
Assignment 4: Dockerized Django Workflow Application

Course: Web-Based Systems

Number: SENG 513

Semester: Fall 2023

Due Date: Week of March 18th

Instructor: Steve Sutcliffe <steve dot sutcliffe at ucalgary dot ca>

Version: 1.0.0

Weight: 10%

Objective:

Develop a Django web application from scratch, focusing on Django's Model-View-Template (MVT) architecture and implementing it within a Docker environment.

Group Size:

You can do this assignment individually or in groups of a maximum of 4. Your group members must be in the same tutorial as you to give the demonstration.

Part 1: Docker Setup

1. Create Dockerfiles for the Django Application.
2. Implement a docker-compose file that includes the Django app and a MySQL database (avoid using passwords in the docker-compose file).
3. MySQL Initialization: include any setup/deployment scripts necessary for constructing the MySQL tables and administrative accounts.

Part 2: Django Application Setup

1. Create a Django Project: Students must create a new Django project from scratch.
2. Implement MVT Architecture:
 - 2.1. Model: Define at least one model relevant to the application.
 - 2.2. View: Create views to handle requests and responses.
 - 2.3. Template: Design templates for the user interface

Part 3: Application Functionality

1. User registration, login and roles. Roles should include employee, manager, and finance officer.
2. Employee role should be able to access and complete a form which includes:
 - a. the employee's first and last name
 - b. the employee's ID
 - c. the manager's name
 - d. request types (e.g., Funding, Per Diem, Travel Authorization, etc.)
3. When an Employee submits the form, they should see where it is in the workflow.

4. The manager should receive access to the form, give an Approve or Reject option and provide a reason for the approval or rejection that is only available to the manager. The manager should be able to edit any part of the form.
5. Upon approval, the form should go to the finance officer. Again, they should be able to Approve or Reject the option with a place for the reason that is only editable by the finance officer. The finance officer should be unable to edit any other part of the form.
6. Whether the manager or Finance Officer reject's the form, it should return to the employee (i.e., the employee should be able to modify the form once more and re-submit it).

Part 4: Demonstration

In your tutorial, each group (or individual if the assignment was done individually) will demonstrate the working application and explain their decisions and implementations.

1. Demonstration:
 - 1.1. Show a new user can register, sign in, and submit a form (new user defaults to employee).
 - 1.2. Show the form is available to the Manager for approval. Upon rejection, the form returns to the employee. The field for the reason of approval/rejection is only editable by the Manager. Upon approval, the form becomes available to the Finance Officer. Once approved or rejected, the field for the reason of approval/rejection is no longer editable.
 - 1.3. Show the form is available to the Finance Officer for approval; upon rejection, the form returns to the employee. The field for the reason of approval/rejection is only editable by the Finance Officer. Upon approval, the form is no longer editable by anyone but is viewable by everyone attached to the form.
 - 1.4. The form for one employee should not be visible to other employees.
2. Explain:
 - 2.1. Explain the MySQL setup files.
 - 2.2. Explain how they set up the Dockerfiles and docker-compose files.
 - 2.3. Explain how they implemented an MVT architecture.

D2L/GitLab Submission

Please follow these guidelines for submitting your application to D2L:

1. Create and use the University of Calgary's Gitlab repository online; name the repository seng513-202401-assignment4.
2. Commit your work frequently. Only commits made before the deadline will be considered for grading.
3. Grant access to both TAs and your Instructor by adding them as members on your repository.
4. Once done, submit a single *.txt file to D2L containing a link to your repository with a list of your group members (each person will need to make a submission on D2L). The file should be called seng513-assignment4.txt.

Grading [40 Points]

FUNCTIONALITY OF THE WEB APP [14 POINTS]

- [2 pts] New user registration, login and secure access page functionality (defaults to employee)
- [2 pts] Submission of a form by an employee with the necessary fields

[4 pts] Form Visibility Control: The form is visible only to appropriate roles at each stage. These include:

- Not viewable by the Manager or Finance Officer until submitted by an employee
- Not viewable by other employees
- Not viewable by the Finance Officer until approved by the Manager

[6 pts] Workflow Control and Form Status Management: Manages the submission and approval flow. This includes:

- Employee submits the form, which becomes available to the Manager
- The manager can approve or reject the form
- On rejection, the form should return to the employee for edits
- On the Manager's approval, the form becomes accessible to the Finance Officer
- Finance Officer's approval "locks" the form, making it non-editable
- The Finance Officer's rejection returns it to the employee for edits

SECURITY PRACTICES [5 POINTS]

[5 pts] Address password issues in the docker-compose file.

EFFECTIVE USE OF DOCKER [5 POINTS]

[5 pts] Correct setup and configuration of Docker for Django and the MySQL database.

EFFECTIVE USE OF DJANGO [5 POINTS]

[5 pts] Correct implementation of MVT architecture, quality and complexity of Django models, views and templates.

EXPLANATION AND UNDERSTANDING [6 POINTS]

[3 pts] Quality of explanation about Docker configuration.

[3 pts] Quality of explanation about MVT implementation.

ACHIEVEMENT POINTS [UP TO 5 POINTS]

Achievement points play a crucial role in securing full marks for this assignment. These points are designed to challenge your understanding and application of the course material, pushing you beyond the foundational requirements. To successfully earn these points, you will need to engage in independent research and demonstrate a higher level of mastery.

These tasks are deliberately more complex and may not have straightforward solutions. They are intended to stimulate critical thinking, creativity, and a deeper exploration of the subject matter. The answers we are looking for here go beyond the basics; we aim to see how you can apply your knowledge innovatively and effectively in less conventional scenarios.

Remember, the journey to these points is as valuable as the points themselves. This is an opportunity for you to excel and showcase the breadth and depth of your understanding.

Innovative design implementation.

Innovatively improved functionality through user roles.

Exceptional handling of user hierarchy.

RESPONSIVE DESIGN BONUS POINTS [UP TO 5 POINTS]

Provide an exceptional interface design for mobile screens with consideration/explanation for the mobile strategy.

Penalties

As part of our commitment to academic integrity and adherence to intellectual property laws, it is crucial that all submitted work strictly respects copyright laws and guidelines. This includes, but is not limited to, the use of copyrighted materials, code, images, or any other content without proper authorization or attribution.

Please be aware that any instance of copyright infringement will be taken very seriously. The following penalties apply:

Immediate Deduction: If any part of your submitted work is found to violate copyright rules, a significant deduction will be applied to your assignment grade. This deduction can range from a partial to a full loss of marks, depending on the severity of the infringement.

Retroactive Application: Importantly, this penalty can be applied at any point during the course, including during the final grade calculation. If it is discovered post-submission – even after initial grading – that your assignment contains copyrighted material used inappropriately, a retroactive deduction will be applied to your grade.

Severe Cases: In severe cases or in instances of repeated infringement, further disciplinary action may be taken in accordance with university policies, which could include failure in the course or referral to a disciplinary committee.

Responsibility and Vigilance: You must ensure that all materials used in your assignments are properly licensed or fall under fair use provisions and are correctly attributed. Please seek guidance before submission if you are unsure about using any material.

Honesty and Integrity: We encourage honesty and integrity in all academic endeavours. This policy is in place to uphold these values and to ensure a fair and legitimate educational environment for all students.

ADDITIONAL PENALTY: USE OF !IMPORTANT [-5]

The use of `!important` is generally discouraged in the industry and demonstrates a lack of knowledge in structuring quality CSS. Using `!important` in this assignment will result in the deduction of 2 marks.

LATE ASSIGNMENTS

Assignments must be demonstrated to the TAs during your scheduled tutorial sessions. If you need to submit an assignment late, you must arrange this directly with your TA, subject to their availability. Late assignments will be graded on a simplified scale: they will receive either a passing grade of D+ (50%) or a failing grade of F (0).

In cases of special circumstances, such as illness or personal emergencies, accommodations may be made regarding submission deadlines. These will be considered on a case-by-case basis. Students facing such circumstances are encouraged to contact me as soon as possible to discuss potential adjustments.