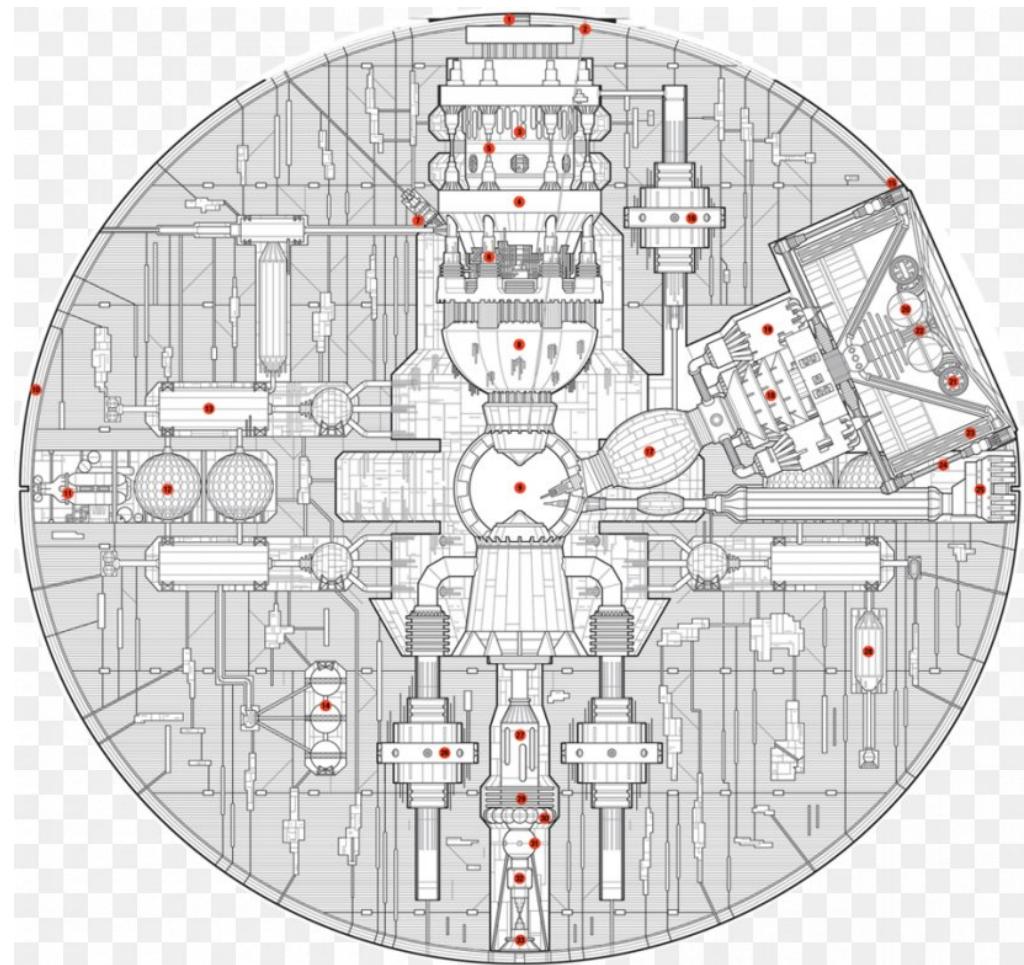


**THE FORCE  
IS STRONG  
WITH THIS ONE**

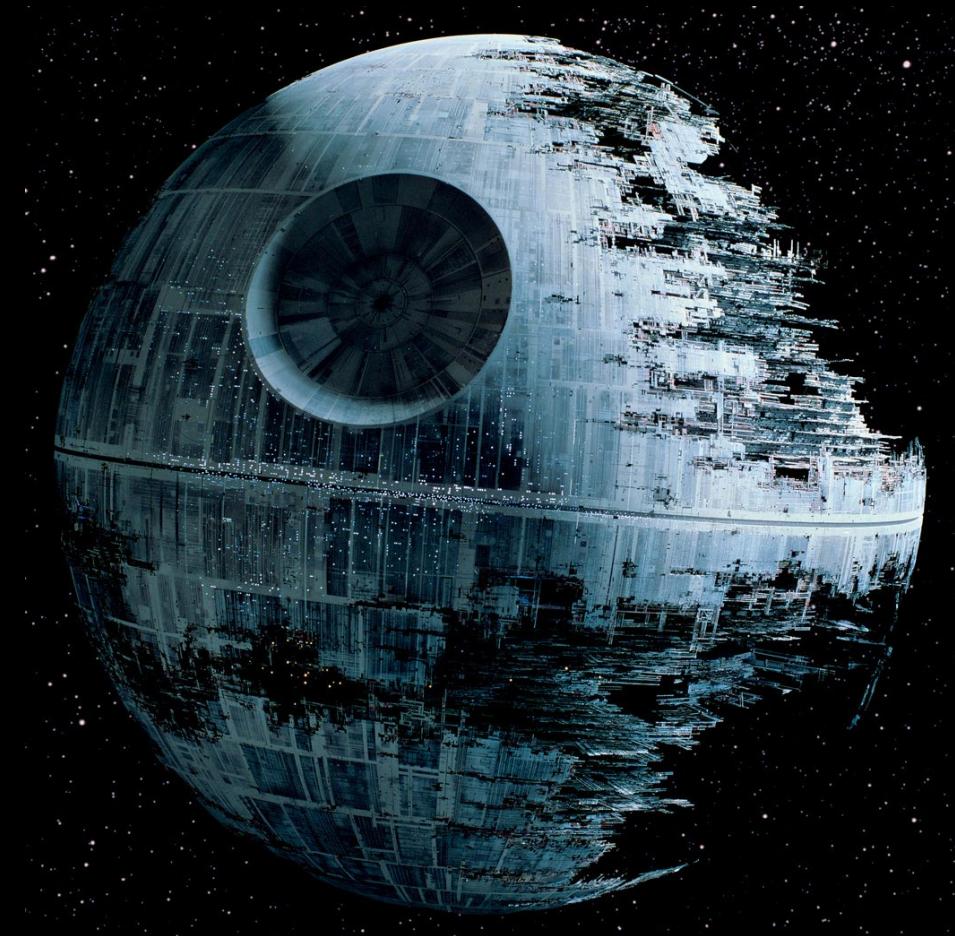


# Dagens agenda

- Demo på vad vi ska bygga
- Bygga webbsidor med Python
  - Hur fungerar en webbserver?
  - Webbserver med Python
  - Server => Python
  - Klient => HTML/CSS
- Bottle som mikroramverk
  - Vad är ett mikroramverk?
  - Routes => Funktioner
- Bygga vår webbplats



Vad vi ska bygga





*“You can’t stop the  
change, any more than  
you can stop the suns  
from setting.”*

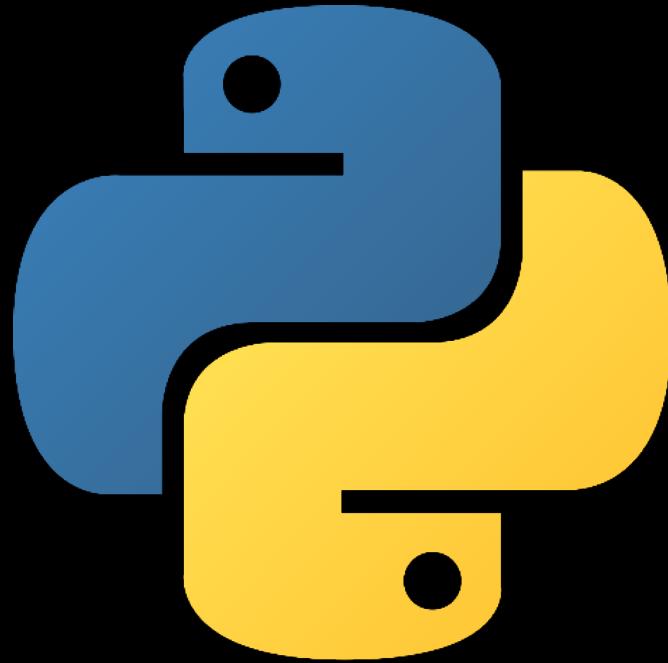
- Shmi Skywalker

Important, this is!



# Webserver?

En **webbserver** är antingen ett datorprogram som tillhandahåller webbsidor för en viss webbplats eller en serverdator på vilken sådan programvara körs.



*...datorprogram som  
tillhandahåller webbsidor ...*

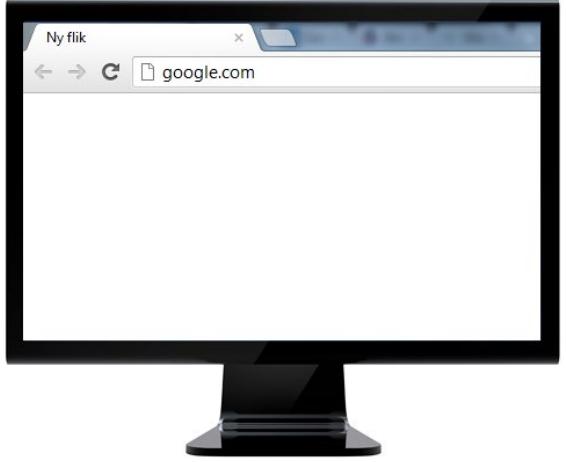


Internet

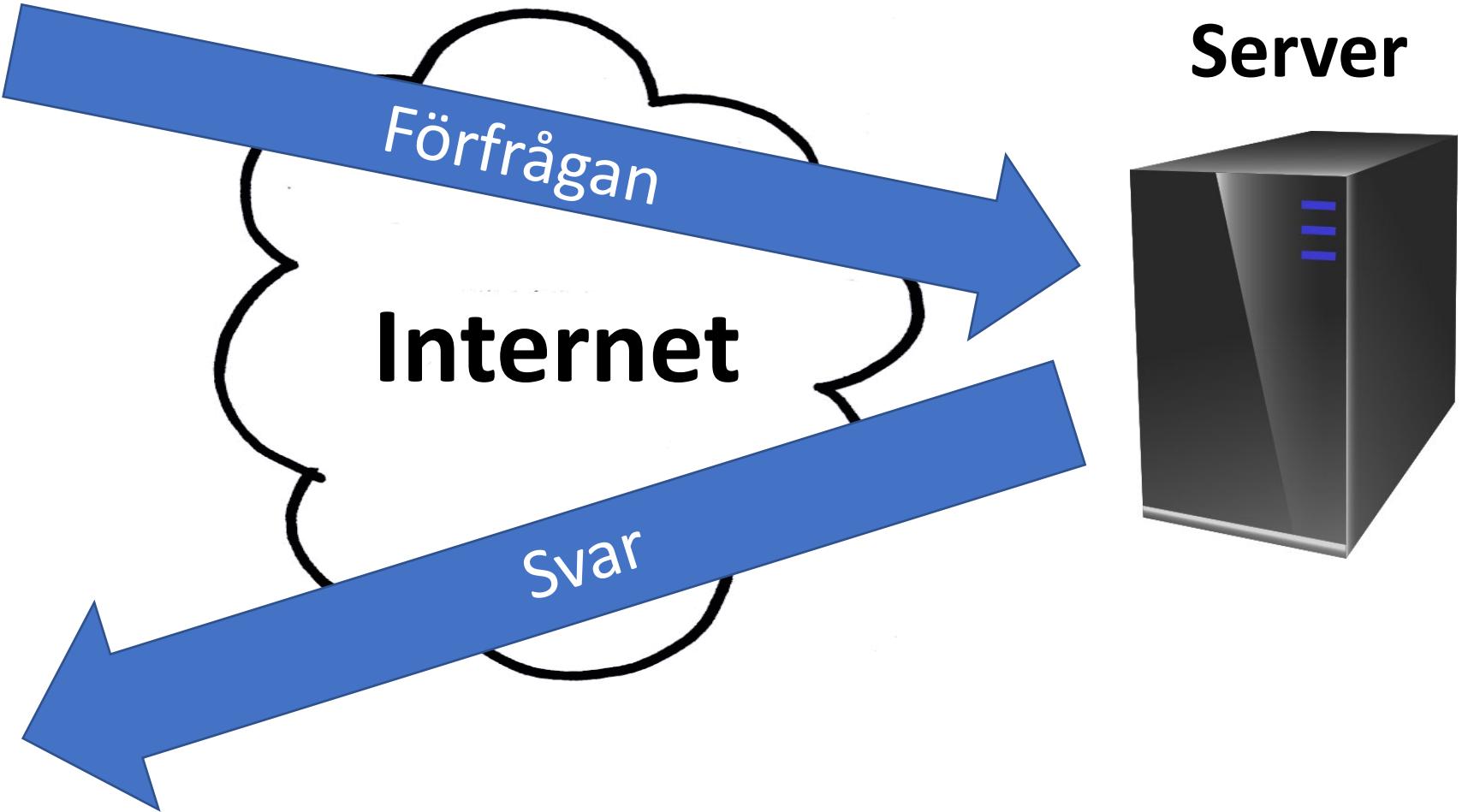
# Webbserver

- Ett webbserverprogram har som uppgift att tillhandahålla webbsidor och andra filer via protokollet HTTP eller HTTPS, **vanligen över Internet.**
- Det förekommer också att **en enskild användare** kör en webbserver för eget lokalt bruk **på sin egen dator**. Vanligen kommunicerar användaren med webbservern med hjälp av en webbläsare.
- Användaren väljer webbsidor och webbläsaren *"beställer"* webbsidorna från webbservern och visar dem på användarens datorskärm. Webbläsaren är klient till webbservern.

# Klient



# Klient





# URL

## Uniform Resource Locator

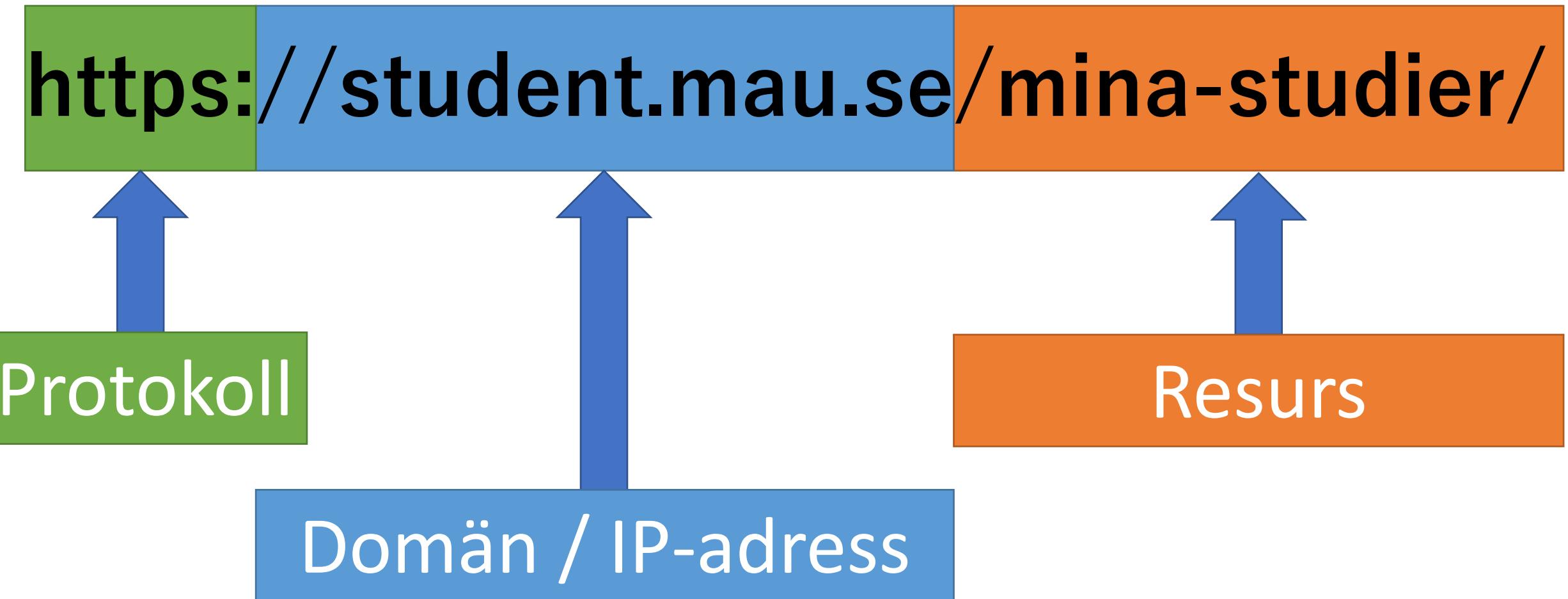
Exempel på URL

<https://mau.se>

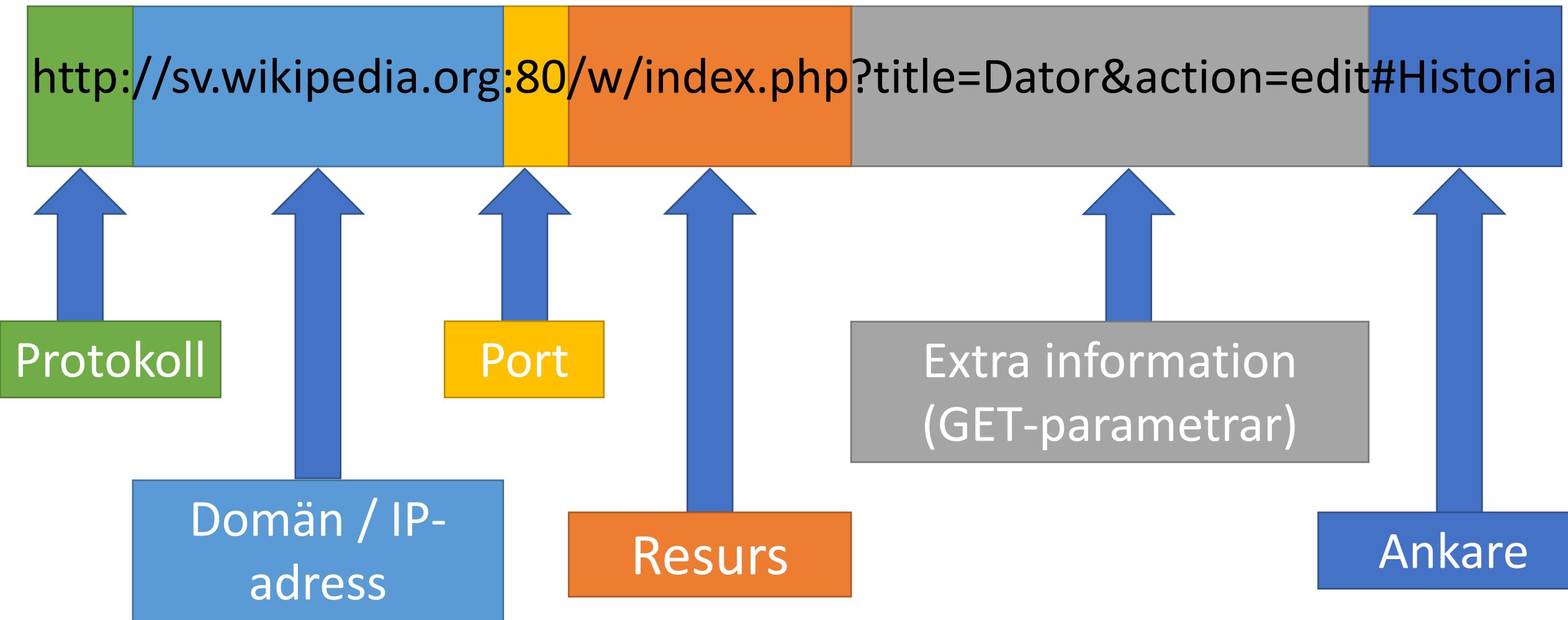
<https://student.mau.se/mina-studier/>

[https://mau.instructure.com/courses/6601/discussion\\_topics/128343](https://mau.instructure.com/courses/6601/discussion_topics/128343)

# Grundläggande URL



# Komplett URL



# Andra URI

## Uniform Resource Identifier

<ftp://ftp.is.co.za/rfc/rfc1808.txt>

<http://www.ietf.org/rfc/rfc2396.txt>

<mailto:John.Doe@example.com>

<telnet://192.0.2.16:80/>

[news:comp.infosystems.www.servers.unix](#)

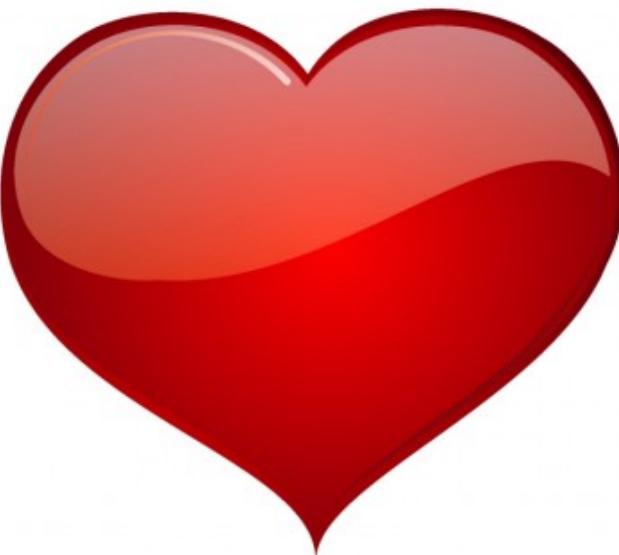
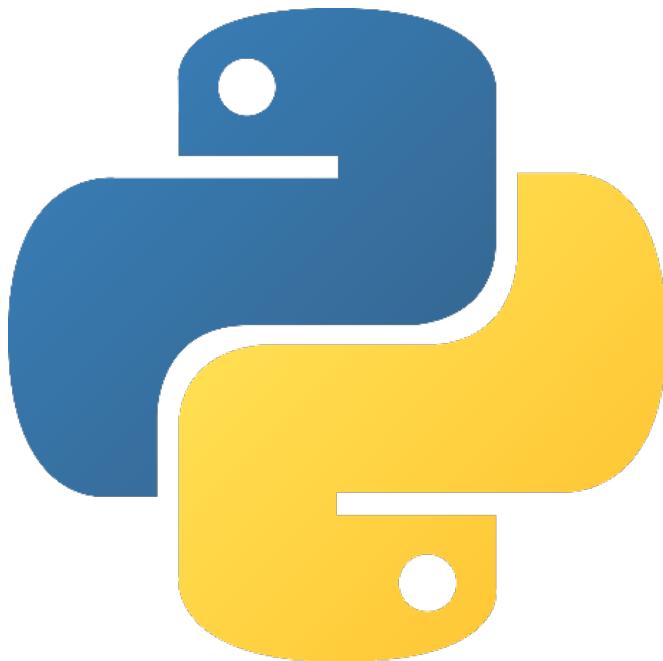
There's no place like  
127.0.0.1

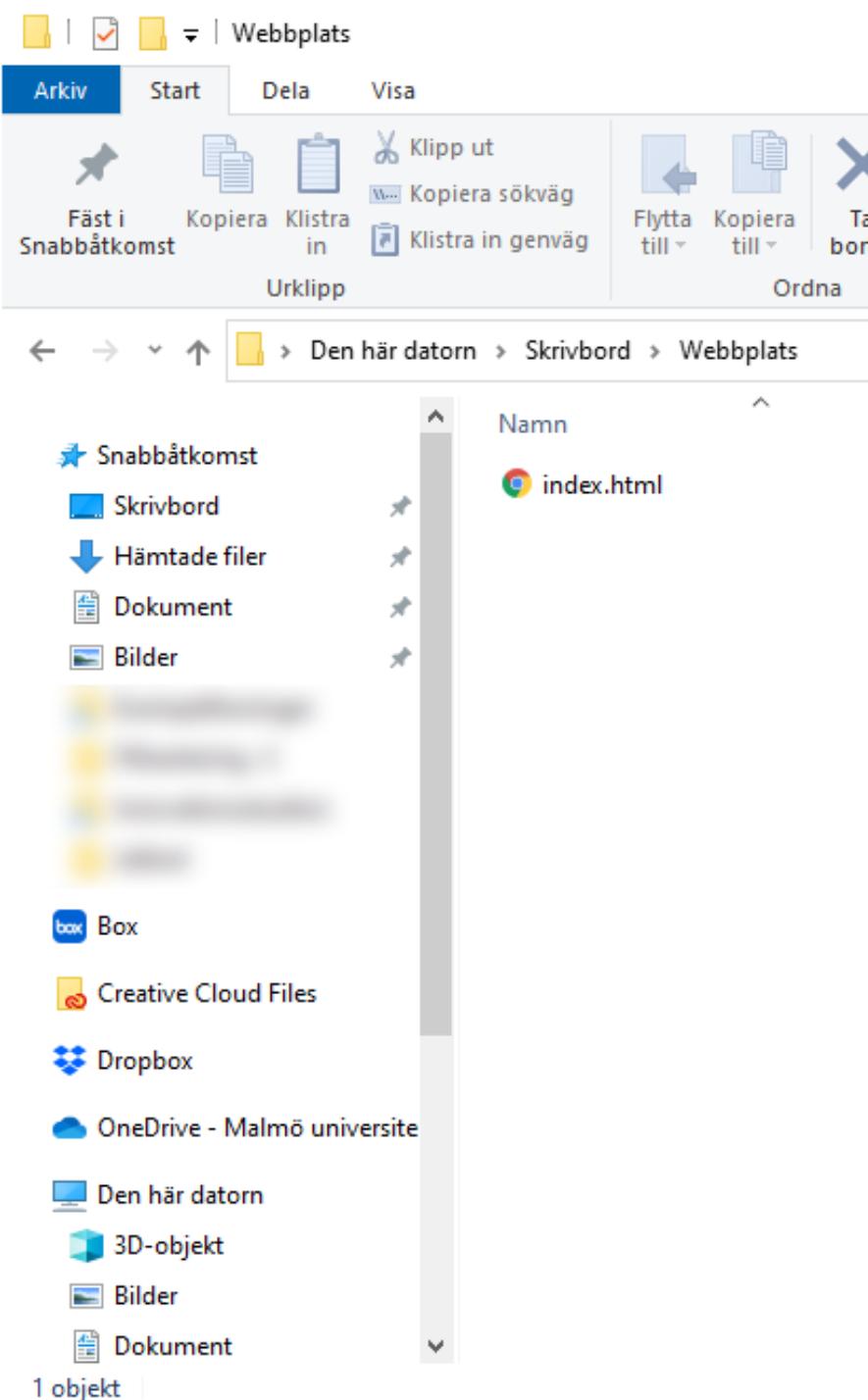


No place like 127.0.0.1, there is.

# `python -3 -m http.server 8000`

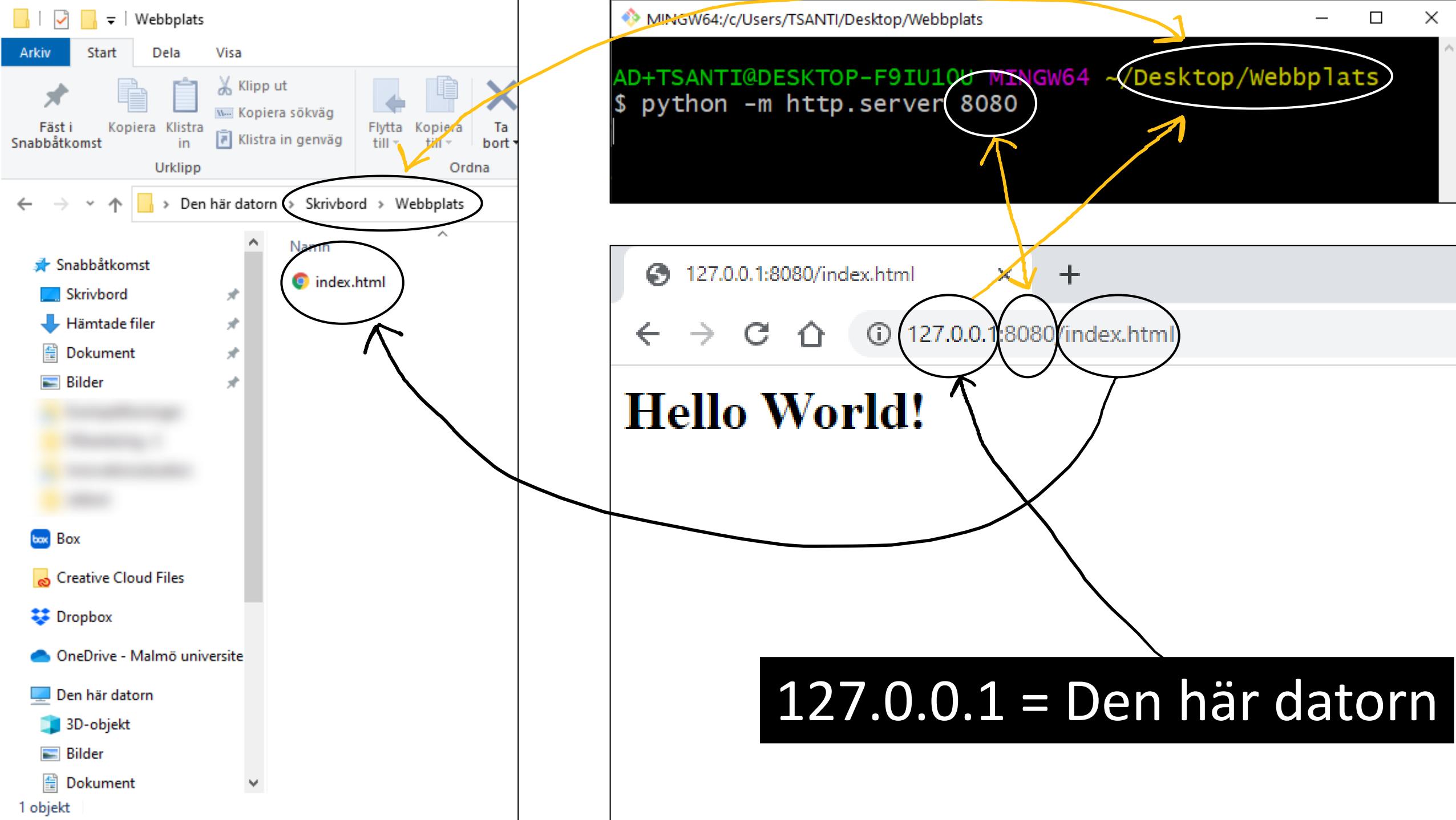
Starta en webbserver från en specifik mapp



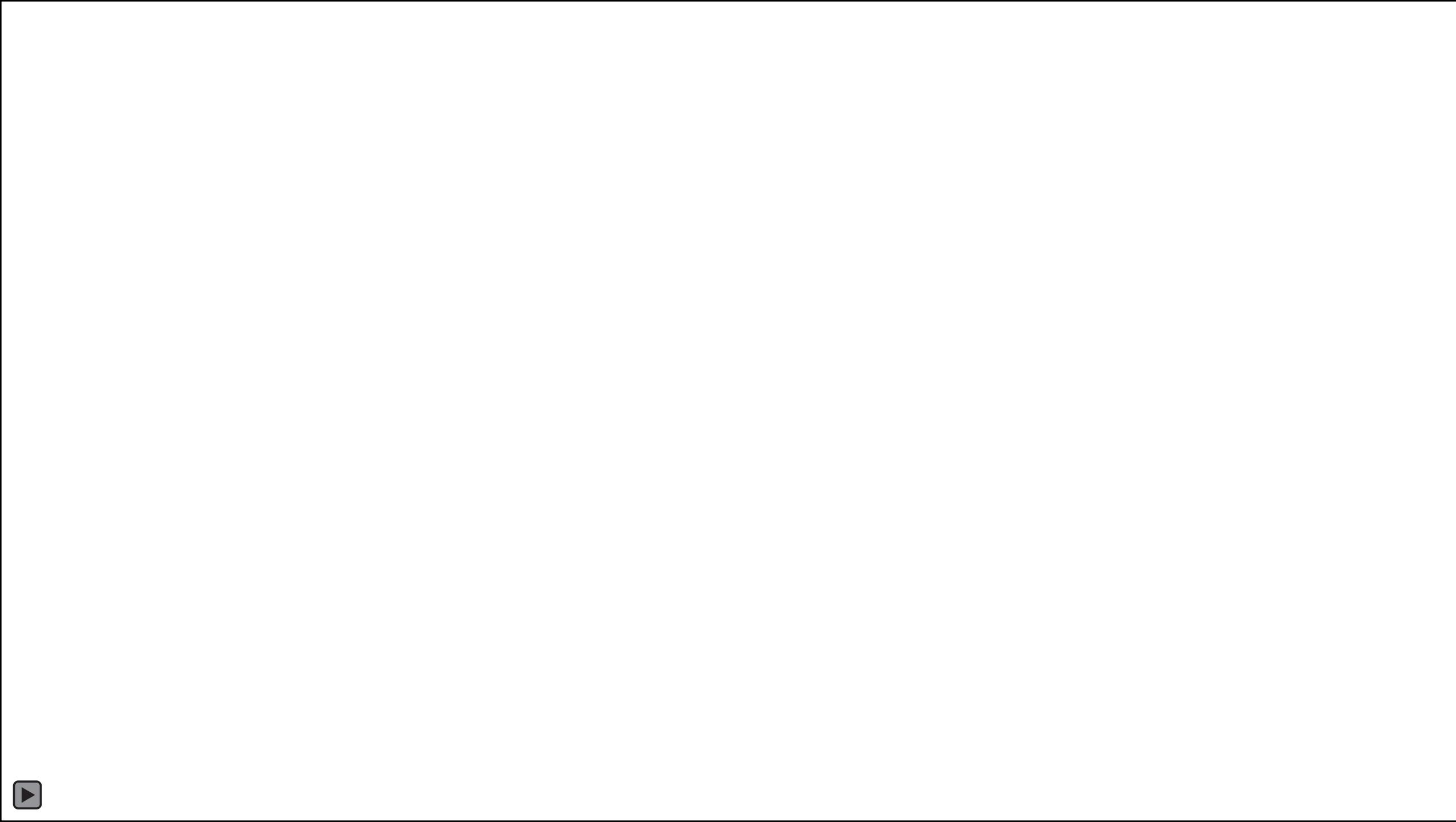


```
MINGW64:/c/Users/TSANTI/Desktop/Webbplats
AD+TSANTI@DESKTOP-F9IU10U MINGW64 ~/Desktop/Webbplats
$ python -m http.server 8080
```

A screenshot of a web browser window. The address bar shows the URL '127.0.0.1:8080/index.html'. The page content displays the text 'Hello World!' in large, bold, black font.



127.0.0.1 = Den här datorn





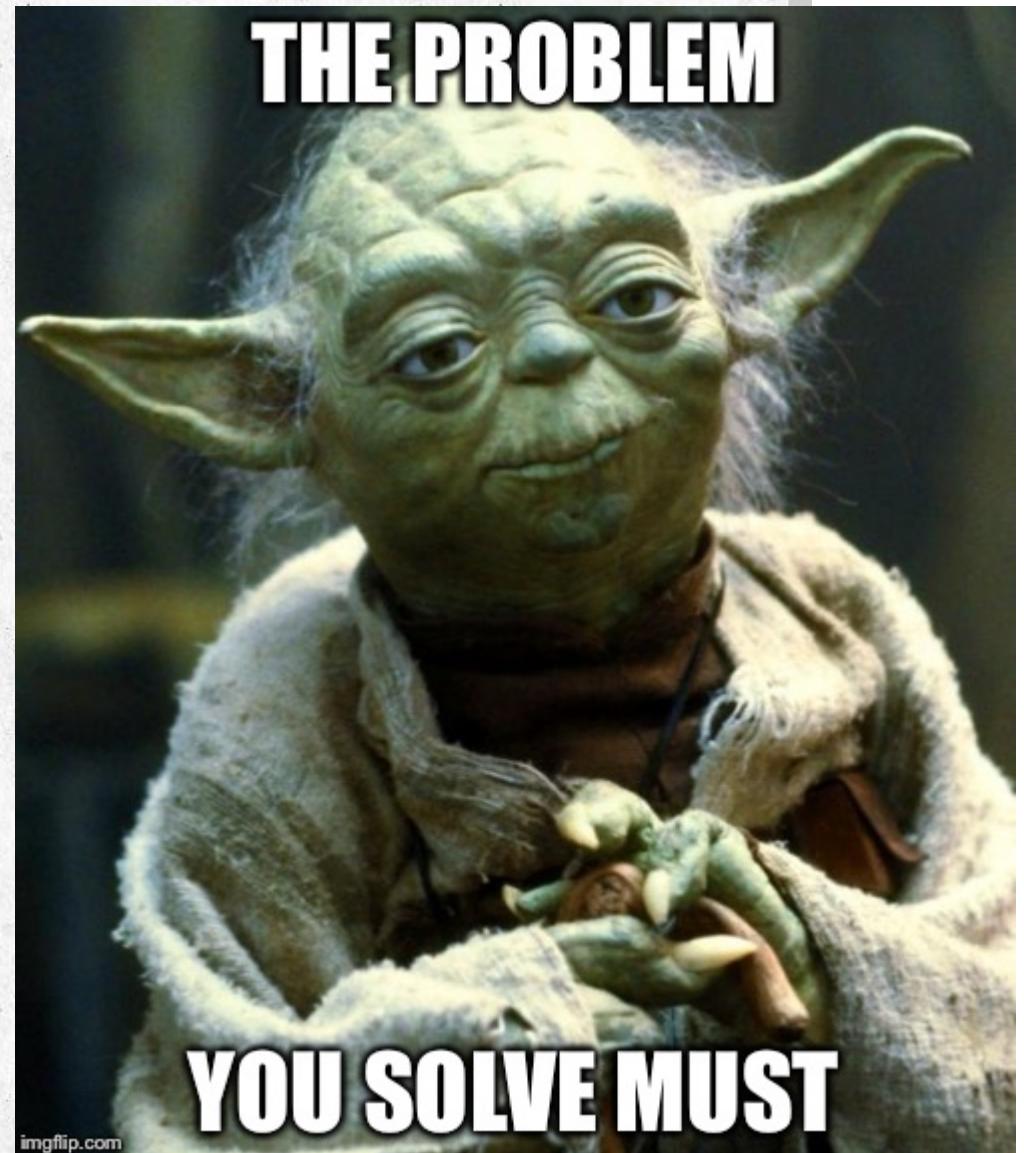
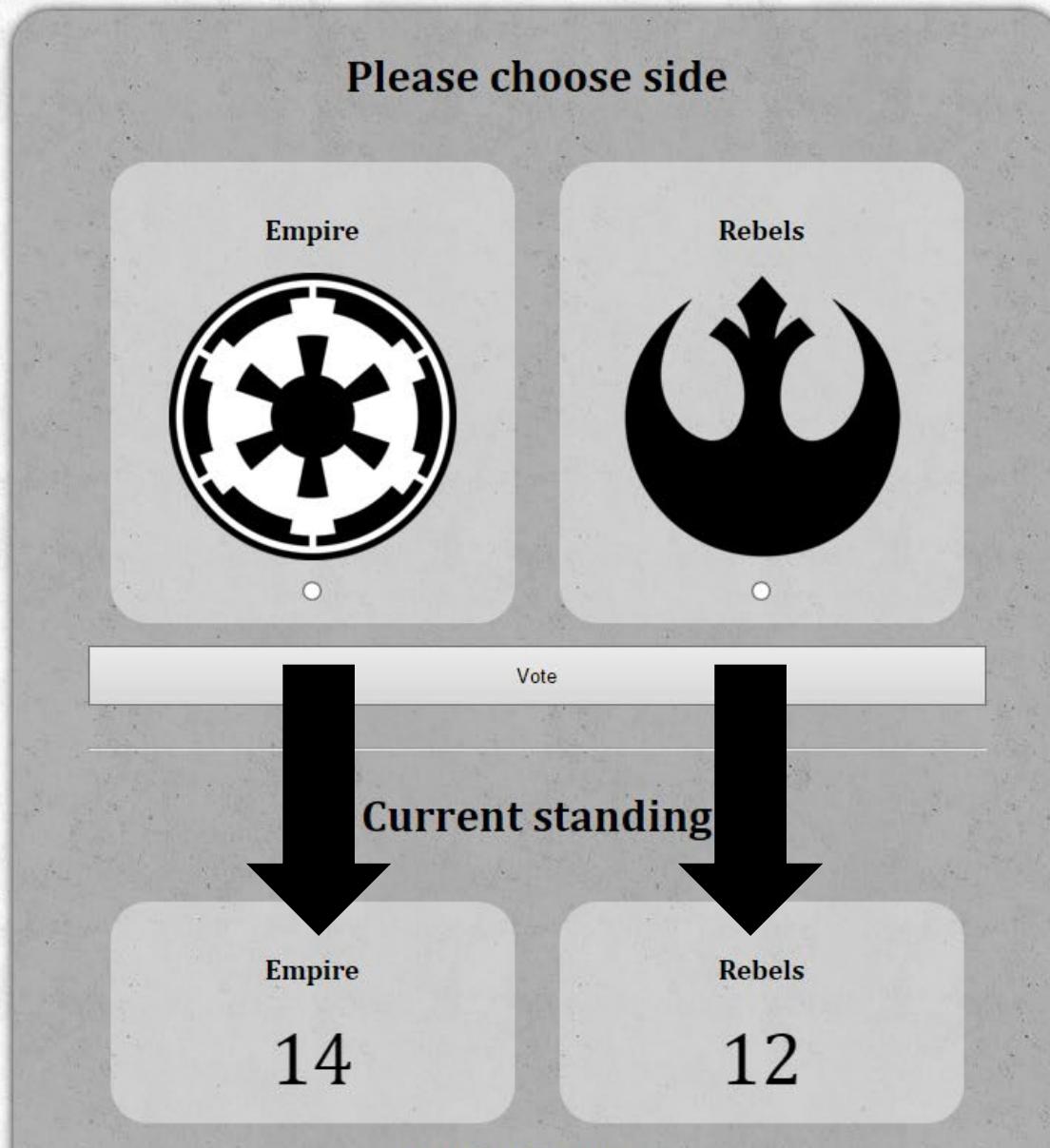
# Demo – Lokal webserver

# Men – hur mycket Python var detta egentligen?



*Feel the power of the server side!*

# **STAR WARS - VOTE**



DO, OR DO NOT...  
THERE IS NO TRY

-YODA





**THE FORCE  
IS STRONG  
WITH THIS ONE**

# Vad kan vi hittills?

## DA106A - Webbutveckling

- Skapa webbsidor genom:
  - HTML
  - CSS
  - (JavaScript)

## DA354A - Programmering

- Programmera i Python
  - Variabler
  - Datatyper
  - Funktioner
  - Filhantering
  - Felhantering
  - JSON
  - M.m.

**Vad behöver vi lära oss? => Bygga en webbtjänst!**



“Oh, my dear friend.  
How I’ve missed you.”  
- C-3PO



# Behöver vi bygga allt själva?



A simpler way, there is.



To be efficient, a tool you need.





<https://www.mindinventory.com/blog/best-python-web-frameworks-2019/>



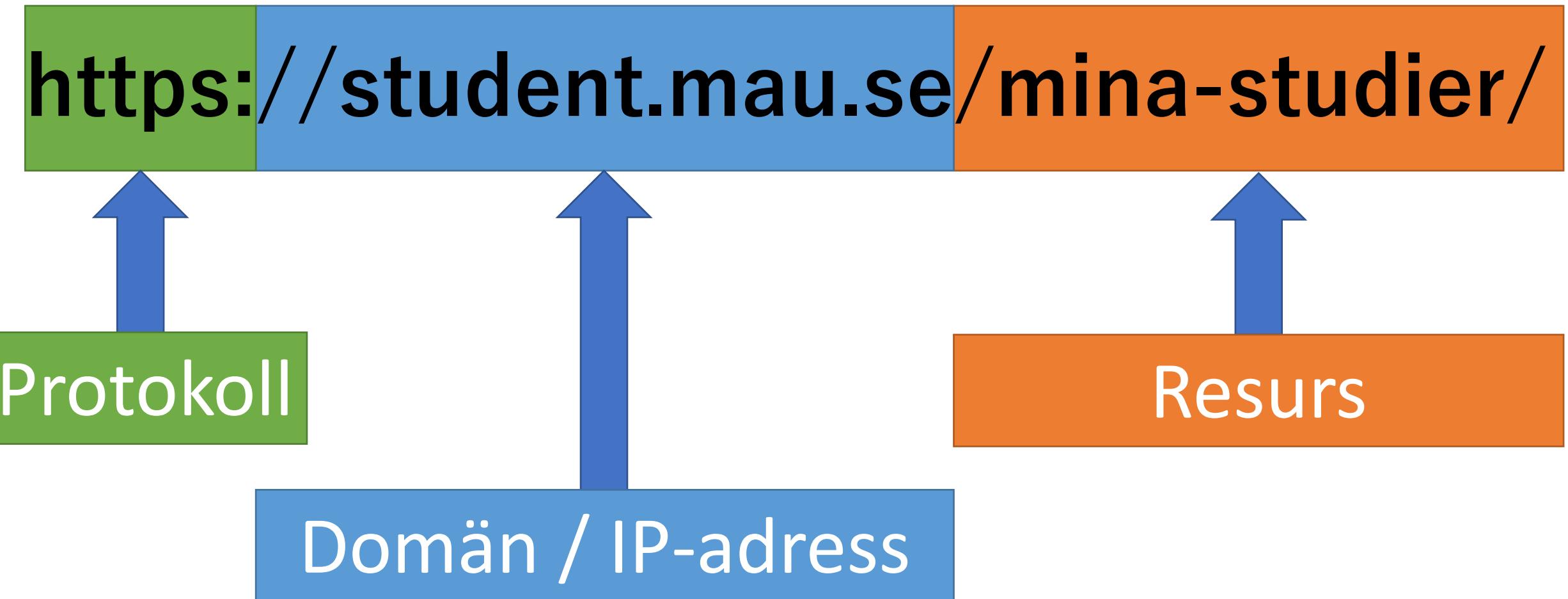
*“I’m just a simple man trying to make my way in the universe.”*  
- Jango Fett

# Koncept 1

## - Routes

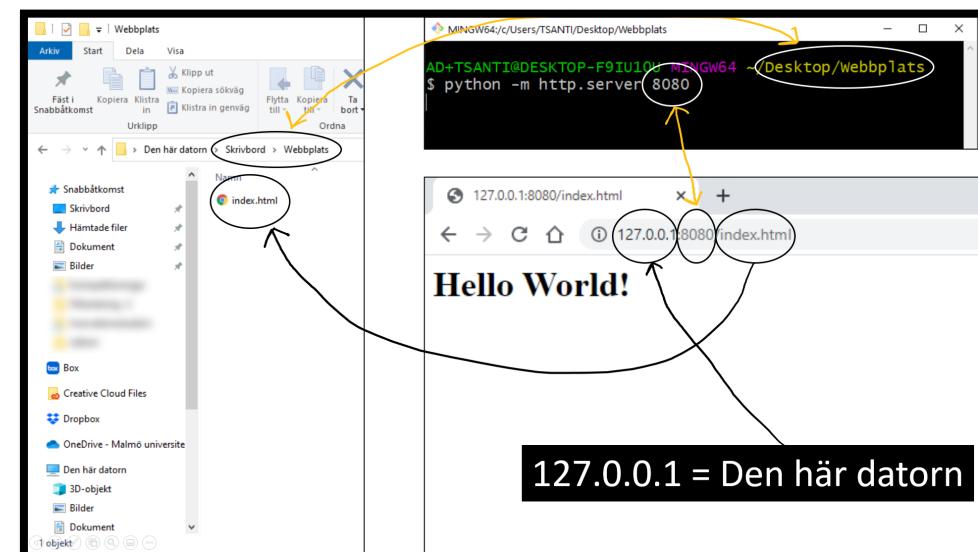


# Grundläggande URL



# Bottle - Routes

- Vi vill kunna mappa URL till olika funktioner i Python
  - /home => def home()
  - /contact => def contact()
  - /about => def about()
- 127.0.0.1/home => def home()
- 127.0.0.1/contact => def contact()
- 127.0.0.1/about => def about()





Kom igång med routes



“  
I'M ONE WITH  
THE FORCE, AND  
THE FORCE IS  
WITH ME.

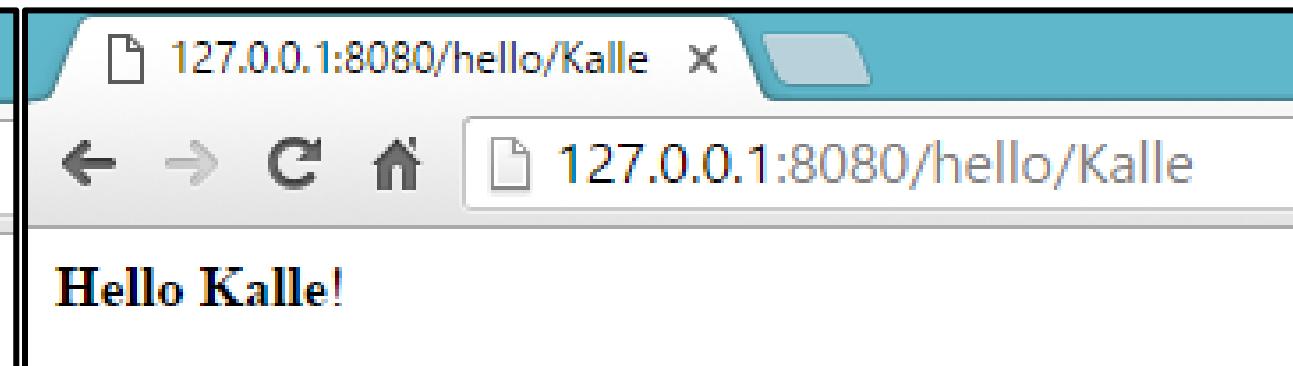
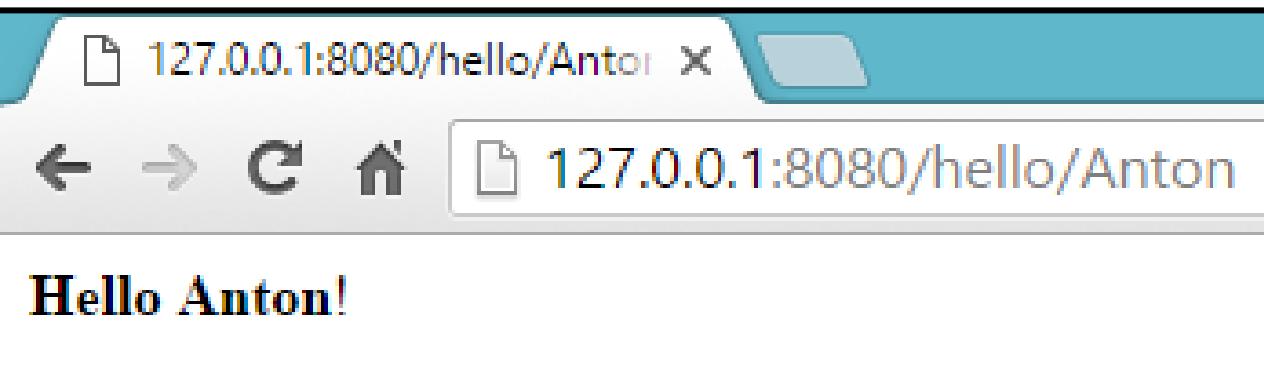
CHIRRUT ÎMWE

# Hello <name>

```
from bottle import route, run, template

@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)

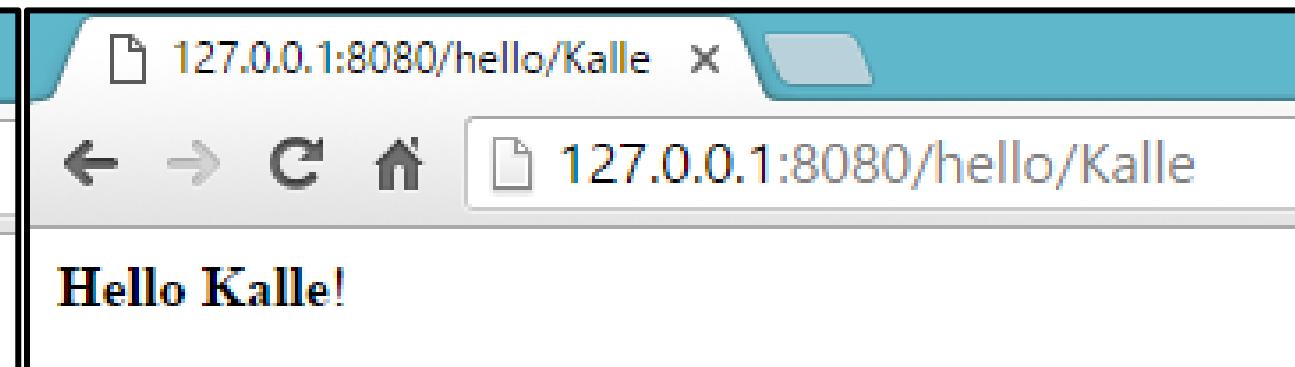
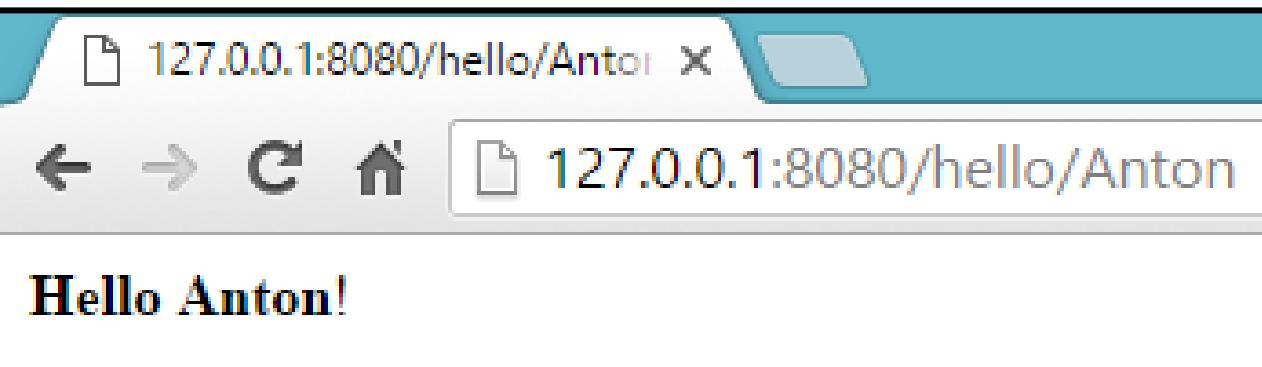
run(host='localhost', port=8080)
```



```
from bottle import route, run, template

@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)

run(host='localhost', port=8080)
```



# 1. Första grunderna i koden

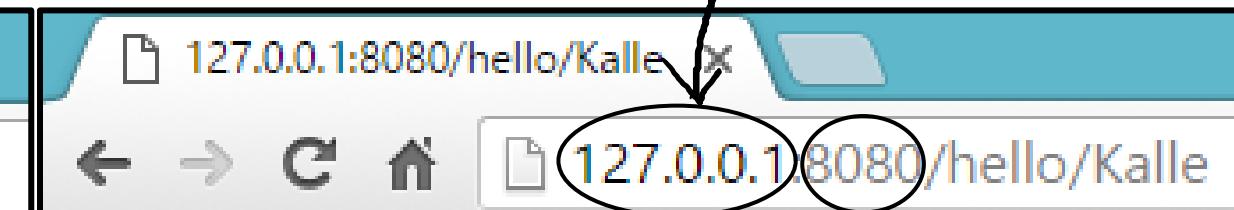
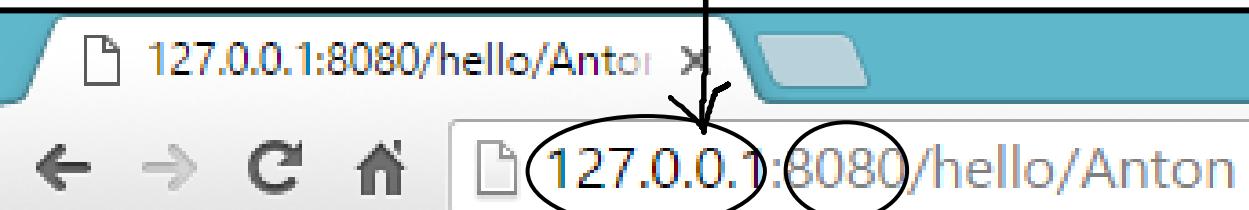
Modulen bottle

Funktioner i bottle

```
from bottle import route, run, template
```

```
@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)
```

```
run(host='localhost', port=8080)
```



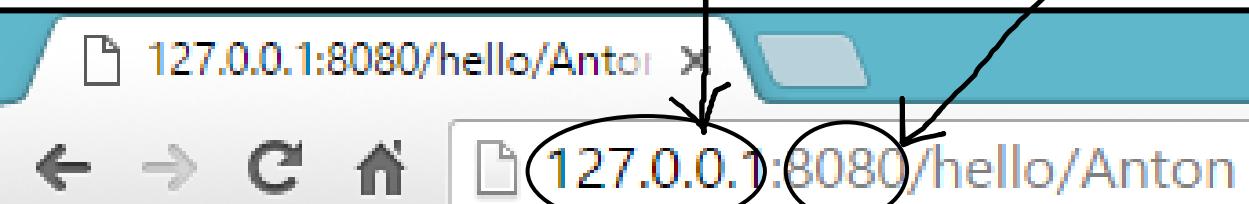
Modulen bottle

Funktioner i bottle

```
from bottle import route, run, template
```

```
@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)
```

```
run(host='localhost', port=8080)
```

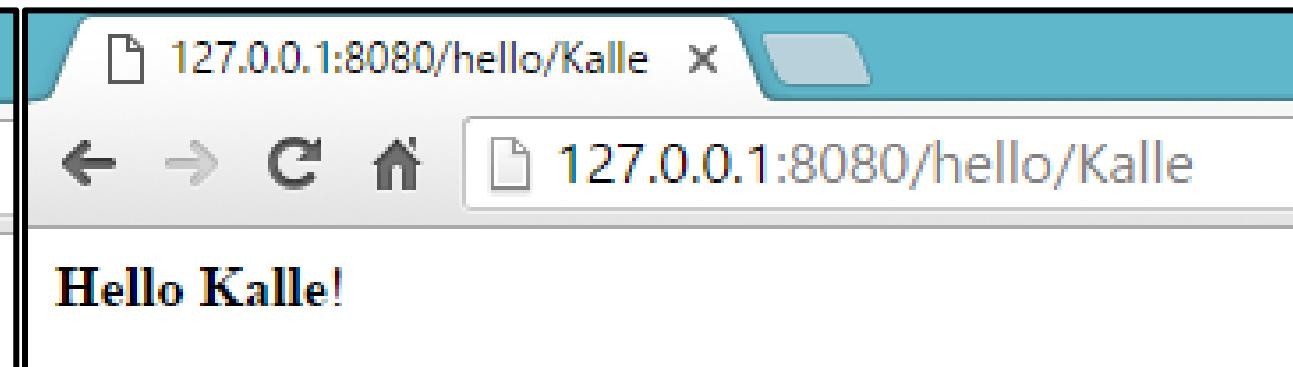
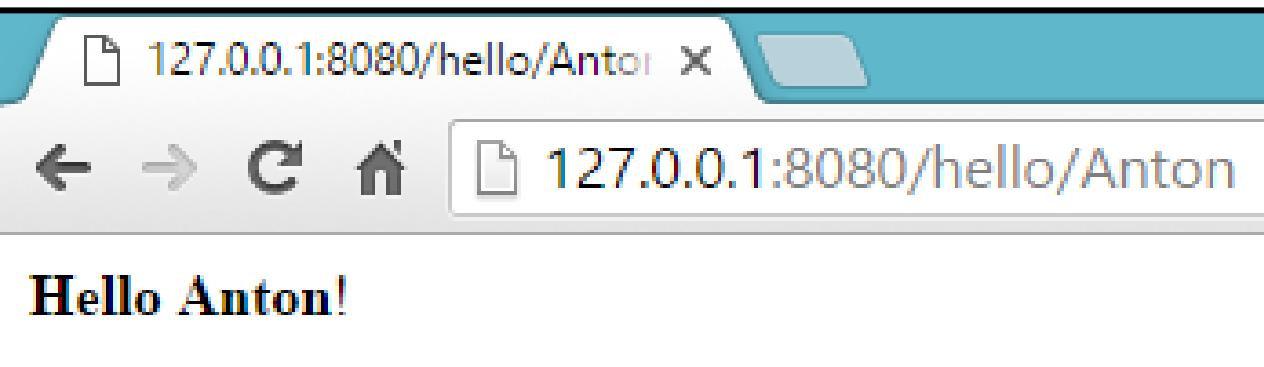


## 2. Förstå routes och argument

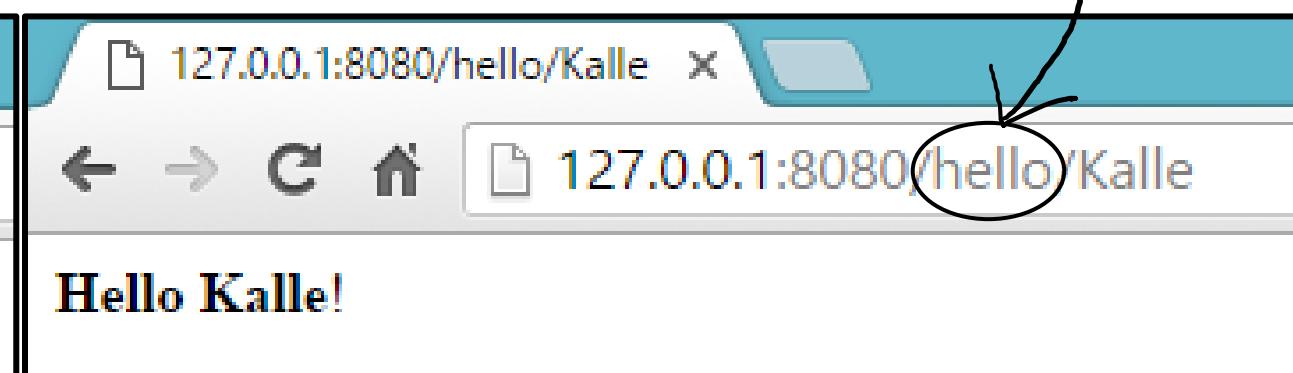
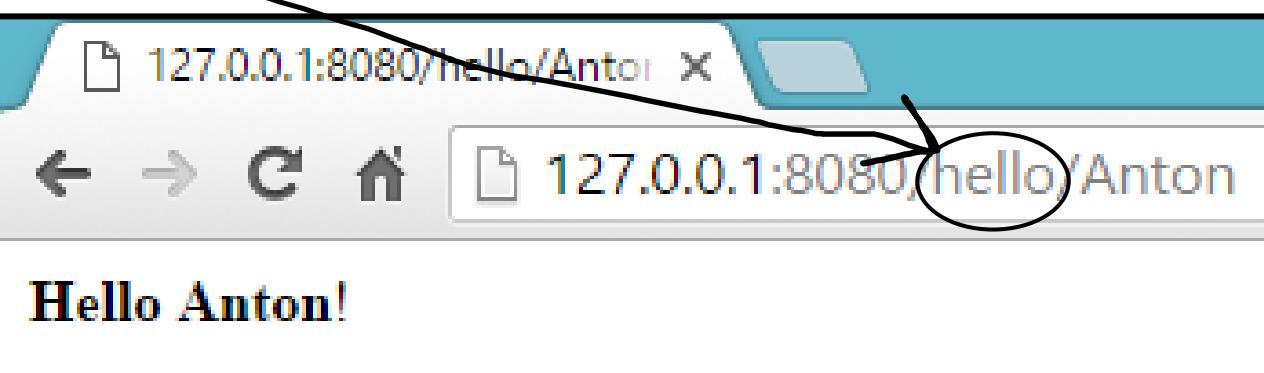
```
from bottle import route, run, template

@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)

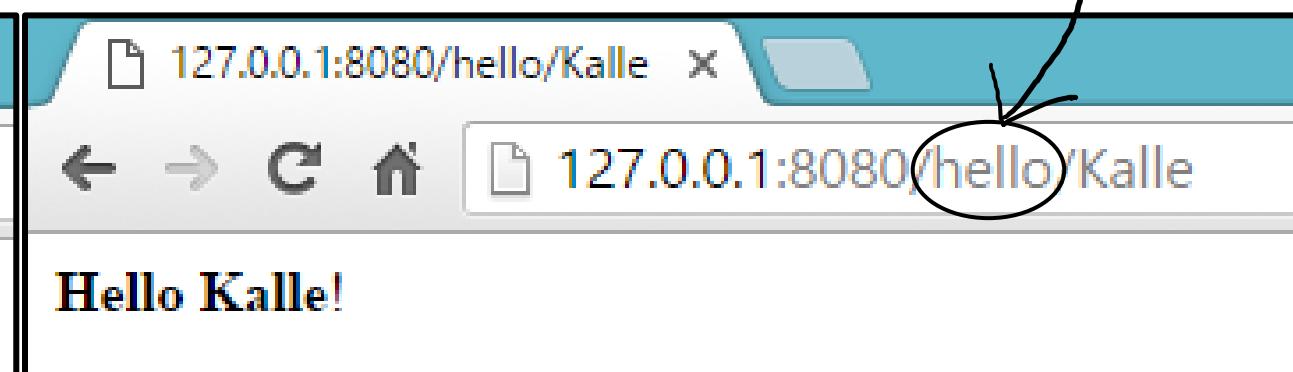
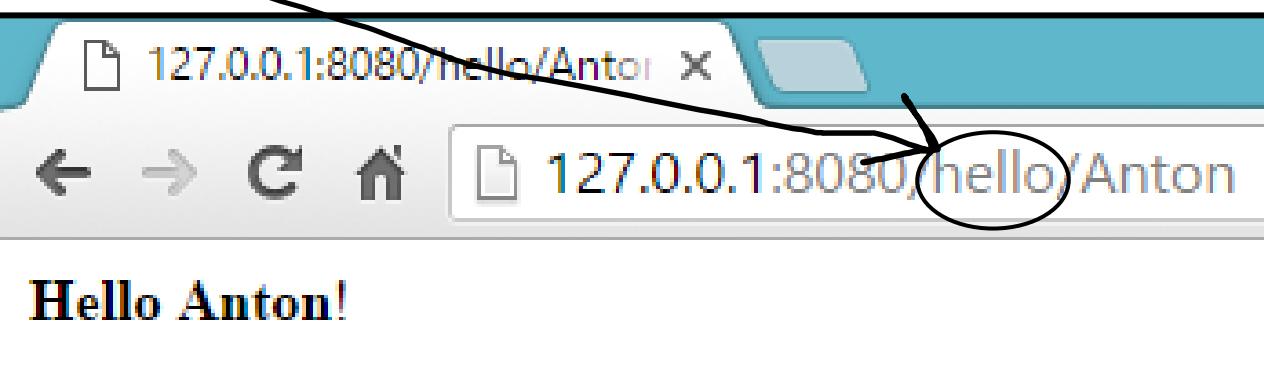
run(host='localhost', port=8080)
```



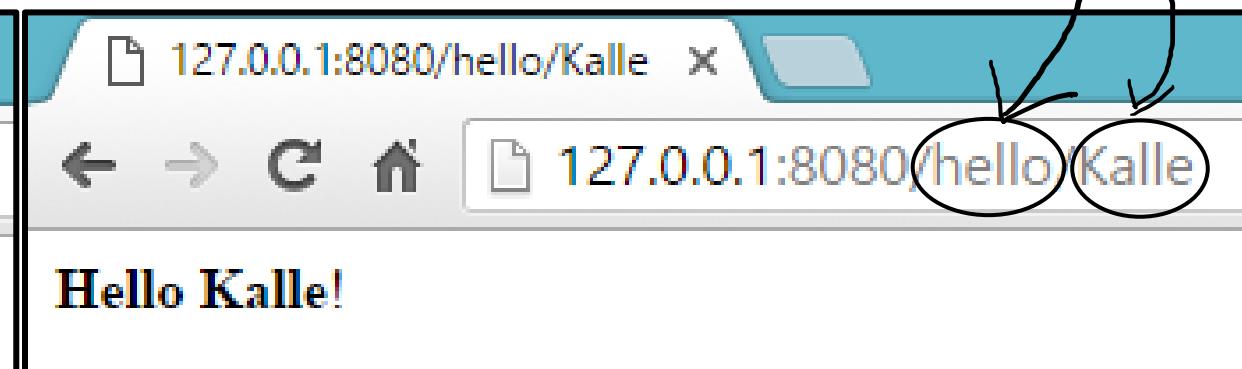
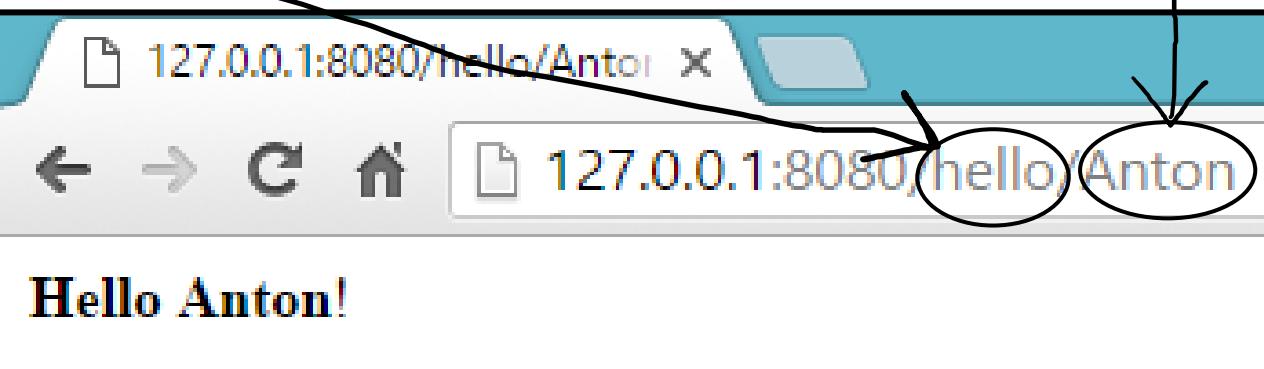
```
from bottle import route, run, template  
  
@route('/hello/<name>')  
def index(name):  
    return template('<b>Hello {{name}}</b>! ', name=name)  
  
run(host='localhost', port=8080)
```



```
from bottle import route, run, template  
  
@route('/hello/<name>')  
def index(name):  
    return template('<b>Hello {{name}}</b>! ', name=name)  
  
run(host='localhost', port=8080)
```



```
from bottle import route, run, template  
  
@route('/hello/<name>')  
def index(name):  
    return template('<b>Hello {{name}}!</b>', name=name)  
  
run(host='localhost', port=8080)
```

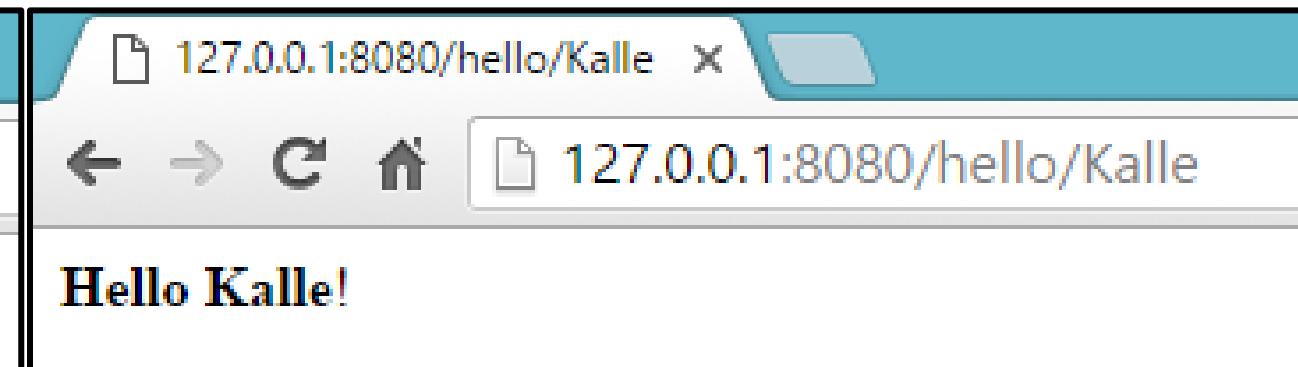
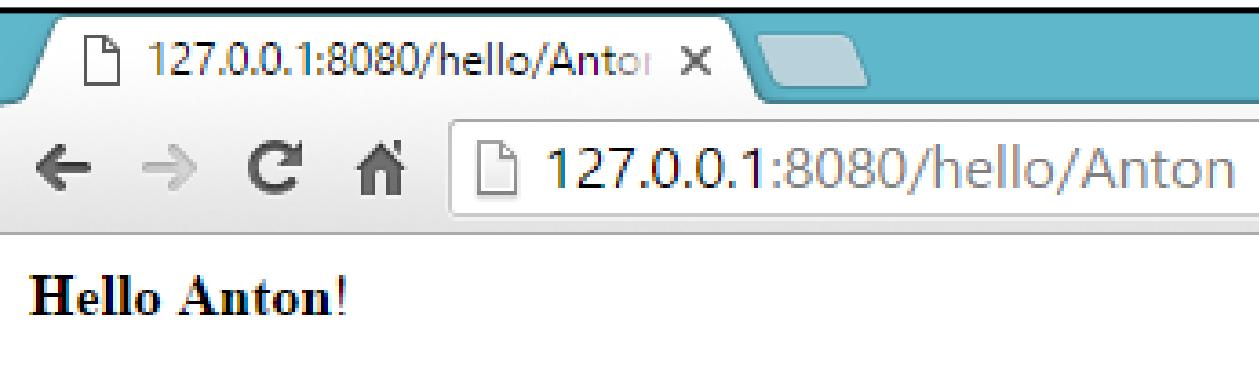


# 3. Förstå parametrar (& värde)

```
from bottle import route, run, template

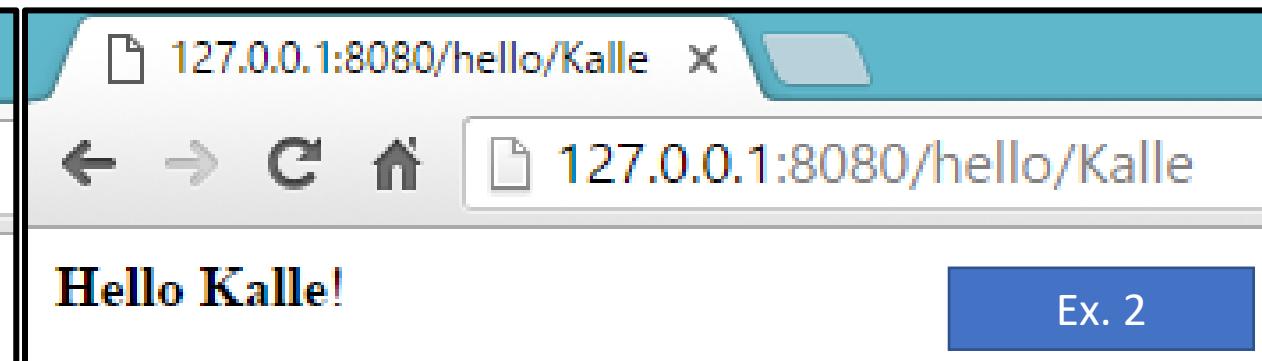
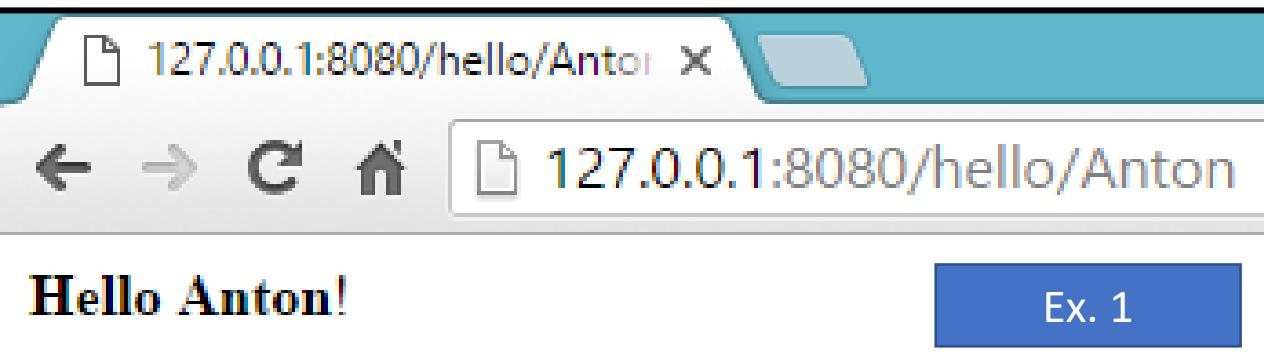
@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)

run(host='localhost', port=8080)
```



```
from bottle import route, run, template  
@route('/hello/<name>')  
def index(name):  
    return template('<b>Hello {{name}}!</b>', name=name)  
run(host='localhost', port=8080)
```

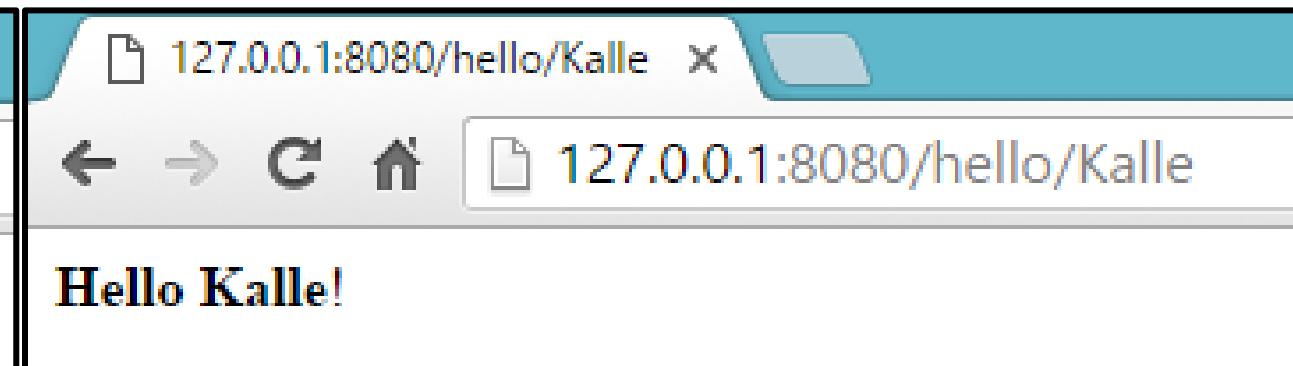
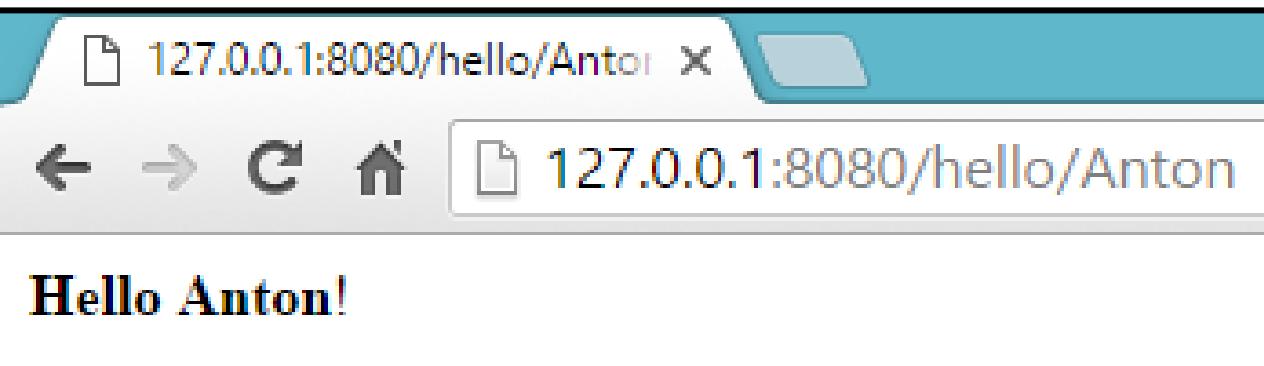
Ex 1 - Anton  
Ex 2 - Kalle



```
from bottle import route, run, template  
  
@route('/hello/<name>')  
def index(name):  
    return template('<b>Hello {{name}}!</b>', name=name)  
  
run(host='localhost', port=8080)
```

Namn på parameter till template

Ex 1 - Anton  
Ex 2 - Kalle



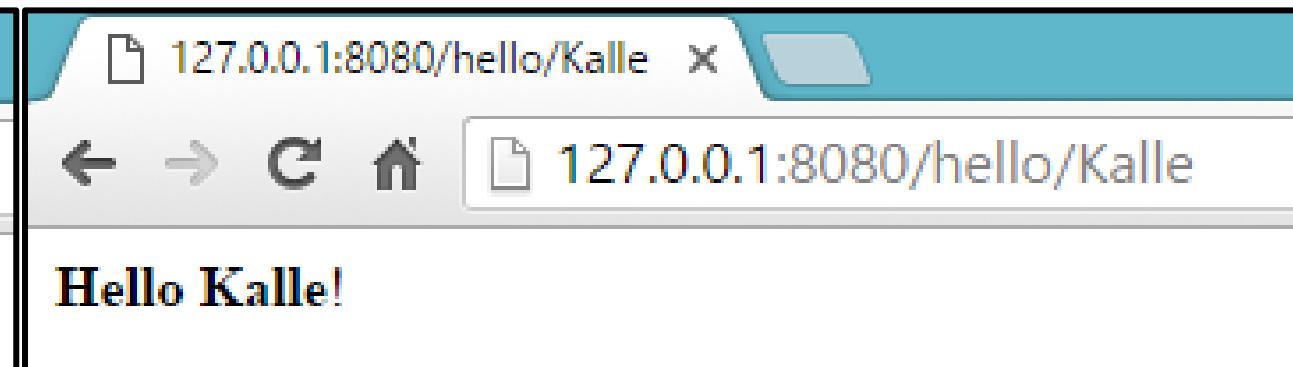
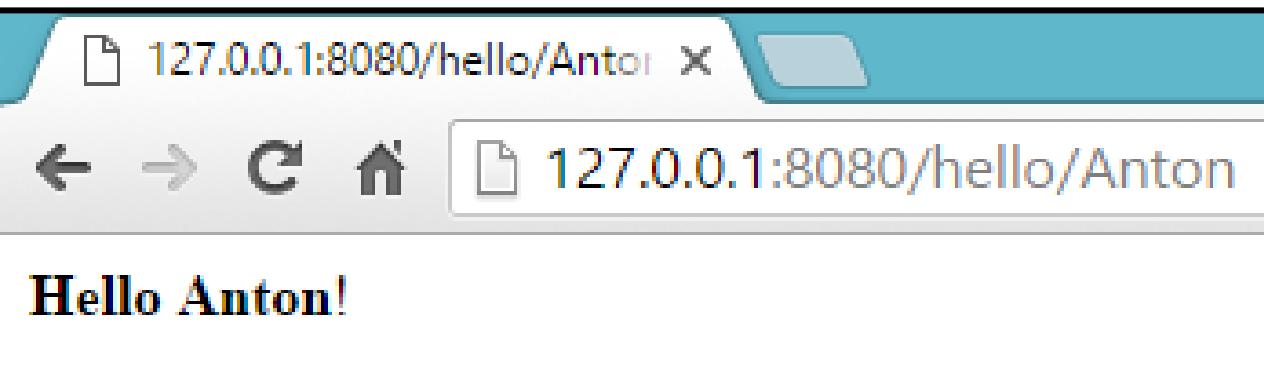
# - En total översikt

Riskerar att bli lite förvirrande ' ...

```
from bottle import route, run, template

@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}</b>! ', name=name)

run(host='localhost', port=8080)
```



## Modulen bottle

```
from bottle import route, run, template
```

```
@route('/hello/<name>')
def index(name):
    return template('<b>Hello {{name}}!</b>', name=name)
```

```
run(host='localhost', port=8080)
```

## Funktioner i bottle





THIS IS THE WAY

Att använda sig  
utav flera routes...

```
from bottle import route, run, error

@route('/')
def index():
    return "Startsida"

@route('/contact')
def contact():
    return "Kontaktsida"

@route('/about')
def about():
    return "Om oss-sida"

@error(404)
def error404(error):
    return "Denna sida finns inte...."

run(host='localhost', port=8080)
```

http://127.0.0.1/

http://127.0.0.1/contact

http://127.0.0.1/about

http://127.0.0.1/xxxxxxxxx

# DEMO - Routes

# Koncept 2

## - Templates



Make a  
good first  
impression

# Templates – Mallar i HTML



*Join the dark side, we have the prettiest web sites!*

# Bottle - Templates

- Templates är mallar för hur vi ska presentera vår information
  - HTML
  - CSS
  - JavaScript
- Vi kan skicka data (bearbetad utav python) till våra malla för att skapa dynamiska webbsidor



# Bottle – Templates och statiska filer

- Alla templates ska:
  - Ligga i mappen "views"
  - Ha filändelsen \*.tpl eller \*.html
- Statiska filer (bilder, css, js, etc.) ska:
  - Ligga i mappen "static"

# Hur ser detta ut i bottle?



```
bottle_app.py - C:\Users\TSANTI\Desktop\Bottle-templates\  
File Edit Format Run Options Windows Help  
from bottle import route, get, post, run, template,  
  
@route('/')
```

```
def index(user_name):  
    return template("index")
```

```
@route('/static/<filename>')
```

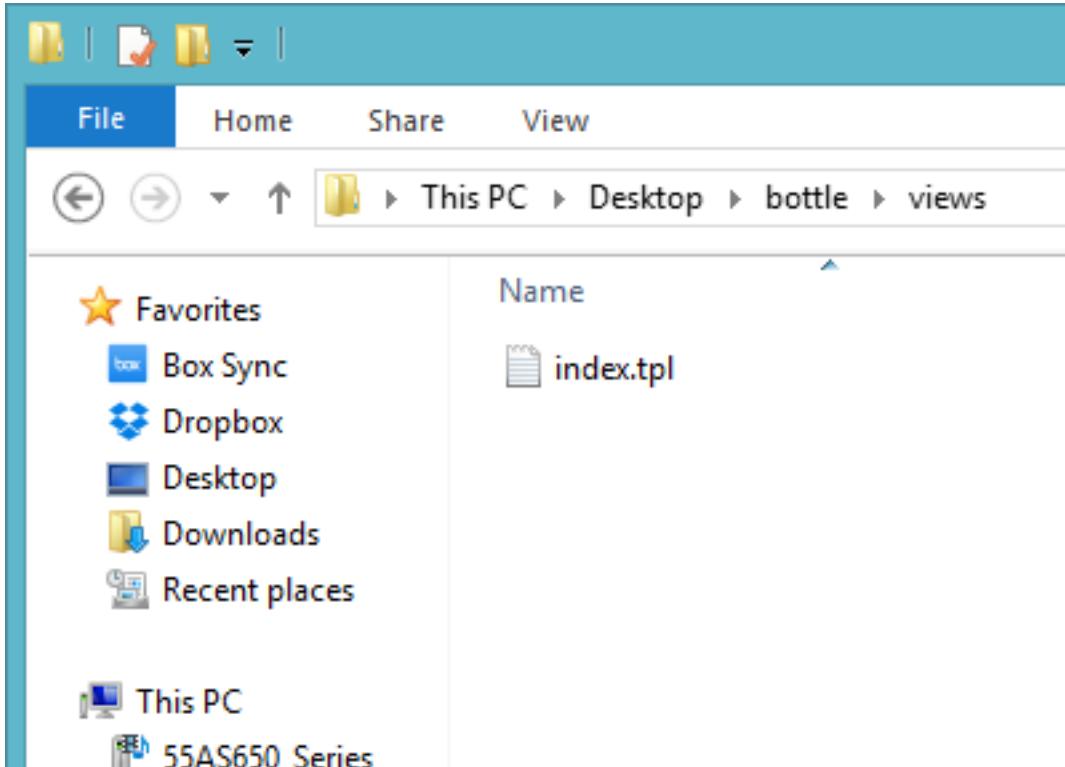
```
def server_static(filename):  
    return static_file(filename, root='static')
```

```
@error(404)
```

```
def error404(error):  
    return "Denna sida finns inte..."
```

```
run(host='localhost', port=8080)
```

```
<!doctype html>  
<html>  
  <head>  
    <title>Star Wars</title>  
    <meta charset="utf-8">  
    <link href="/static/style.css" rel="stylesheet">  
  </head>  
  <body>  
    <h1>Star Wars!</h1>  
    <footer>  
      Made by the force  
    </footer>  
  </body>  
</html>
```



# Demo - Templates

**{JSON}**

**JavaScript Object Notation**

# JSON

JavaScript Object Notation

`json.dumps()` => omvandla datatyper till sträng

`json.loads()` => omvändla sträng till datatyp

**Lista**

```
[  
 {  
   "title": "Star Wars",  
   "year": 1977,  
   "director": "George Lucas"  
,  
 {  
   "title": "Fight club",  
   "year": 1999,  
   "director": "David Fincher"  
}  
]
```

**json.dumps**

**Sträng**

```
"[  
 {  
   'title': 'Star Wars',  
   'year': 1977,  
   'director': 'George Lucas'  
,  
 {  
   'title': 'Fight club',  
   'year': 1999,  
   'director': 'David Fincher'  
}  
]"
```

**Lista**

**json.loads**

**Sträng**

# Nu till vårt projekt

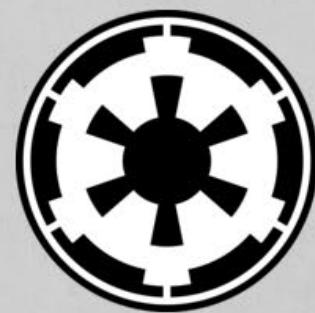


**“There’s always a bigger fish.”**  
- Qui-Gon Jinn

# STAR WARS - VOTE

Please choose side

Empire



Rebels



Vote

Current standing

Empire

14

Rebels

12

# Routes => Vilka behöver vi?

Route	Syfte	Metod	Template
/	Till vår startsida	GET	index
/vote	Rösta på en sida	POST	index
/disqus	Visa gästbok	GET	disqus
/new-post	Skriv ett inlägg	POST	disqus
*error404*	En sida som ej finns	Alla	error

```
*Untitled*
```

File Edit Format Run Options Windows Help

```
from bottle import route, get, post, run, template, error, static_file, request

@route('/')
def index():
    # View start page
    return template("index")

@route('/vote', method='POST')
def vote():
    # Save vote and view start page
    return template("index")

@route('/disqus')
def disqus():
    # View disqus page
    return template("disqus")

@post('/disqus-post', method='POST')
def save_post():
    # Save new disqus post and view disqus page
    return template("disqus")

@route('/static/<filename>')
def server_static(filename):
    return static_file(filename, root='static')

@error(404)
def error404(error):
    return template("error")

run(host='localhost', port=8080, debug=False)
```

## Routes => Vilka behöver vi?

Route	Syfte	Metod	Template
/	Till vår startsida	GET	index
/vote	Rösta på en sida	POST	index
/disqus	Visa gästbok	GET	disqus
/new-post	Skriv ett inlägg	POST	disqus
*error404*	En sida som ej finns	Alla	error

# Testa så att allt fungerar

*Let the battle begin*



1. Fixa röstningen

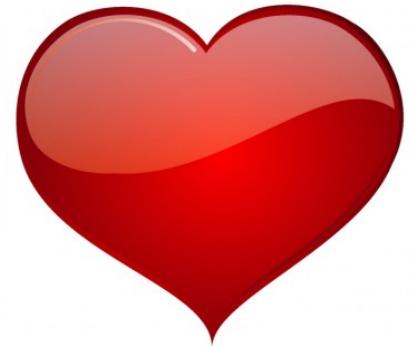
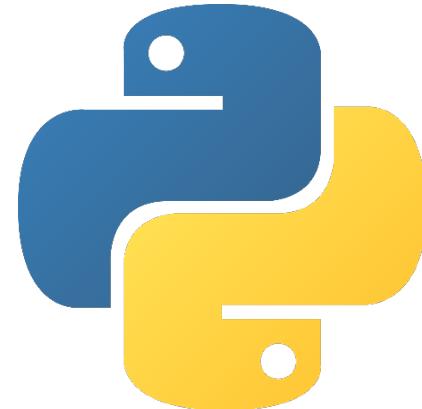
2. Fixa gästboken

# Röstningen

- Spara alla röster i filen "votes.json"
- Spara rösterna som JSON-format, enligt mallen:

```
{  
    "empire": 0,  
    "rebels": 0  
}
```

- Vi kan omvandla lexikon i Python till JSON genom:
  - `json_votes = json.dumps(votes)`
- Vi kan omvandla JSON till Python-datatyper genom:
  - `votes = json.loads(json_votes)`



# {JSON}

**JavaScript Object Notation**

# Flödesschema



Läs in textfilens  
innehåll



```
votes_file = open('static/standings.txt', 'r')
```

**1**

```
votes = json.loads(votes_file.read())
```

**2**

Tolka JSON-data  
till ett lexikon



```
votes["empire"]
```

**3**

Skriv ut  
imperiets röster

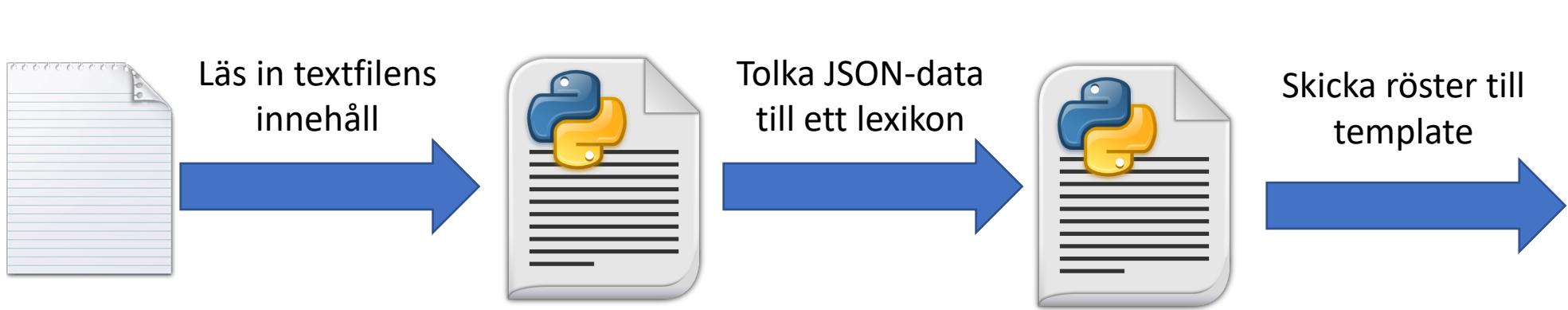


```
votes["rebels"]
```

```
{  
    "empire": 0,  
    "rebels": 0  
}
```

# Flödesschema

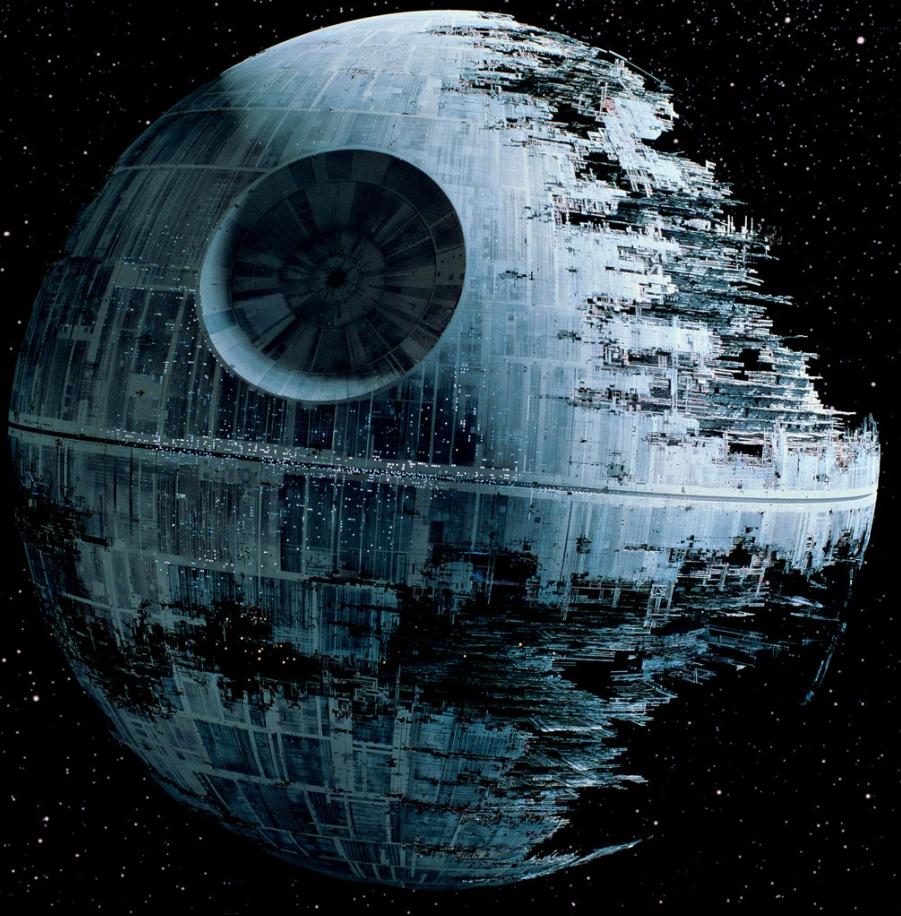
Webbsida på internet



Skriv ut  
imperiets röster



Skriv ut  
Rebellers röster



Nu bygger vi! ;)

## 2. Fixa gästboken



“Power! *Unlimited*  
power!”  
- Darth Sidious

*Flavianne*

Frågor?

