02. Creating Your First Django Project

- creating apps

What you learn:
- Create and run a basic Django project and understand app architecture

Creating Your First Django Project

1. Create an app

A Django project contains multiple apps (self-contained components).
Create an app called courses

```
>> python manage.py startapp courses
```

Folder courses/ created with:
courses/
├── admin.py
├── apps.py
├── migrations/
├── models.py
├── tests.py
├── views.py
└── __init__.py

Register the app
Open myproject/settings.py and add 'courses.apps.CoursesConfig' (or 'courses') to
INSTALLED_APPS:

```
INSTALLED_APPS = [
    'django.contrib.admin',
    ...,
    'courses.apps.CoursesConfig',  # or 'courses'
]
```

2) Minimal app example — model, migration, admin, view, template, urls

a) Define a model (courses/models.py)

```python
from django.db import models

class Course(models.Model):
    title = models.CharField(max_length=200)
    instructor = models.CharField(max_length=100)
    seats = models.IntegerField(default=30)
    start_date = models.DateField(null=True, blank=True)

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

b) Create & apply migrations

```
>> python manage.py makemigrations
>> python manage.py migrate
```

Note: makemigrations creates migration files; migrate applies them to DB.

c) Register model in admin (courses/admin.py)

```python
from django.contrib import admin
from .models import Course

@admin.register(Course)
class CourseAdmin(admin.ModelAdmin):
    list_display = ('title', 'instructor', 'seats', 'start_date')
```

Create an admin user and login:

```
>> python manage.py createsuperuser        # supply username, email, password
```

```
>>python manage.py runserver        # Visit http://127.0.0.1:8000/admin/ and login
```

d) Simple view (courses/views.py)

```python
from django.shortcuts import render
from .models import Course

def course_list(request):
    courses = Course.objects.all()
    return render(request, 'courses/course_list.html', {'courses': courses})
```

e) Templates — create template folder
Create courses/templates/courses/course_list.html:

```html
<!-- course_list.html -->
<!doctype html>
<html>
<head><title>Courses</title></head>
<body>
  <h1>Available Courses</h1>
  <ul>
    {% for c in courses %}
      <li>{{ c.title }} — {{ c.instructor }}</li>
    {% empty %}
      <li>No courses yet.</li>
    {% endfor %}
  </ul>
</body>
</html>
```

Ensure TEMPLATES in **settings.py** has **'DIRS':** [] (Django will find app templates by default since APP_DIRS=True).

f) App-level urls (courses/urls.py)
Create file courses/urls.py:

```python
from django.urls import path
from . import views

urlpatterns = [
    path('', views.course_list, name='course_list'),
]
```

g) Include app URLs in project urls.py (myproject/urls.py)

```python
from django.contrib import admin
from django.urls import path, include

urlpatterns = [
    path('admin/', admin.site.urls),
    path('courses/', include('courses.urls')),  # app URLs
]
```

Now visiting http://127.0.0.1:8000/courses/ shows course list page.