Deployment Pipeline (Development to Production)

This section describes a simple and effective deployment pipeline for the **Blog Management System**, based on Docker containerization. The goal is to move the application from a local development environment to a production-ready setup.

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1. Development Stage

During development:

- The app is written in Python using FastAPI.
- It is tested locally using uvicorn with --reload.
- Dependencies are managed using requirements.txt.
- API is tested with Swagger UI or Postman.

Example:

```
uvicorn src.main:app --reload --host 127.0.0.1 --port 8000
```

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2. Containerization with Docker

Once the application is tested locally, it is containerized using Docker.

Dockerfile example:

```
FROM python:3.10-slim


WORKDIR /app


COPY requirements.txt .
RUN pip install --no-cache-dir -r requirements.txt


COPY ./src ./src


CMD ["uvicorn", "src.main:app", "--host", "0.0.0.0", "--port", "8000"]
```

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3. Build and Run Docker Container

Build the image:

```
docker build -t blog-app .
```

Run the container:

```
docker run -d -p 8000:8000 blog-app
```

- The app is now accessible at:
  👉 http://localhost:8000

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4. Preparing for Production

To move to production:

- Deploy the Docker image to a server (e.g., a cloud VM or hosting provider).
- Optionally, use a service like **Render**, **Railway**, or **DigitalOcean App Platform** to deploy directly from GitHub with Docker support.
- Make sure port 8000 is open or forwarded.
- (Optional) Add **NGINX** and **SSL** for HTTPS if deploying manually.

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5. Environment Variables (Optional)

For storing secrets like JWT keys or database credentials, use a .env file or Docker environment variables:

```
docker run -d -p 8000:8000 \
  -e SECRET_KEY=your_secret_key \
  blog-app
```

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6. Conclusion

This Docker-based pipeline allows easy transition from development to production by:

- Ensuring consistent environments
- Avoiding dependency issues
- Supporting deployment to any Docker-compatible platform

Tools Used

Stage	Tool
Dev Server	Uvicorn
API	FastAPI
Container	Docker
Deployment	Localhost / Cloud VM

Security Notes

- Always use strong JWT secret keys.
- Keep .env files out of version control (.gitignore).
- Use HTTPS in production.