Comparison of FastAPI, Django, and Flask

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | FastAPI | Django | Flask |
| Framework Type | Modern, asynchronous web framework | Full-stack web framework | Lightweight micro-framework |
| Performance | High performance, asynchronous support | Moderate performance, synchronous | High performance, but synchronous |
| Ease of Use | Easy to use, intuitive syntax | Steeper learning curve | Simple and easy to get started |
| Use Case | APIs, microservices, asynchronous applications | Large-scale applications, rapid development | Simple web applications, microservices |
| Built-in Features | Minimal, focuses on API creation | Comes with ORM, admin panel, authentication | Minimal, requires extensions for added features |
| Asynchronous Support | Yes, built-in | No, requires additional libraries | No, requires additional libraries |
| ORM | None by default (Can use SQLAlchemy) | Built-in ORM (Django ORM) | None by default (Can use SQLAlchemy) |
| Admin Interface | No | Built-in admin interface | No |
| Template Engine | Jinja2 | Django Templating Engine | Jinja2 |
| Routing | Declarative routing | URL routing based on configuration | Declarative routing |
| Data Validation | Built-in with Pydantic | Custom validators and serializers | None by default (Can use WTForms) |
| Security | Built-in support for OAuth2, JWT | Built-in support for authentication, CSRF, etc. | Minimal, requires extensions for added security |
| Documentation | Automatic interactive API documentation | Manual documentation | Manual documentation |
| Community Support | Growing, but smaller compared to Django and Flask | Large, well-established community | Large, well-established community |
| Third-party Libraries | Growing ecosystem | Vast ecosystem with many plugins | Vast ecosystem with many plugins |
| Deployment | ASGI, supports Uvicorn, Hypercorn | WSGI, supports Gunicorn, uWSGI | WSGI, supports Gunicorn, uWSGI |
| Learning Curve | Moderate | Steep | Low |
| Flexibility | High, allows for custom setups | Moderate, many features are built-in | High, allows for custom setups |
| Scalability | High, designed for scalability | Moderate, good for monolithic applications | High, good for microservices architecture |