LearnDjango

Flask vs Django in 2025: A Comprehensive Comparison of Python Web Frameworks

Updated Sep 11, 2025

Flask and Django are the two leading Python web frameworks and while they both help developers build websites quickly, they do so with vastly different approaches. In this article, we will look at what each framework does, how they work, and why developers choose one over the other. To demonstrate these differences we will build out three distinct projects from scratch—Hello World app, Personal website, and a To Do project—so you can see for yourself how they work and make the best decision for your needs.

What's a Web Framework?

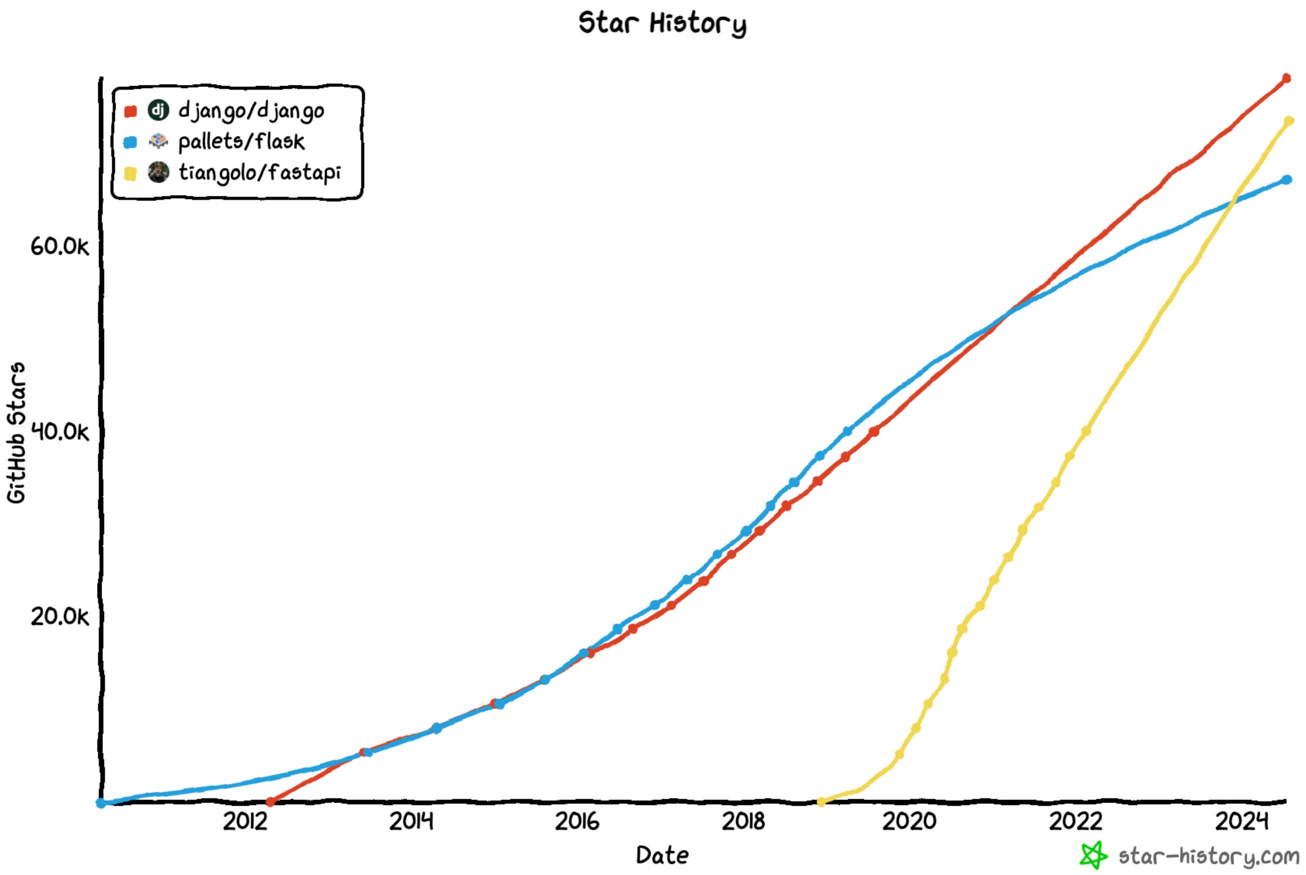
Database-driven websites have remarkably similar needs: URL routing, logic, connect to a database, render HTML templates, user authentication, and so on. In the early days of the World Wide Web, developers had to construct all these pieces themselves before they even started work on the website itself.

Open-source web frameworks soon emerged that allowed groups of developers to collaborate on this challenge, sharing best practices, reviewing code, and generally not reinventing the wheel every time someone wanted to build a new website. There are web frameworks in every major programming language with notable examples including Ruby on Rails written in Ruby, Laravel written in PHP, Spring written in Java, and in Python the two frameworks we cover here: Flask and Django.

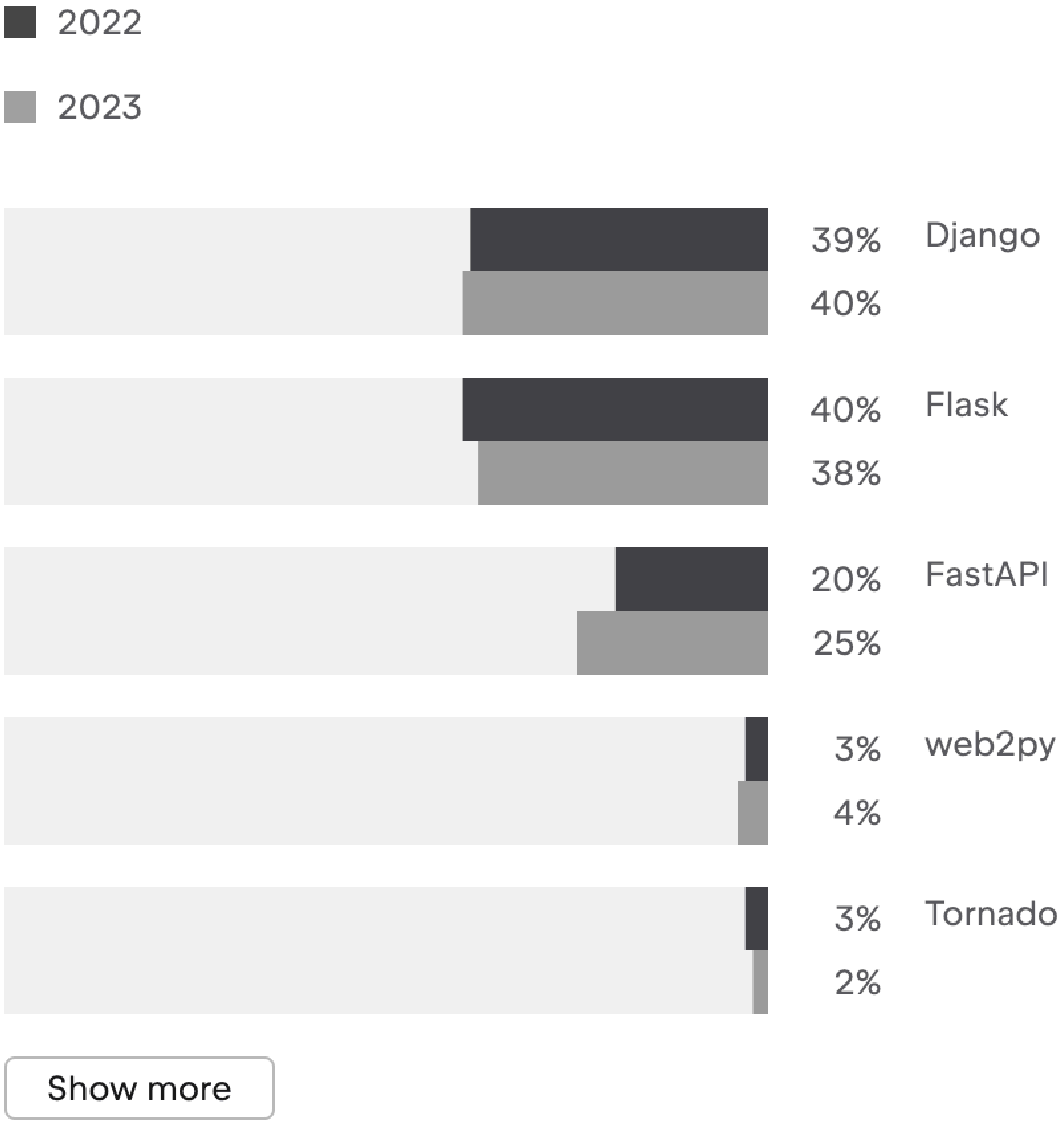
If you're new to programming, it might be confusing to hear the term Python "framework" vs "library." Both refer to software but the difference is complexity: a library is focused on a specific problem, while a framework tackles a larger challenge and often incorporates many smaller libraries to do so. As we'll see, both Flask and Django rely on quite a few Python libraries.

Which is More Popular?

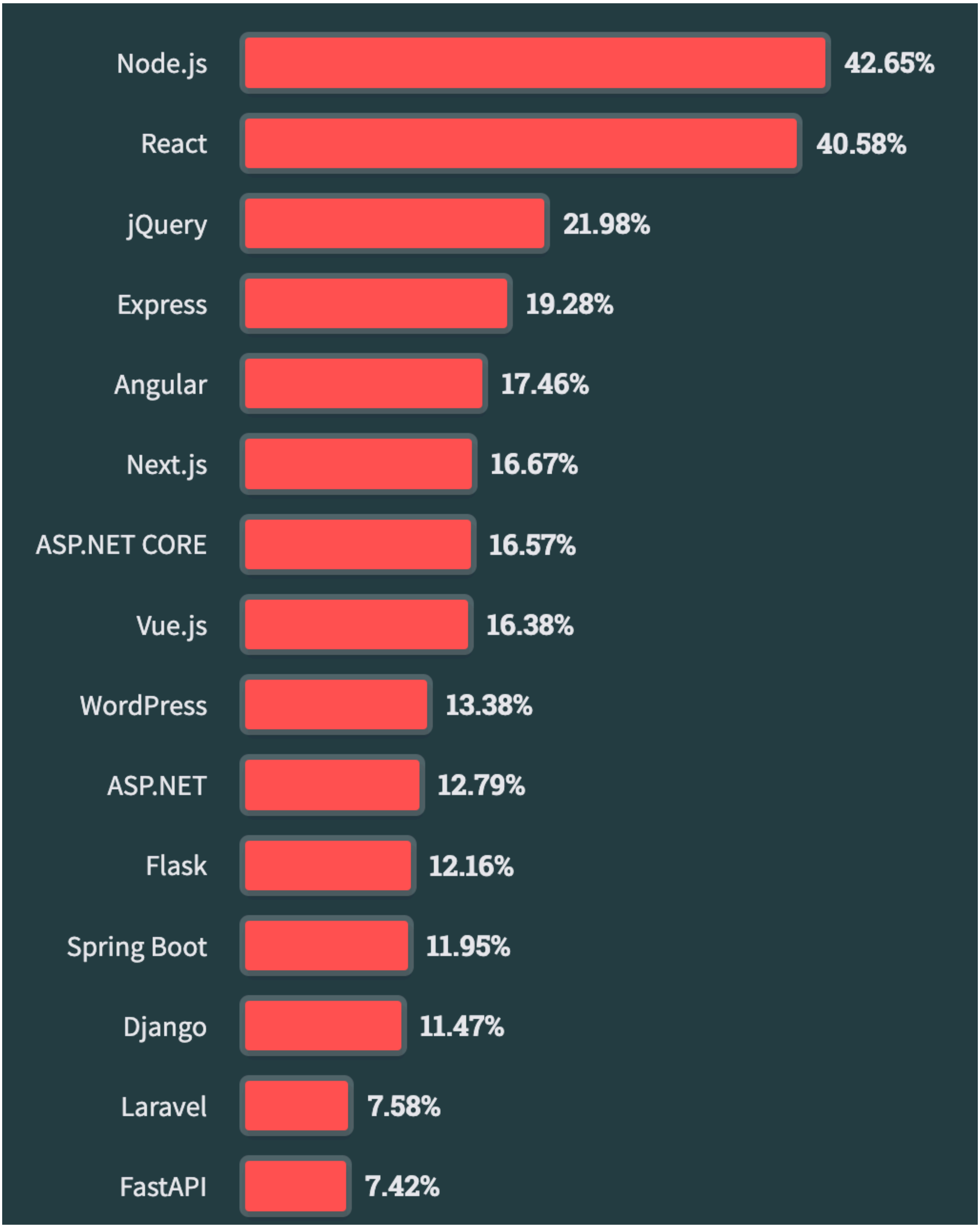
If we look at GitHub stars, Flask and Django are relatively neck and neck but we can see the explosive growth of FastAPI, which is now clearly established in the top 3 of Python web frameworks.



The 2023 Python Developers Survey shows Django just ahead of Flask in 2023 but with FastAPI also gaining momentum.



Stack Overflow's 2023 survey of developers across all programming languages Flask slightly ahead but followed almost immediately by Django and with FastAPI a little behind.



These comparisons are interesting to view for trends but don't account for many things. For example, just because a web framework is popular, does that mean that real companies and professional developers are using it, or is it just something that beginners like to play around with?

Regardless of the comparison metric, it is clear Flask and Django are currently the top two Python web frameworks.

Jobs

If you're looking for a job as a Python web developer, Django is the better choice. There are almost twice as many listings for Django developers as for Flask on major job boards such as Indeed.com.

However, this disparity is likely because Django is a much more specific choice than Flask. A startup or company can run almost all of their services just on Django whereas Flask is often used alongside other technologies given its lightweight footprint.

The most employable approach is to truly master Python first and then add web development knowledge with either Django or Flask (ideally both!) on top.

Community

Django has the larger, more organized community of the two. There are over 1,800 committers to the Django codebase vs around 550 for Flask. On StackOverflow there are ~212,500 Django questions compared to ~31,500 Flask questions.

Django also has annual conferences in the United States, Europe, and Australia. Flask does not have a similar level of conferences, although there are active discussions for both frameworks at PyCon events.

What is Flask?

Flask is a micro-framework that is intentionally minimal and flexible by design, which clearly doesn't limit its utility. As we will see, this design decision comes with both strengths and weaknesses.

Flask started out as an April Fool's joke in 2010 by Armin Ronacher and was inspired by the Sinatra Ruby framework. FLask was meant to be simple enough to fit in a single Python file and, despite its humorous origins, Flask quickly gained popularity due to its simplicity and flexibility.

Flask itself has a quite small codebase and relies heavily on two major dependencies: Werkzeug and Jinja, both of which were initially created by Armin Ronacher.

Werkzeug is a WSGI (Web Server Gateway Interface) toolkit that provides the core functionality for Flask. It handles HTTP requests, and responses, a URL routing system, a built-in development server, interactive debugger, test client, and middleware. Jinja is a templating engine used to generate dynamic HTML documents that comes with its own syntax for basic logic, variables, if/else loops, template inheritance, and more.

Although Flask doesn't specify a specific structure, it is often used in a Model-View-Controller (MVC) pattern common to other web frameworks such as Ruby on Rails.

- **Model**: Interacts with the database and handles data logic.
- **View**: Renders HTML templates (usually) with data for the user.
- **Controller**: Processes user input, interacts with the Model, and selects the View to render.

Flask's micro-framework architecture means it performs a few tasks extremely well and relies on third-party libraries (and the developer) to implement the rest. This approach is well-suited to smaller web applications that don't require all the bells and whistles built into Django. On the other extreme, experienced programmers who demand complete control over their application often prefer Flask, though this means making more design decisions than they would with a full framework like Django.

What is Django?

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. It was created in at the Lawrence Journal-World newspaper and publicly released in 2005. "High-level" means that Django is designed to minimize the actual coding required during the web application process by providing built-in "batteries" for most use cases, including an ORM (Object-Relational Mapper), URL routing, template engine, form handling, authentication system, admin interface, and robust security features. In Flask, the developer must choose and implement these various features but with Django they are included out-of-the-box.

Django is managed by the non-profit Django Software Foundation and has a large and dedicated community behind it working on new releases, extensive documentation, active online communities, and regular community-run conferences.

Django follows a variant of the MVC architecture called the Model-View-Template (MVT) pattern that emphasizes separation of concerns:

- **Model**: Handles data and business logic, including methods to interact with the data
- **View**: Handles business logic and interacts with the Model and Template. It also processes user requests.

- **Templates**: Render the user interface, usually as HTML using the Django templating language

A fourth component, **URLs**, is also included and used to handle URL routing, matching a user request to a specific View that then generates a response.

Flask: Hello, World

Python should already be installed on your computer so all we need to do is create a virtual environment and install Flask.

```
# Windows
$ python -m venv .venv
$ .venv\Scripts\Activate.ps1
(.venv) $ python -m pip install flask

# macOS/Linux
$ python3 -m venv .venv
$ source .venv/bin/activate
(.venv) $ python -m pip install flask
```

With your text editor, create a new file called `hello.py`. Flask famously requires only five lines for a Hello World web page.

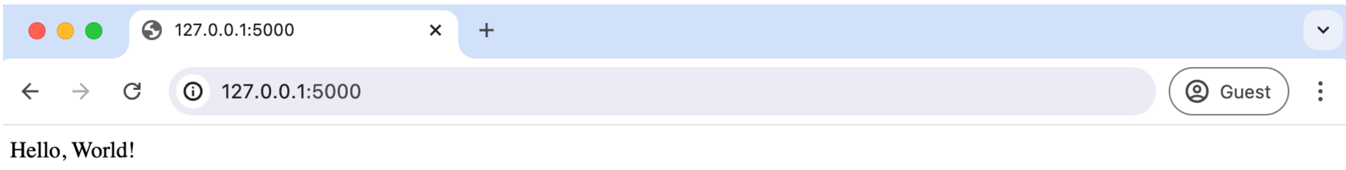
```
# app.py
from flask import Flask

app = Flask(__name__)

@app.route("/")
def hello_world():
    return "<p>Hello, World!</p>"
```

This code imports the `Flask` class at the top and creates an instance called `app` on the next line. The `route()` decorator tells Flask what URL should trigger the function; here it is set to the homepage at `/`. Then the function, `hello_world`, returns an HTML string between paragraph `<p>` tags with our message.

To run the code, use the `flask run` command.

```
(.venv)
$ flask run
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deploymen
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
```

If you navigate to `127.0.0.1:5000` in your web browser the message is visible. Flask uses port `5000` by default.



Hello, World!

This is about as simple as can be and speaks to both Flask's roots as an attempt at a single-file way to create a web application and also an example of its inherent flexibility.

Django: Hello, World

The Django docs don't provide a similar quickstart guide but we can accomplish a similar feat with only a few more lines of code. In fact, doing so has become a bit of a game among seasoned Django developers and there is an entire repo, django-microframework, dedicated to these efforts. We will choose Option2, which is not the most concise, but is more easily understood than some of the other approaches.

Navigate to a new directory, perhaps called `django` on your Desktop, and create a virtual environment containing Django.

```
# Windows
> cd onedrive\desktop\code
> mkdir django
> cd django
> python -m venv .venv
> .venv\Scripts\Activate.ps1
(.venv) > python -m pip install django
```

```
# macOS
% cd ~/desktop/code
% mkdir django
% cd django
% python3 -m venv .venv
% source .venv/bin/activate
(.venv) % python3 -m pip install django
```

In your text editor create a `hello_django.py` file with the following code:

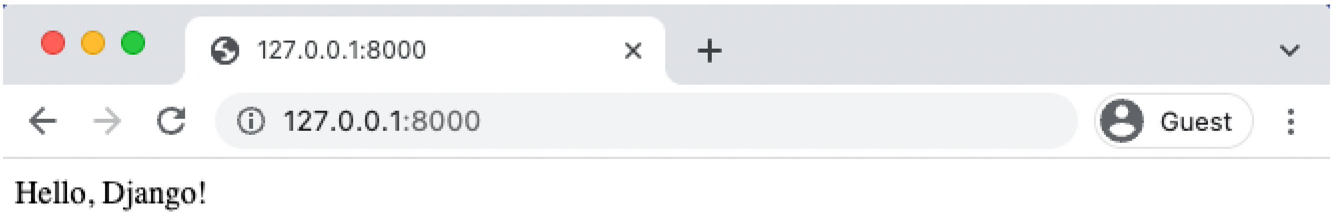
```
# hello_django.py
from django.conf import settings
from django.core.handlers.wsgi import WSGIHandler
from django.core.management import execute_from_command_line
from django.http import HttpResponse
from django.urls import path

settings.configure(
    ROOT_URLCONF=__name__,
    DEBUG=True,
)


def hello_world(request):
    return HttpResponse("Hello, Django!")


urlpatterns = [path("", hello_world)]

application = WSGIHandler()

if __name__ == "__main__":
    execute_from_command_line()
```

Django is designed for larger web application and typically relies on a global `settings.py` file for many configurations, however we can import what we need in a single file. The key points of reference are the `hello_world` function that returns the string, "Hello, Django!" and the `urlpatterns` defining our URL routes, namely at `""`, meaning the empty string, so the homepage.

Start up Django's built-in server using the `runserver` command

```
(.venv) > python hello_django.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
July 17, 2024 - 13:48:54
Django version 5.0, using settings None
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
```

Navigate to Django's standard port of 8000, http://127.0.0.1:8000/, to see the "Hello, Django!" message.



Hello, Django!

Django required twelve lines of code rather than Flask's five, but both these examples are intended as quickstart guides; they are not how you structure a real-world Flask or Django app.

Flask Personal Website

Now let's build a Personal Website with a home page and an about page. This will give a chance to introduce templates and repeat some of the patterns we saw around how routes are defined in Flask.

Update the `app.py` file as follows:

```
from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def home():
    return render_template('home.html')
```

```
@app.route('/about')
def about():
    return render_template('about.html')

if __name__ == '__main__':
    app.run(debug=True)
```

Both the `` `home` `` and `` `about` `` View functions now return a template. We're also using the `` `route()` `` decorator again to define the URL path for each. We've also added `` `debug=True` `` at the bottom so that the development server runs now in debug mode.

The next step is creating our two templates. Flask will look for template files in a `` `templates` `` directory so create that now.

```
(.venv) $ mkdir templates
```

Within it add the two files with the following code:

1. Create templates in `` `templates/` ``:

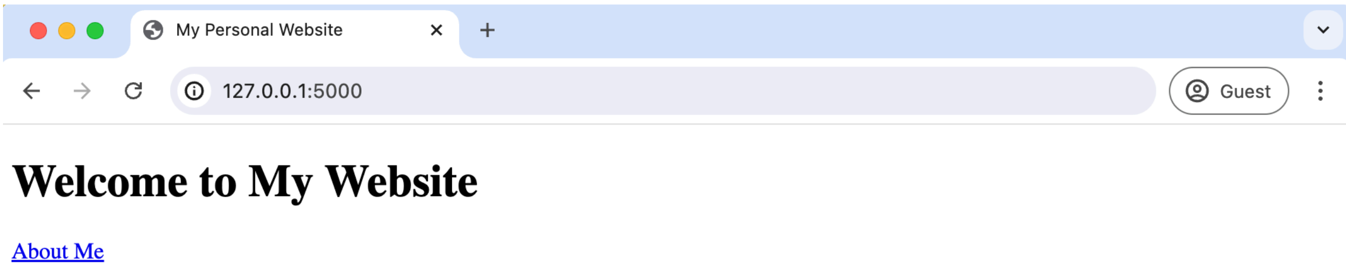
```
<!-- templates/home.html -->
<!DOCTYPE html>
<html>
<head>
    <title>Personal Website</title>
</head>
<body>
    <h1>Welcome to My Website</h1>
    <a href="{{ url_for('about') }}">About Me</a>
</body>
</html>
```

```
<!-- templates/about.html -->
<!DOCTYPE html>
<html>
<head>
    <title>About Me</title>
</head>
<body>
```

```
    <h1>About Me</h1>
    <p>This is my personal website.</p>
    <a href="{{ url_for('home') }}">Home</a>
</body>
</html>
```

Each file use the method url_for to define links based on the view function name.

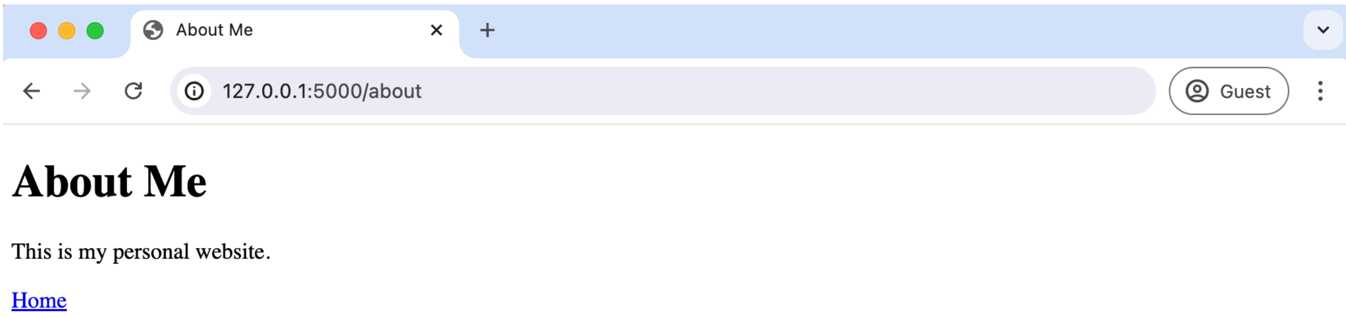
Run the server again with `flask run` and navigate to the homepage:



Welcome to My Website

About Me

Then click the "About Me" link.



About Me

This is my personal website.

Home

This is a rudimentary example but you can start to see how templates and views interact in Flask. We still have only one main Python file powering the whole thing, but once we have many more pages and start to introduce logic, the single-file approach stops making sense and it's time to start organizing the Flask app in different ways. There are some common patterns used in the Flask community, however, it is ultimately up to the developer.

Django: Personal Website

Django is designed for full-bodied web applications so building a Personal Website is a chance to see this in action. We'll start by creating a project, which is the central hub for our website, using the `startproject` command.

```
(.venv) $ django-admin startproject django_project .
```

We've named the project `django_project` here. Adding the period, `.`, means the new folder and files are installed in the current directory. If you don't have the period Django creates a new directory and *then* adds the project folder and files there.

This is what your directory should look like now. The `hello_django.py` file remains and can either be left there or removed entirely: we will no longer use it. There is an entirely new `django_project` folder containing several files and a `manage.py` file used for running Django commands.

```
├── django_project
│   ├── __init__.py
│   ├── asgi.py
│   ├── settings.py
│   ├── urls.py
│   └── wsgi.py
├── hello_django.py
└── manage.py
```

We want to create an app now using these `startapp` command which will be called `pages`. A single Django project typically has multiple apps for different functionality. If we added user registration that code should be in its own app, same for payments, and so on. This is a way to help developers reason better about their code.

```
(.venv) $ python manage.py startapp pages.
```

This command creates a `pages` directory with the following files:

```
└── pages
    ├── __init__.py
    ├── admin.py
    ├── apps.py
    ├── migrations
    │   └── __init__.py
    ├── models.py
    ├── tests.py
    └── views.py
```

Our first step is updating the `django_project/settings.py` file to tell Django about our new app. This is a global settings file for the entire project.

```
# django_project/settings.py
INSTALLED_APPS = [
    "django.contrib.admin",
    "django.contrib.auth",
    "django.contrib.contenttypes",
    "django.contrib.sessions",
    "django.contrib.messages",
    "django.contrib.staticfiles",
    "pages",  # new
]
```

Second, update the `django_project/urls.py` file. When a URL request comes in it will hit this file first and then be either processed or redirected to a specific app. In this case, we want to send requests to the `pages` app. To do this we'll import `include` and set a new path at `""`, meaning the homepage. Django defaults to including the URL configuration for the built-in admin, a powerful visual way to interact with your database.

```
# django_project/urls.py
from django.contrib import admin
from django.urls import path, include  # new

urlpatterns = [
    path("admin/", admin.site.urls),
    path("", include("pages.urls")),  # new
]
```

Within the `pages` app we need a view and a URLs file. Let's start with the view at `pages/views.py`.

```
# pages/views.py
from django.shortcuts import render
```

```
def home(request):
    return render(request, "home.html")


def about(request):
    return render(request, "about.html")
```

In Django, views receive web requests and return web responses. The `request` parameter is an object containing metadata about the request from the user. We'll define two function-based views here, `home` and `about`, that use the shortcut function `render` to combine a template with an `HttpResponse` object sent back to the user. The two templates are `home.html` and `about.html`.

For the templates, we can create a `templates` directory within `pages`, then another directory with the app name, and finally our template files. This approach removes any concerns about confusing the Django template loader in larger projects.

```
(.venv) $ mkdir pages/templates
(.venv) $ mkdir pages/templates/pages
```

Then in your text editor add two new files: `pages/templates/pages/home.html` and `pages/templates/pages/about.html`.

```
<!-- pages/templates/pages/home.html -->
<!DOCTYPE html>
<html>
<head>
    <title>Personal Website</title>
</head>
<body>
    <h1>Welcome to My Website</h1>
    <a href="{% url 'about' %}">About Me</a>
</body>
</html>


<!-- pages/templates/pages/about.html -->
<!DOCTYPE html>
<html>
<head>
```

```
        <title>About Me</title>
    </head>
    <body>
        <h1>About Me</h1>
        <p>This is my personal website.</p>
        <a href="{% url 'home' %}">Home</a>
    </body>
    </html>
```

The final step is configuring the URLs for these two pages. To do this, create a `` `urls.py` `` file within the `` `pages` `` app with the following code.

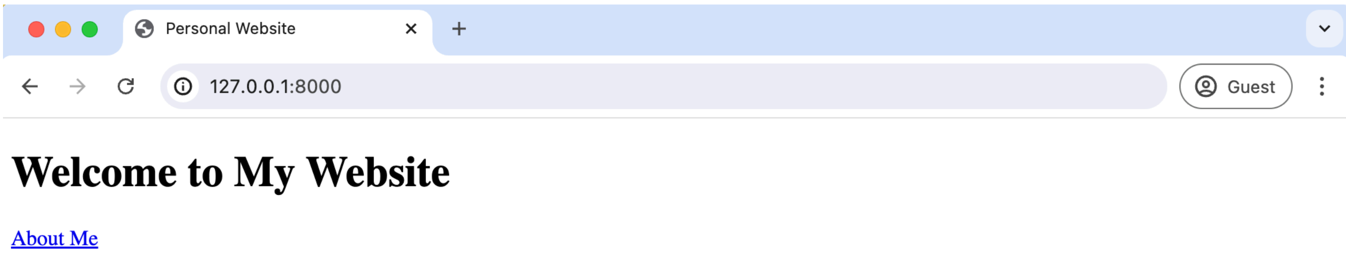
```
# pages/urls.py
from django.urls import path
from . import views

urlpatterns = [
    path("", views.home, name="home"),
    path("about/", views.about, name="about"),
]
```

At the top we import our views and then set a URL path for each. The syntax is defining the URL path, the view name, and optionally adding a URL `` `name` `` that allows us to link to each path in our templates.

Start up the Django local server with the `` `runserver` `` command.

```
(.venv) $ python manage.py runserver
```

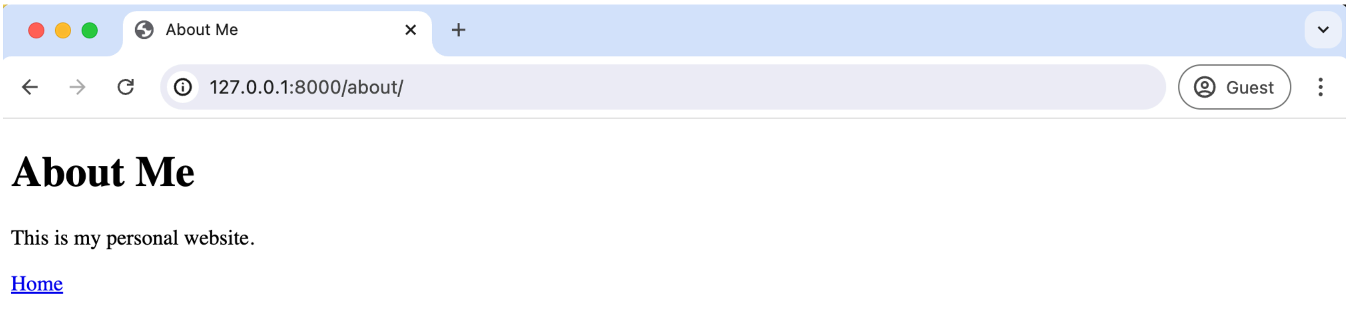
You can see the homepage:



Welcome to My Website

About Me

Click the "About Me" to be redirected to the about page:



About Me

This is my personal website.

Home

As you can see Django required more scaffolding than Flask, however this approach provides a consistent structure that is quite scalable.

Detailed Comparison

The true comparison of these web frameworks depends on your project's needs. Are you building a traditional web application that connects to a database, requires CRUD (Create-Read-Update-Delete) functionality, and user authentication? If yes, Django has built-in solutions for all of these needs. By comparison, Flask requires installing multiple third-party libraries: `` `Flask-SQLAlchemy` `` to connect to the database, `` `Flask-Migrate` `` to manage database migrations, `` `Flask-WTF` `` and `` `WTForms` `` for forms, `` `Flask-Login` `` for user authentication, `` `FLask-Mail` `` for email support, `` `Flask-Security` `` for security features, `` `Flask-Admin` `` for an admin interface to manage application data, `` `Flask-Caching` `` for caching support, `` `Flask-BCrypt` `` for password hashing and so on.

The power of Django is that you don't have to worry about any of these things. They are included, tested, and supported by the community. For Flask, the third-party libraries are not as tightly integrated and require more manual installation by the developer. This affords greater flexibility but also requires more programmer expertise.

Conclusion

Ultimately, you can't go wrong choosing Flask or Django for your web application needs. They both are mature, scalable, and well-documented. This difference is in approach and the best way to determine what you prefer is to try each out by building more complex projects.

If you're interested in learning more about Django, check out Django for Beginners for a guide to building six progressively more complex web applications including testing and deployment. For Flask, the Flask Mega-Tutorial has a free online version. There are also two courses over at

TestDriven.io worth recommending: **TDD with Python, Flask and Docker** and **Authentication with Flask, React, and Docker**. If you prefer video, there are many Flask courses on Udemy but the best video course I've seen is **Build a SaaS App with Flask and Docker**.