



# Backend Engineering with Flask

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So what is backend engineering  
anyways?

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**BACK END DEVELOPER**

# WEB DEVELOPERS



WHAT MY FRIENDS  
THINK I DO



WHAT MY MOM  
THINKS I DO



WHAT SOCIETY  
THINKS I DO



WHAT OUR CLIENTS  
THINK WE DO



WHAT I  
THINK I DO



WHAT WE  
REALLY DO

*zach nicodemous*

# But really ... Backend Engineering

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Idea: Building **dynamic web applications** powered by data

# Aspects of Backend Engineering

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- Databases (SQL, NoSQL)
- User Authentication
- URL Routing
- Security (CSRF, XSS, SQL Injection)
- APIs
- Analytics
- Business Logic

# CRUD

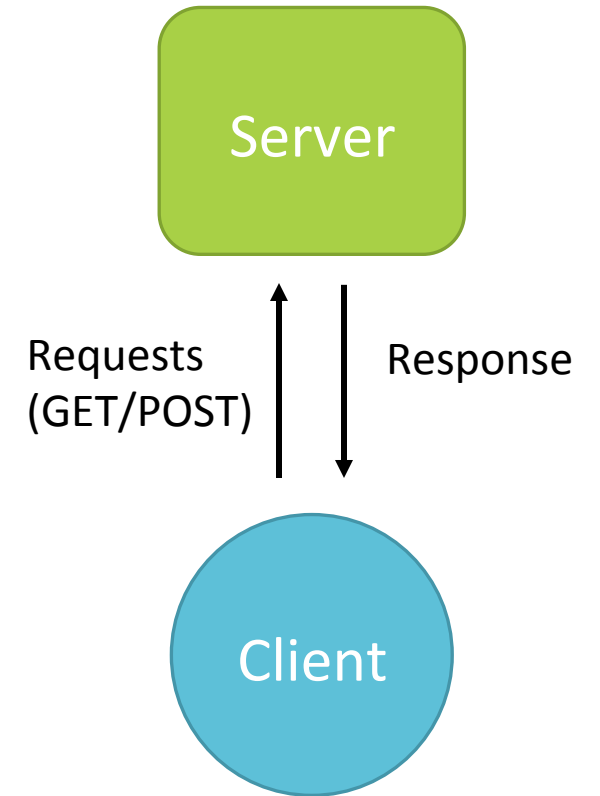
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- Pretty much all web applications can be summarized by the acronym CRUD:
  - Create
  - Read
  - Update
  - Delete
- The most basic functions of a web application

# Basic Web Concepts

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- Various HTTP methods to make requests to a web server. Most important ones:
  - **GET** – Requests data from resource. Query arguments sent in URL
  - **POST** – Submits data to resource. Query arguments sent in body of HTTP (more secure)
  - Never use GET requests when dealing with sensitive data
- Client-Server Model: client makes requests, server provides content
- We're going to build a simple **web server** for a blog application





# HTML Forms

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- Where backend meets frontend
- HTML Forms can submit data via GET and POST requests
- HTML GET form

```
<form action="sample_get_form.asp" method="get">  
  Name: <input type="text" name="name"><br>  
  <input type="submit" value="Submit">  
</form>
```

- HTML POST form

```
<form action="sample_post_form.html" method="post">  
  Password: <input type="text" name="password"><br>  
  <input type="submit" value="Submit">  
</form>
```

# What is Flask?

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- Easy-to-use, Python-based **web framework**
- Pinterest API, Twilio APIs, Linked-in “internal stack”, Obama 2012
- Makes your life easier when building web applications by providing various features:
  - URL Routing
  - Database manipulation (using ORM)
  - Security against Cross-site request forgery (CSRF) and other attacks
  - Session storage and retrieval

# Structure of a Flask App

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Model

View

Controller

Database  
ORM

HTML Templates  
Template Formatting

Routes and  
Actions

# Time to Flask!

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# What's Next?

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- Check out other web frameworks:
  - Python-based: Django, Tornado
  - Others: Ruby on Rails, Node.js
- Learn about asynchronous frameworks
- Explore SQL Alternatives: NoSQL and Key-Value Stores
  - MongoDB, Cassandra, Redis
- Learn about Long Polling using Javascript (AJAX, WebSockets)