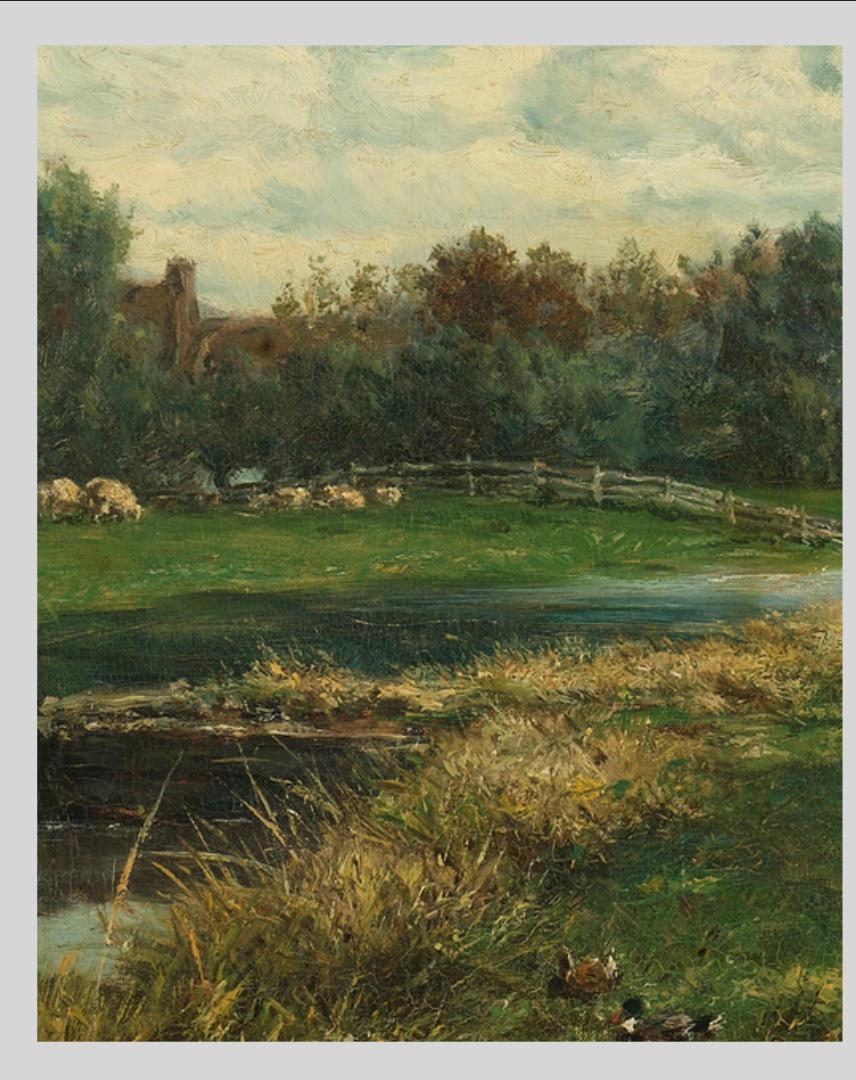




SMART SYSTEM FOR ART PRODUCT AND INVENTORY MANAGEMENT

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Yue, Lai Tsun Wai Matthew,
Leong Jin Yuan



Group 2

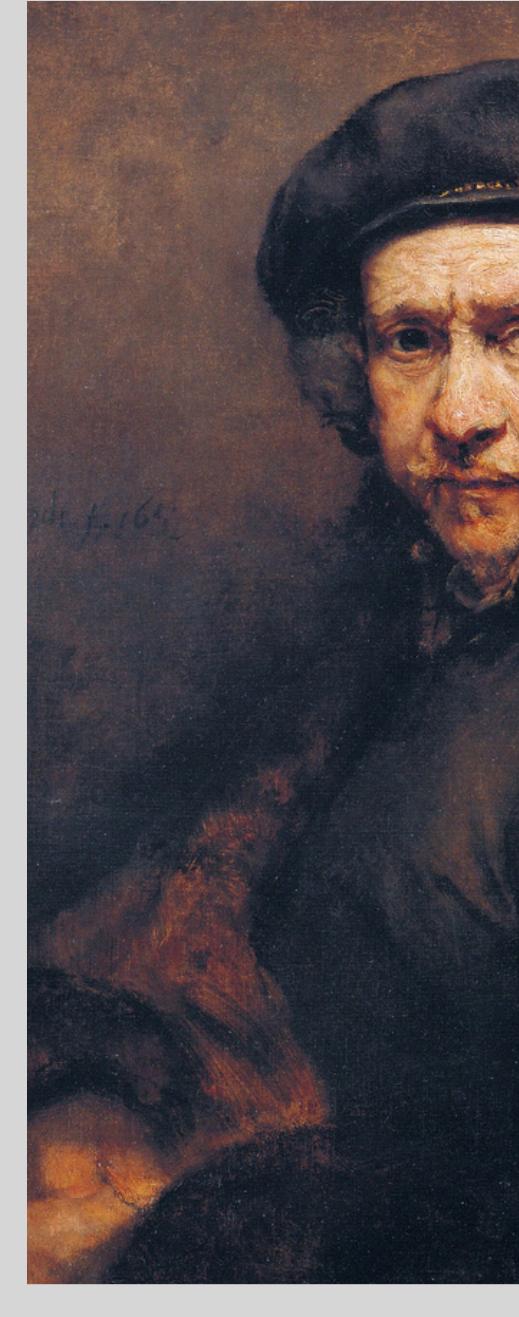
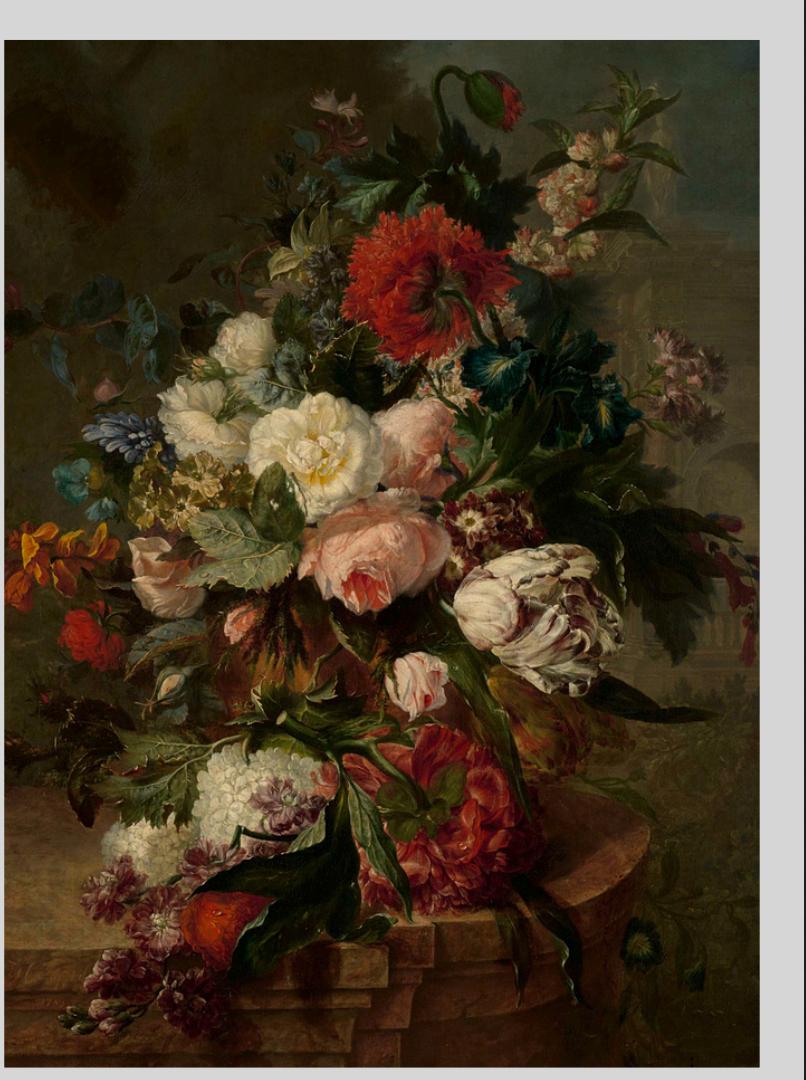




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A painter with long dark hair tied back in a ponytail is shown from the side and back, working on a large painting on an easel. She wears a light-colored t-shirt and jeans. A palette with paint and brushes hangs around her neck. In the background, another painting of a face is visible on a wall.

Introduction

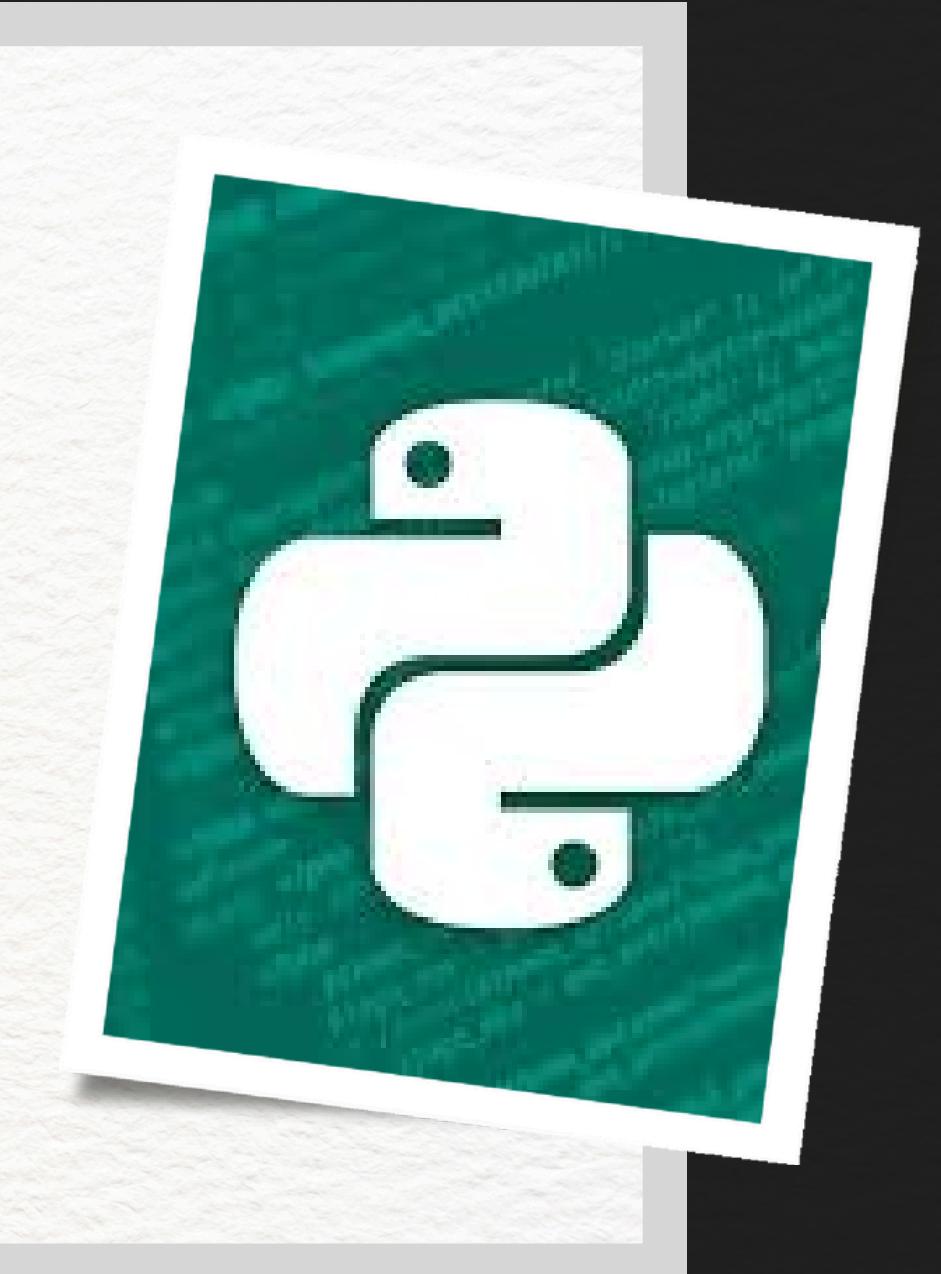
Introduction

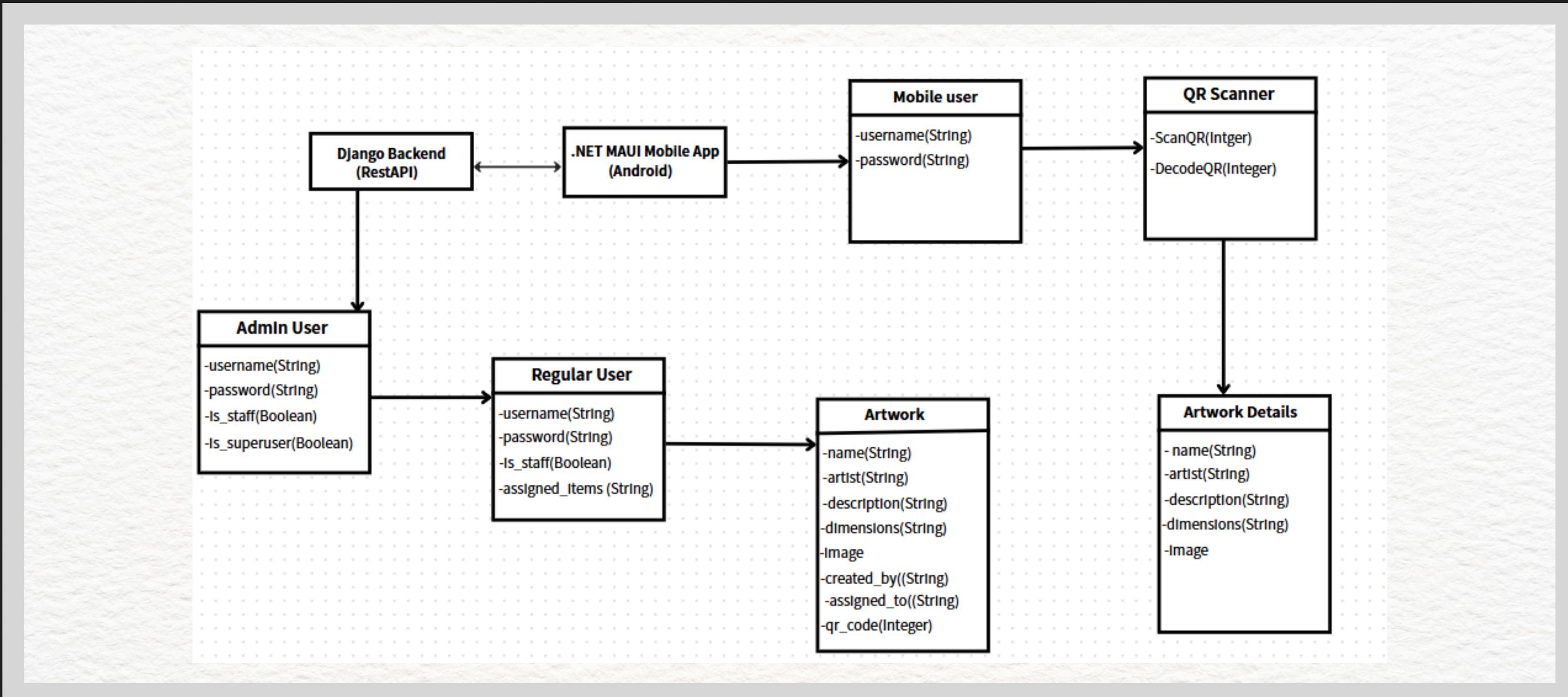
Goal

In this group project, we aim to develop an Artwork Android app that connects to the Django framework. By conducting searches within the app, we can retrieve data from the Django backend.

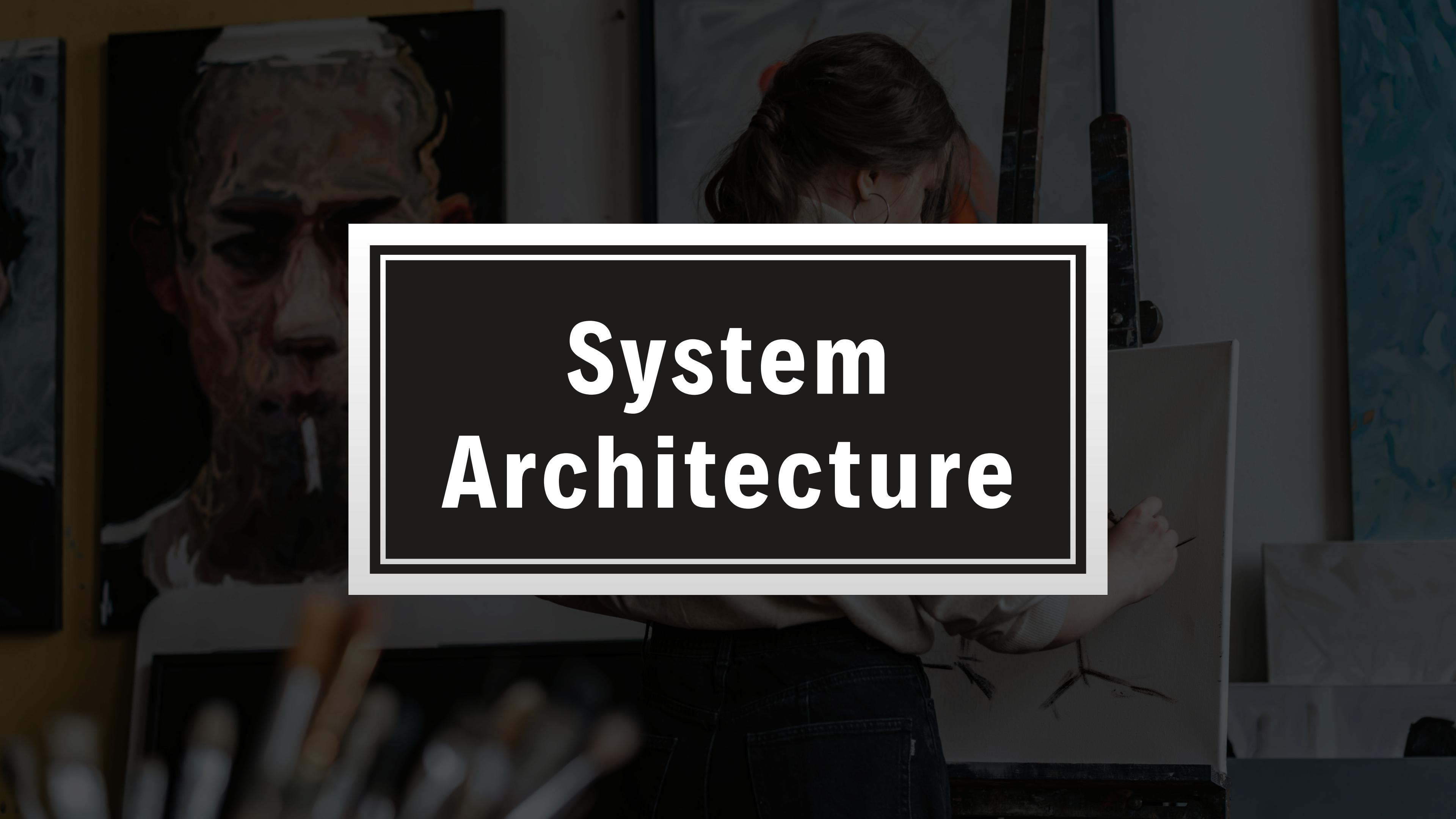
Admin

And the admin user can log in to the Django framework, where they can edit and delete artworks as well as manage ordinary users.





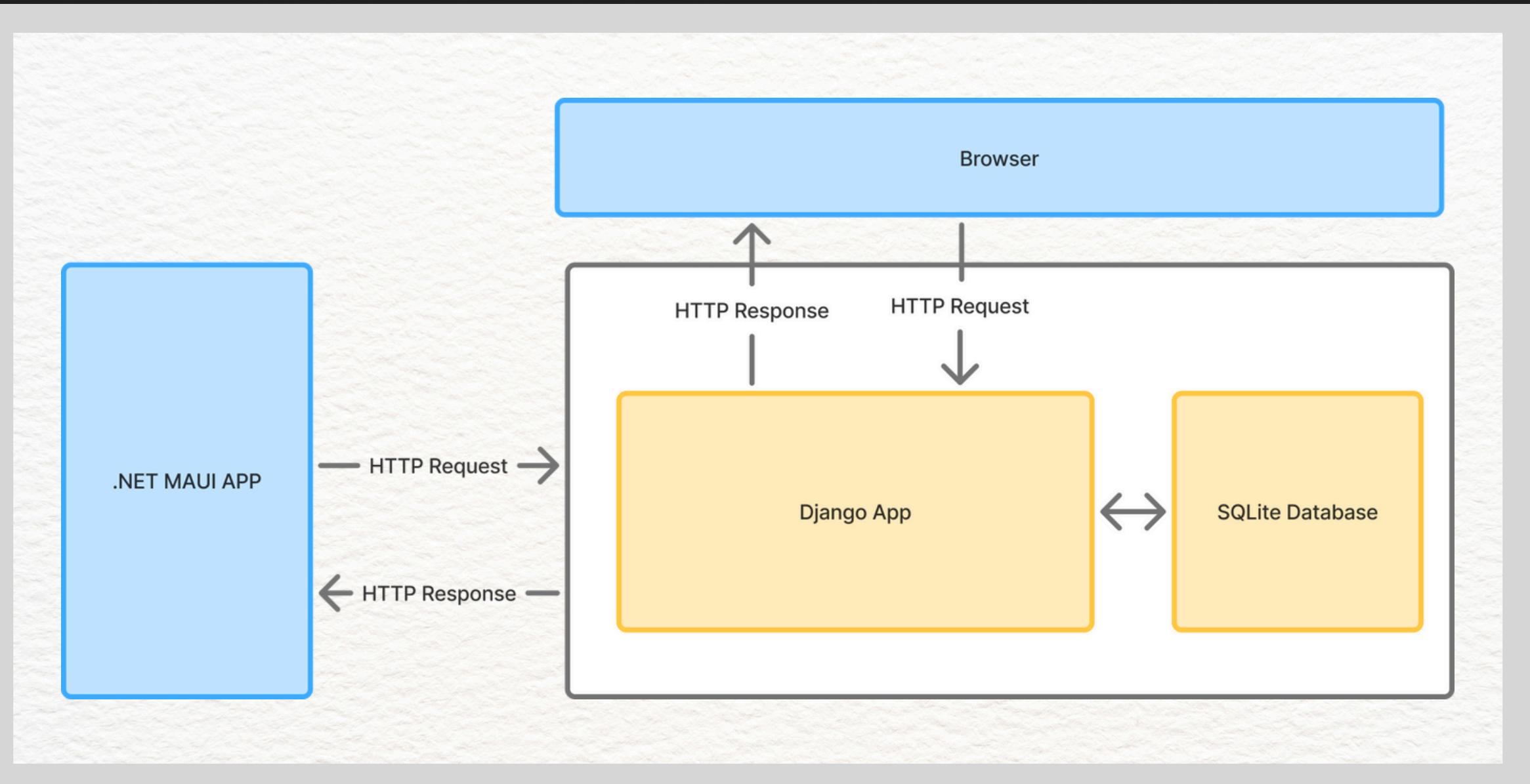
UML Diagram

A painter with long dark hair tied back in a ponytail is focused on her work. She is wearing a light-colored t-shirt and jeans. Her hands are covered in paint as she uses a brush to apply strokes to a large, vertical canvas. The background shows other artworks hanging on the wall, including a portrait and a landscape painting.

System Architecture

System Architecture

- **Backend Components:**
 - Django models (User, Artwork)
 - REST API endpoints (JSON responses)
- **Mobile Components:**
 - Artwork detail views



Django REST API Implementation

Django REST framework

Inventory Item List

OPTIONS GET ▾

GET /api/

HTTP 200 OK

Allow: GET, POST, HEAD, OPTIONS

Content-Type: application/json

Vary: Accept

```
[{"id": 8, "name": "Lily Pads at Dawn", "description": "A tranquil landscape painting capturing the peacefulness of a pond at dawn, with vibrant green lily pads floating gracefully across the water.", "artist": "Olivia Bennett", "dimension": "24 x 36 inches", "image": "http://127.0.0.1:8000/media/artworks/demo_painting_6CIicET.jpeg", "purchase_date": "2023-08-21", "category": 1, "user": 1}, {"id": 10, "name": "Contemplation in Bloom", "description": "A serene portrait of a woman in a floral-patterned kimono, seated on an ornate, decorative bench.", "artist": "Emily Vandeur", "dimension": "24 x 36 inches", "image": "http://127.0.0.1:8000/media/artworks/acrylic_lady.webp", "purchase_date": "2025-03-21", "category": 7, "user": 1}, {"id": 11, "name": "Serenity in Stone", "description": "A minimalist photograph of a smooth, polished stone surface reflecting the surrounding environment in a peaceful setting.", "artist": "Jordan Hayes", "dimension": "18 x 24 inches", "image": "http://127.0.0.1:8000/media/artworks/stone_surface.jpg", "purchase_date": "2024-05-15", "category": 2, "user": 2}], [{"id": 8, "name": "Lily Pads at Dawn", "description": "A tranquil landscape painting capturing the peacefulness of a pond at dawn, with vibrant green lily pads floating gracefully across the water.", "artist": "Olivia Bennett", "dimension": "24 x 36 inches", "image": "http://127.0.0.1:8000/media/artworks/demo_painting_6CIicET.jpeg", "purchase_date": "2023-08-21", "category": 1, "user": 1}, {"id": 10, "name": "Contemplation in Bloom", "description": "A serene portrait of a woman in a floral-patterned kimono, seated on an ornate, decorative bench.", "artist": "Emily Vandeur", "dimension": "24 x 36 inches", "image": "http://127.0.0.1:8000/media/artworks/acrylic_lady.webp", "purchase_date": "2025-03-21", "category": 7, "user": 1}, {"id": 11, "name": "Serenity in Stone", "description": "A minimalist photograph of a smooth, polished stone surface reflecting the surrounding environment in a peaceful setting.", "artist": "Jordan Hayes", "dimension": "18 x 24 inches", "image": "http://127.0.0.1:8000/media/artworks/stone_surface.jpg", "purchase_date": "2024-05-15", "category": 2, "user": 2}]]
```

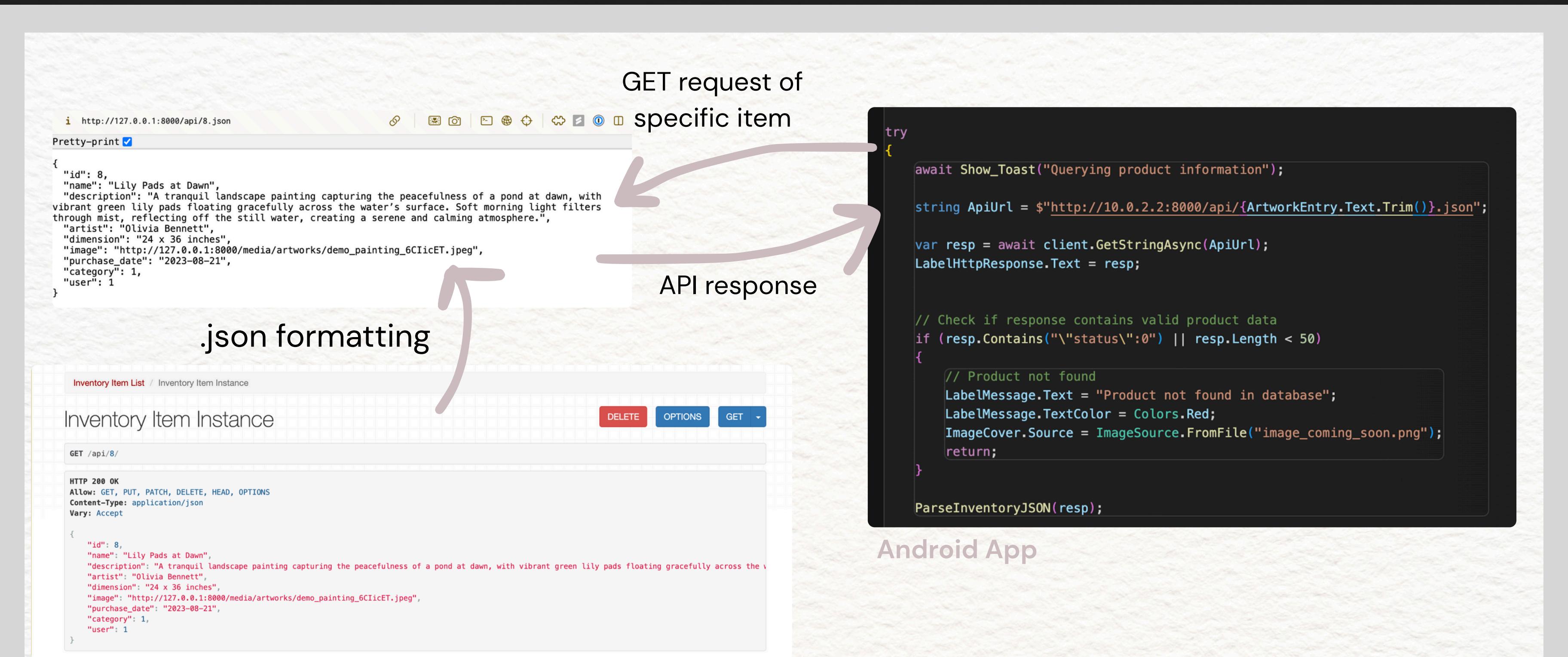
```
class InventoryItemViewSet(viewsets.ModelViewSet):  
    queryset = InventoryItem.objects.all()  
    serializer_class = ItemSerializer
```

Adding view

```
# Automatically include ViewSet routes  
path('', include(router.urls)),
```

Adding urls

Django REST API Implementation



Django

Android App



Key Features



User Management:

- Admin vs. regular user permissions
- User-artwork assignment system



Artwork Management:

- CRUD operations
- Image handling/storage
- Register / Login



Mobile Functionality:

- Retrieve artwork information by ID
- Responsive UI for artwork display

Strengths

1. Multiple-Class Data Model

Reduce cost in storage as redundancy has been reduced

```
class InventoryItem(models.Model):
    name = models.CharField(max_length=200)
    description = models.TextField(blank=True, null=True)
    artist = models.CharField(max_length=200, blank=True, null=True)
    dimension = models.CharField(max_length=200, blank=True, null=True)
    category = models.ForeignKey('Category', on_delete=models.SET_NULL, blank=True, null=True)
    image = models.ImageField(upload_to='artworks/', blank=True) # this will store the image in a folder named 'artworks'
    purchase_date = models.DateField()
    #if we delete user, we delete the assets tied to them too
    user = models.ForeignKey(User, on_delete=models.CASCADE)

    def __str__(self):
        return self.name

class Category(models.Model):
    name = models.CharField(max_length=200)

    #fix plural name in admin portal
    class Meta:
        verbose_name_plural = 'categories'

    def __str__(self):
        return self.name
```

Django model

```
path('edit-item/<int:pk>', EditItem.as_view(), name='edit-item'),
path('delete-item/<int:pk>', DeleteItem.as_view(), name='delete-item'),
```



2. Dynamic URLs

Align with REST principles, makes APIs more intuitive, scalable, and easier to maintain, Handle multiple similar requests. Reduces code redundancy, improves organization, and enhances maintainability

CSS

More organized- developer friendly Interface

bootswatch template

Art Inventory Management



ArtCollector123 Log Out

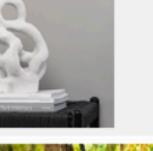
Optimize Your Gallery's Inventory Levels

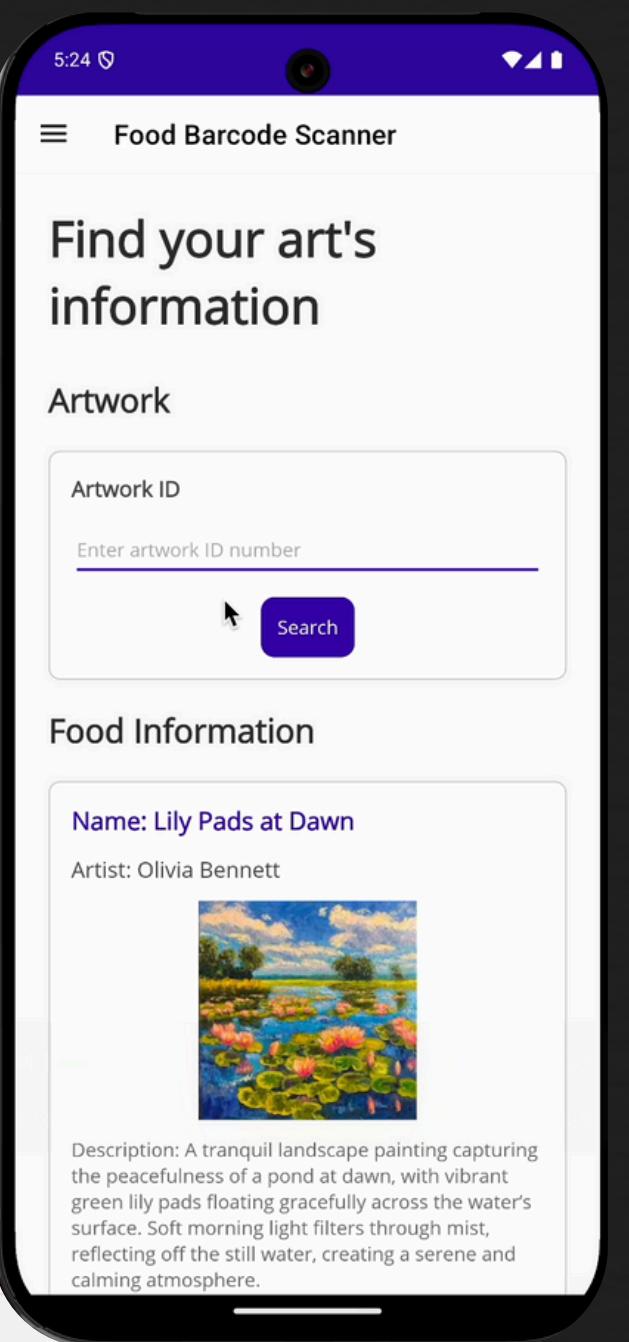
Simplify the way you organize and preserve your art collection with intuitive tools for tracking and managing every detail.

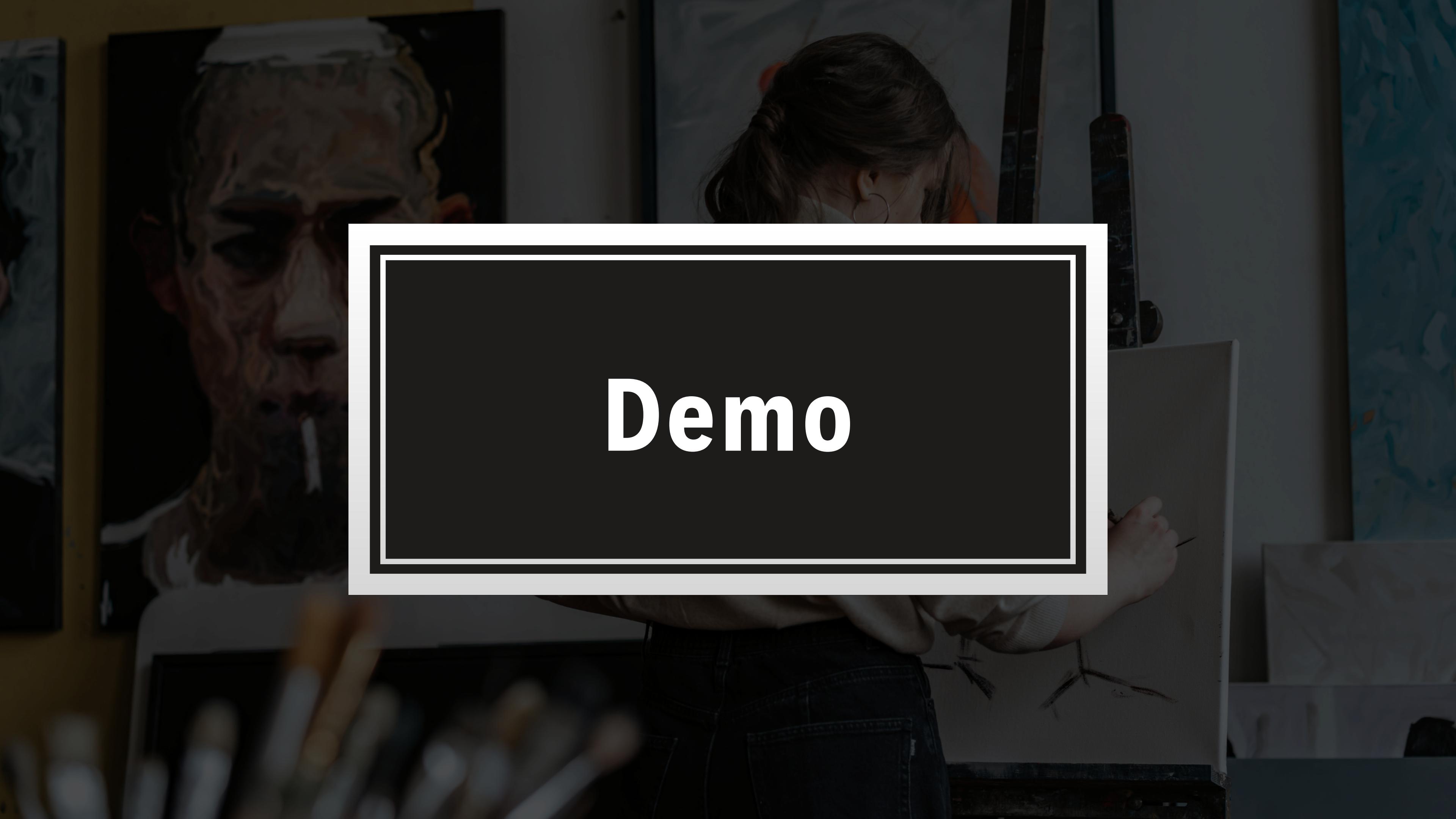
[View and Manage Inventory](#)

Art Inventory Management

Your Art Collection

Name	Category	Description	Artist	Image	Purchase Date
Lily Pads at Dawn	Oil Painting	A tranquil landscape painting ...	Olivia Bennett		Aug. 21, 2023
Contemplation in Bloom	Acrylic Painting	A serene portrait of a woman i...	Emily Vandeur		March 21, 2025
Serenity in Stone	Sculpture	A minimalist white sculpture d...	Unknown		Jan. 26, 2023
Misty Forest	Watercolour Painting	A serene depiction of a foggy ...	Irene Lin		May 2, 2022





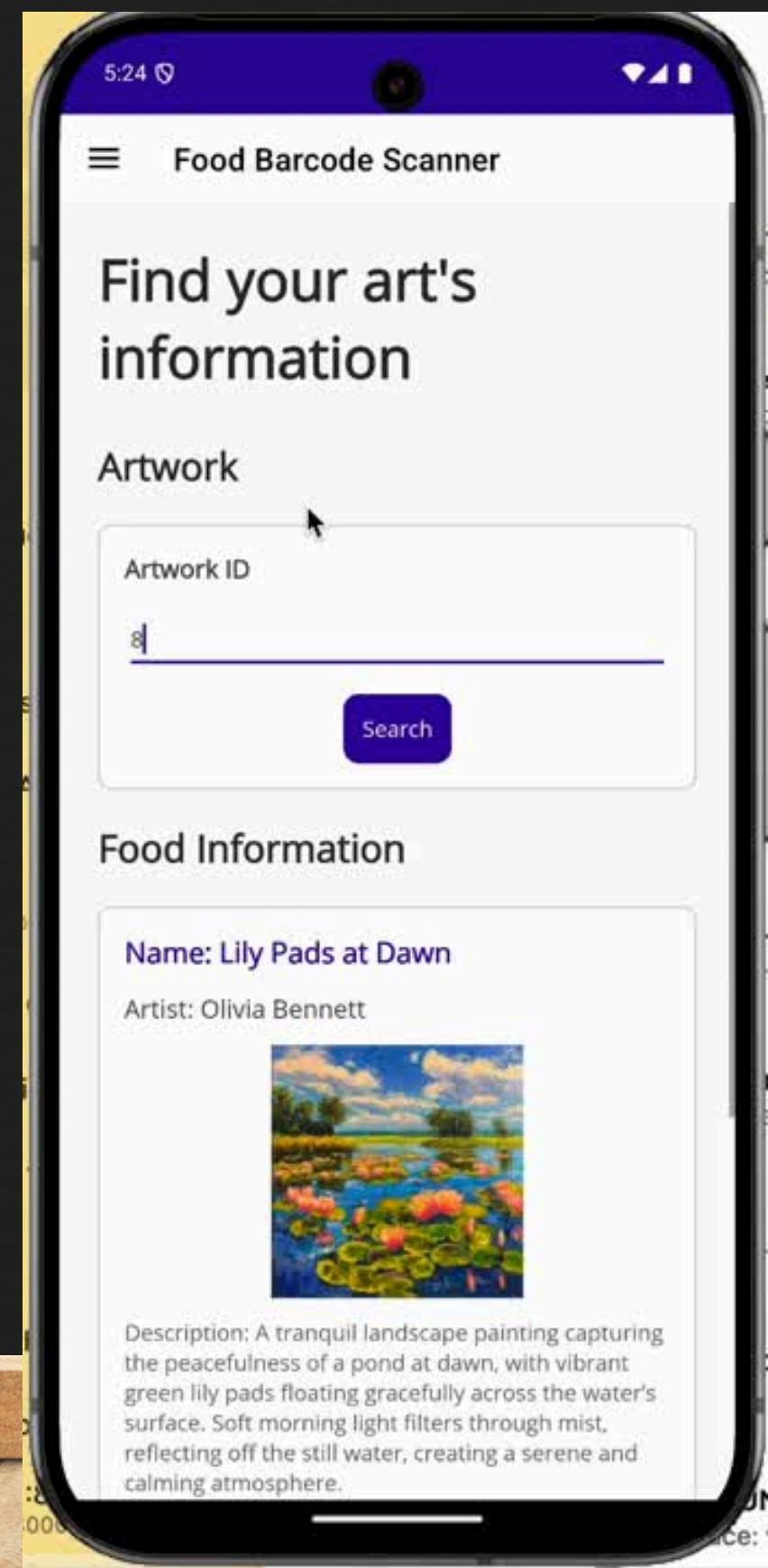
A painter with long brown hair tied back in a ponytail is working on a large canvas in an art studio. She is wearing a light-colored t-shirt and jeans. The studio is filled with various art supplies and other paintings. A large, abstract painting of a face is visible on the left. The overall atmosphere is artistic and focused.

Demo

Django

Django

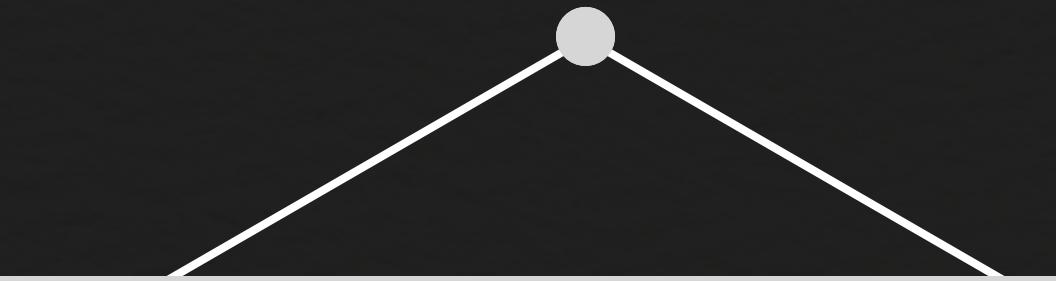
Mobile App



Conclusion

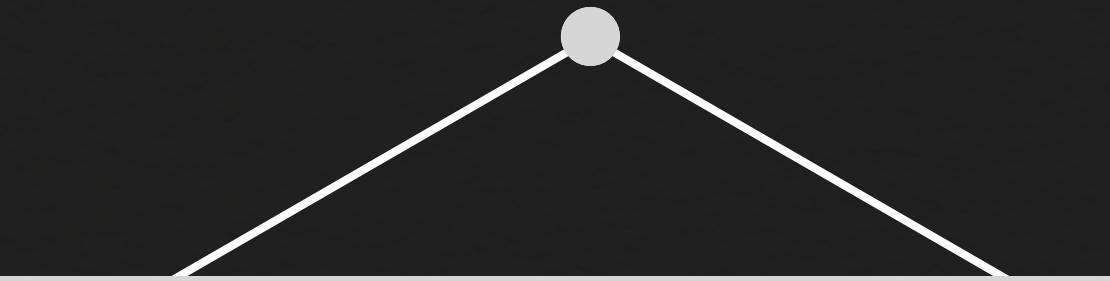


Future Implementations



Improved Security

Only can retrieve your own account's items
More security with API requests



More API Features

Search by different fields
Filter your search



A painter with long dark hair tied back, wearing a light-colored t-shirt and jeans, is working on a large painting of a face in an art studio. The painting features warm, earthy tones. In the foreground, a white rectangular box contains the text "Thank you!" in a bold, sans-serif font.

Thank you!