University of Science and Technology of Southern Philippines
Alubijid | **Cagayan de Oro** | Claveria | Jasaan | Panaon | Oroquieta

COLLEGE OF
INFORMATION TECHNOLOGY AND COMPUTING

Name: Dave M. Clavite
Section: BSIT-3R1

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APPDEV

Full-Stack Todo App Documentation (FastAPI + React)

Technical Report: DRF vs FastAPI

Django REST Framework (DRF)

Key Features:

- Batteries-included framework
- Built-in admin interface
- ORM-based serialization
- Class-based views
- Extensive documentation

Advantages:

- Mature ecosystem
- Automatic API documentation
- Built-in authentication
- Excellent for CRUD applications

Disadvantages:

- Steeper learning curve
- Can be overkill for simple APIs
- Less performant for high-throughput APIs
- Synchronous by default

FastAPI

Key Features:

- Modern Python 3.7+ framework
- Automatic data validation
- Async-ready
- Automatic OpenAPI/Swagger docs
- Dependency injection system

Advantages:

- Excellent performance
- Intuitive syntax
- Automatic interactive docs
- Easy to learn
- Native async support

Disadvantages:

- Younger ecosystem
- Fewer built-in features
- Less "magic" automation

Development Challenges & Solutions

Django REST Framework Challenges:

1. **Complex Setup**:
   - Solution: Used cookiecutter-django for project scaffolding
2. **ORM Limitations**:
   - Solution: Custom model managers for complex queries
3. **Deployment Issues**:
   - Solution: Properly configured Gunicorn and WhiteNoise

FastAPI Challenges:

1. **Async Database Sessions**:
   - Solution: Implemented async SQLAlchemy sessions
2. **Permission Denied Errors**:
   - Solution: Used `--unsafe-perm` flag in build commands
3. **Vite Deployment Issues**:
   - Solution: Pre-built frontend locally before deployment