Homework 6: Deployment

Due date: Thursday November 08, 2018

This homework is the last in a series of homeworks in which you will build an increasingly sophisticated nano-blogging site. This site will now be a featureful, fully-deployed web application including user registration and authentication, email integration, photo upload, and quasi-real-time updates.

For this assignment, you will deploy your homework 5 solution to a cloud-based application server.

The learning goals for this assignment are to:

- Demonstrate mastery of the learning goals from the previous homeworks, including both technical features of web applications and the development process.
- Gain familiarity with a cloud-based web application platform.
- Gain basic familiarity with database systems administration.

Specification

This section describes the enhancements you will make to your social network application. To begin this assignment, you should copy your homework 5 solution to your `homework/6` directory.

Correct any flaws in your homework 5 solution and then deploy grumblr on one of the following platforms:

- AWS EC2
- Google App Engine
- Heroku
- DigitalOcean
- Microsoft Azure
- Other cloud-based systems, with explicit permission from course staff

Your solution must use a relational or cloud-based database server; you may not use SQLite.

Requirements

Your application must also follow these requirements:

- You must meet all requirements specified in the previous assignments.
- Your solution may not use the Django development server.
- If you deploy with Heroku you must store your images in an external data service, not the temporary Heroku file system.
- You should not store passwords or access keys in your application code or in your repository.
- You should commit (as part of your homework solution) any relevant environment or configuration files you edited as part of your deployment, edited (if necessary) to not contain any passwords or access keys.
- Cite all external resources used and any additional notes in a `homework/6/README.md` file.

Assignment hints

1. Check the Django deployment checklist
2. Here are tutorials for several platforms:
    - **AWS EC2**: Django recommends the mod_wsgi plugin for the Apache web server.
    - **Google App Engine:** Python Runtime Environment
    - **Heroku:** Getting Started with Django on Heroku
    - **Digital Ocean:** How To Use the Django One-Click Install
3. If you use Heroku we recommend that you store uploaded files (such as images) in AWS S3. The relevant Heroku guide is at https://devcenter.heroku.com/articles/s3-upload-python.
4. You should not include passwords and other access keys in your application code and you should not put them in your GitHub repositories. Either use environment variables, or store keys/passwords in files that are never committed to version control (use .gitignore).
5. AWS, Heroku, and Google App Engine each have 'free' plans which should be sufficient for this assignment and for your course project. The GitHub Student Developer Pack offers $50 in DigitalOcean credit: https://education.github.com/pack. If you plan to use AWS and have expired your 'free' plan, we can provide a small amount of AWS credit for your use; please email the instructors for details.

Grading criteria

For substantial credit your solution must clearly demonstrate the learning goals for this assignment. You should commit all files necessary for us to understand your deployment and its relevant configuration. Almost all credit for this assignment will be awarded based on the new learning goals related to web application deployment, with only a very small amount of credit being based on your development process and correction of flaws in your previous homework solution.

Turning in your work

In addition to your source code and all relevant configuration files, you must provide the URL for your deployed application in the `homework/6/README.md` file in your GitHub repository. We will not be able to evaluate your deployed application without its deployed URL. Be sure to commit your application as actually deployed on the cloud service. Your solution might resemble:

```
homework/6/
    README.md
    webapps/
        ...
    grumblr/
        ...
    venv/             (optional; solutions will vary)
    ...
```