Session 5: Takeoff

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Contents of last session

1. Deploy checklist
2. Performance
3. Sentry

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Contents of this session

1. Deployment
2. Performance issue investigation
3. Further resources

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1. Deployment

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Register for GitHub Student Developer Pack

- Register for student dev pack if student:
  - https://education.github.com/discount_requests/student_application?utm_source=2022-10-05-Webapp-dev-4-dummies

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DigitalOcean (1)

1. Go to: https://www.digitalocean.com/
2. Log in using GitHub
3. Create > Apps
4. Service Provider GitHub + Give Access to repo
5. Select branch
6. Remove dockerfile from deploy
7. Update run command:
   1. gunicorn --worker-tmp-dir /dev/shm config.wsgi
8. Set Route to /
9. Edit plan > Basic

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DigitalOcean (2)

1. Add resource > Database > Create and attach
2. Add resource > Detect from Source Code
    1. Do same steps at start as before
    2. Edit > Resource Type = Static Site
    3. Output directory = staticfiles
    4. Request route: /static/
3. Set env vars of webapp resource (not static)

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Environment variables

1. DJANGO_SECRET_KEY = <random secret key> + encrypt
2. DJANGO_ALLOWED_HOSTS = ${APP_DOMAIN}
3. DATABASE_URL = ${db.DATABASE_URL}
4. DISABLE_COLLECTSTATIC = 1
5. GITHUB_CLIENT_ID = <value>
6. GITHUB_CLIENT_SECRET = <value>
    1. For both update your urls in GitHub
7. SENDGRID_API_KEY = <key> + encrypt
8. SENDGRID_FROM_EMAIL = <sendgrid-mail>
9. MOLLIE_API_KEY = <key> + encrypt
10. SENTRY_DSN = <value>

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DigitalOcean (3)

1. Console:
   1. Execute: ***python manage.py migrate***
   2. Execute: ***python manage.py createsuperuser***
2. Alerts (settings > App selected > Alert Policies)
   - Failed & Successful Deployment: Enable
3. Media files require a bit more setup:
   - https://www.digitalocean.com/community/questions/how-to-store-django-media-files-to-spaces
4. Add some data using admin

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Questions?

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2. Performance issue investigation

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When do I have an issue?

- When a user reports one
- Better: when you notice your apdex is low in Sentry

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Step 1: Production - Sentry

1. Make a couple of requests to /albums endpoint
2. Open the performance analysis of this endpoint in Sentry
   1. Open last request made
      - Since we don't have a lot of data, I will nudge a bit in the direction of the issue
   2. At bottom of query, you can see two similar SELECT queries
   3. Add an extra album, make a couple of requests and open this again
   4. Now this query appears 3 times

   → N+1 Problem

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Step 2: Development - DDT

1. Start your docker containers
2. Reproduce data (having 3 albums is enough)
3. Open localhost:8000/albums
   1. Open SQL tab of DDT
   2. You can see that for each album the artist is selected

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Optimizing queries

- ***Select_related***: returns a QuerySet that follows foreign-key relationships
  - One-to-one
  - One-to-many
- ***Prefetch_related***: idem but
  - Many-to-many
  - Many-to-one
- ***Indexes***: if field is used in 10-25% of all queries →should be index
  - Using: db_index = True

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Git checkpoint

1. Create new feature branch

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Step 2: Development - DDT

1. Start your docker containers
2. Reproduce data (having 3 albums is enough)
3. Open localhost:8000/albums
   1. Open SQL tab of DDT
   2. You can see that for each album the artist is selected
4. Update ***albums/views.py***

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albums/views.py

```
def get_queryset(self):
    query = self.request.GET.get("q")

    result = self.model.objects.all()
    if not query is None:
        result = result.filter(
        Q(title__icontains=query) | Q(artist__name__icontains=query)
    )

    return result.prefetch_related("artist_set")
```


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Result

- Number of queries will be reduced from 7 to 5
- Add another album to verify it stays at 5

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Git checkpoint

1. Commit changes
2. Create PR

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Questions?

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3. Further resources

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Further resources

- Useful references:
  - https://docs.djangoproject.com/en/4.0/
  - Two scoops of Django
- Microservices:
  - Designing Microservices with Django: An Overview of Tools and Practices
- Various topics:
  - Lightweight Django (Rest, Websockets…)
  - Boost your Django DX, Speed up your Django Tests
  - The Temple of Django Database Performance

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Thanks for following along

- For further questions: xander@xdoubleu.com

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