Gacha Game: Duck Spinning

Project Report (Draft)

Students:

Alexandra Pavlova, Othman Alhammali Shoaib Alhadiri,
Ermias Mulugeta Teklehaimanot

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Introduction

This report describes the development of the Gacha Game, a Django-based web application that allows users to spin and collect virtual ducks of varying rarities. The game provides an engaging experience by combining user registration, authentication, and a randomized collection system. The project was developed as part of the Advanced Software Engineering course at the University of Pisa for the 2024/2025 academic year.

Project Overview

The Gacha Game offers users the ability to:

- Register an account.

- Log in and manage their profile.

- Spin for random ducks that are categorized by rarity.

- Collect multiple ducks, including duplicates.

- View their collection of ducks.

This report discusses the project architecture, technologies used, implementation challenges, and future steps for improvement.

Technologies Used

- **Backend:** Python 3.x, Django 5.1.2, Django REST Framework

- **Database:** SQLite

- **Frontend:** HTML, CSS

- **Other:** Docker for containerization (optional)

Installation Guide

Prerequisites:

- Python 3.x

- pip (Python package installer)

- Docker (optional)

Local Environment Setup

1. Clone the repository:

   ```
   git clone https://github.com/your-username/gacha-game.git
   cd gacha-game
   ```

2. Create a virtual environment:

   ```
   python -m venv venv
   ```

3. Activate the virtual environment:

   - On Windows:
     ```
     venv\Scripts\activate
     ```

   - On macOS/Linux:
     ```
     source venv/bin/activate
     ```

4. Install the required packages:

   ```
   pip install django djangorestframework Pillow
   ```

5. Set up the database:

   ```
   python manage.py migrate
   ```

6. Create a superuser for admin access:

   ```
   python manage.py createsuperuser
   ```

7. Run the development server:

   ```
   python manage.py runserver
   ```

Docker Setup

1. Build the Docker image:

   ```
   docker build -t gacha-game .
   ```

2. Run the container:

   ```
   docker run -p 8000:8000 gacha-game
   ```

Usage

Once the server is running, open your web browser and navigate to the following URLs:

- **Register:** Go to /register/ to create a new account.

- **Login:** Log in using your credentials at /login/.

- **Spin for Ducks:** After logging in, visit /profile/ and click "Spin for a Duck!" to collect a random duck.

- **View Ducks:** Your collection will be displayed on the profile page.

Admin Panel

To manage ducks and users:

1. Visit the admin panel at http://127.0.0.1:8000/admin/.

2. Log in with the superuser credentials.

3. Use the admin interface to manage ducks and user data.

Next Steps

- Add tests for game logic, user registration, and spin feature.

- Implement security features such as user input validation, session management, and protection against attacks like CSRF and SQL injection.

- Further enhancements such as more interactive UI elements and integration with other systems.