Title: Dockerizing and Running a Django 5.2.4 Application

Objective: Deploy a Django 5.2.4 application using Docker, ensuring minimal dependencies and successful containerized execution.

1. Project Structure

```
Django_web_app/
 django_web_app/
    ├── Dockerfile
    ├── requirements.txt
    ├── manage.py
    ├── .env
    ├── django_web_app/
    │    ├── __init__.py
    │    ├── settings.py
    │    ├── urls.py
    │    ├── wsgi.py
    ├── users/
    │    ├── models.py
    │    ├── views.py
    │    ├── ...
    ├── templates/
         ├── base.html
         └── index.html
```

2. Dockerfile

```dockerfile
# ---------- Stage 1: Builder ----------
FROM python:3.11-slim AS builder

ENV PYTHONDONTWRITEBYTECODE=1 \
    PYTHONUNBUFFERED=1

WORKDIR /app

RUN apt-get update && apt-get install -y --no-install-recommends \
    build-essential \
    libpq-dev \
    git \
    curl \
    && rm -rf /var/lib/apt/lists/*
```

```
COPY requirements.txt .
RUN python -m venv /opt/venv \
 && /opt/venv/bin/pip install --upgrade pip \
 && /opt/venv/bin/pip install -r requirements.txt

# ---------- Stage 2: Runtime ----------
FROM python:3.11-slim

RUN useradd -m appuser

ENV PATH="/opt/venv/bin:$PATH" \
    PYTHONDONTWRITEBYTECODE=1 \
    PYTHONUNBUFFERED=1

WORKDIR /app

COPY --from=builder /opt/venv /opt/venv
COPY . .

RUN chown -R appuser:appuser /app

# Add this line to collect static files
RUN python manage.py collectstatic --noinput

USER appuser

HEALTHCHECK CMD curl --fail http://localhost:8000/ || exit 1

CMD ["gunicorn", "django_web_app.wsgi:application", "--bind", "0.0.0.0:8000"]
```

---

3. requirements.txt

```
asgiref==3.9.1
Django==5.2.4
gunicorn==23.0.0
packaging==25.0
sqlparse==0.5.3
tzdata==2025.2
psycopg2-binary==2.9.9
python-dotenv==1.0.0
Pillow==10.3.0
```

Pillow is required because users/models.py uses from PIL import Image.

---

4. Fix for Template Error

In all HTML template files: **Replace**

`{% load staticfiles %}`

With

`{% load static %}`

This is necessary because Django 5+ no longer supports the `staticfiles` template tag.

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5. Build and Run Docker Image

```
docker build -t django-app .
docker run  -p 8000:8000 --name my-django-app django-app
```

---

6. Confirm the App is Running

Visit: http://localhost:8000 You should see the application homepage.

To check logs:

```
docker logs my-django-app
```

---

7. Common Errors and Fixes

- ``

  Add `Pillow` to `requirements.txt`

- ``

  Replace `{% load staticfiles %}` with `{% load static %}`

✓Final Status

- Django app successfully containerized and running in Docker.
- All runtime errors resolved.
- Logs show proper Gunicorn startup and no fatal exceptions.

✓ Section Added: "Local Testing Before Dockerization"

I'll highlight that we:

- Activated a virtual environment
- Installed dependencies
- Fixed template and package errors
- Verified successful local run at `localhost:8000`