

API Design & use in Python

Université Toulouse Paul Sabatier - KEAT9AA1

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Available at

**[https://homepages.laas.fr/gsaurel/teach/
2024-2025/M2_ISTR/7-api-python.pdf](https://homepages.laas.fr/gsaurel/teach/2024-2025/M2_ISTR/7-api-python.pdf)**

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Source

**`https://gitlab.laas.fr/gsaurel/teach :
2024-2025/M2_ISTR/7-api-python.md`**

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```
class Point:
    def __init__(self, x: int, y: int):
        self.x = x
        self.y = y

    def __str__(self):
        return f"{self.x} {self.y}"

if __name__ == "__main__":
    p = Point(3, 4)
    print(p)
```



Figure 1: Django

Django

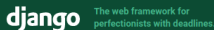


Figure 1: Django

Django

Quickstart

```
$ python -m venv venv
$ echo venv >> .gitignore
$ source venv/bin/activate
(venv) $ pip install django
(venv) $ django-admin startproject mysite
(venv) $ cd mysite
(venv) $ ./manage.py runserver
(venv) $ ./manage.py migrate
(venv) $ ./manage.py startapp election
```

Models

```
# election/models.py
from django.db import models

class Election(models.Model):
    title = models.CharField(max_length=200)
    pub_date = models.DateTimeField()

class Candidate(models.Model):
    election = models.ForeignKey(
        Election,
        on_delete=models.CASCADE,
    )
    name = models.CharField(max_length=200)
    votes = models.IntegerField(default=0)
```


■ add **election** in

```
(venv) $ ./manage.py makemigrations election
```

```
(venv) $ ./manage.py migrate
```

```
(venv) $ ./manage.py shell
```

```
In [1]: from election.models import *
```

```
In [2]: from django.utils.timezone import now
```

```
In [3]: e = Election.objects.create(
        title="Qui est le meilleur chat ?",
        pub_date=now())
```

```
In [4]: Candidate.objects.create(
        election=e, name="Doc")
```

```
Out[4]: <Candidate: Candidate object (1)>
```

```
In [5]: Candidate.objects.create(
        election=e, name="Pitre")
```

```
Out[5]: <Candidate: Candidate object (2)>
```

```
# election/models.py
class Election(models.Model):
    ...
    def __str__(self):
        return self.title

class Candidate(models.Model):
    ...
    def __str__(self):
        return self.name
```

```
# election/admin.py
from django.contrib import admin

from . import models

admin.site.register(models.Election)
admin.site.register(models.Candidate)
```

```
# election/admin.py
from django.contrib import admin

from . import models

admin.site.register(models.Election)
admin.site.register(models.Candidate)

(venv) $ ./manage.py createsuperuser
(venv) $ ./manage.py runserver
```

Views

```
# election/views.py
from django.views.generic import DetailView, ListView
from .models import Election

class ElectionListView(ListView):
    model = Election

class ElectionDetailView(DetailView):
    model = Election
```

Route some URLs to your views

```
# mysite/urls.py
from election import views

urlpatterns = [
    path("admin/", admin.site.urls),
    path(
        "",
        views.ElectionListView.as_view(),
        name="elections",
    ),
    path(
        "election/<int:pk>",
        views.ElectionDetailView.as_view(),
        name="election",
    ),
]
```



```
# election/views.py
class CandidateDetailView(DetailView):
    model = Candidate

# election/urls.py
urlpatterns = [
    ...
    path(
        "candidate/<int:pk>",
        views.CandidateDetailView.as_view(),
        name="candidate",
    ),
]
```

```
# election/views.py
from django.views.generic import RedirectView
from django.views.generic.detail import SingleObjectM

class VoteView(SingleObjectMixin, RedirectView):
    model = Candidate

    def get_redirect_url(self, *args, **kwargs):
        candidate = self.get_object()
        candidate.votes += 1
        candidate.save()
        return f"/candidate/{candidate.id}"
```