

Full Stack Type Safety

Szymon Pyżalski

Egnyte Inc.

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Outline

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Premise

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Summary

Our goals

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- Catch typing errors ASAP (not later than in CI)

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- Catch typing errors ASAP (not later than in CI)
- Catch typing errors that span layers of stack

What will we use

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- mypy to catch analyze the code in Python

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- OpenAPI3 to ensure the contract between BE and FE

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- Travis to catch the error ASAP

What will we use

- mypy to catch analyze the code in Python
- OpenAPI3 to ensure the contract between BE and FE
- Travis to catch the error ASAP
- Automatic code generation to integrate contract and typing systems

Goals of the presentation

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- To show a process of type-proofing of a simple app

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- To show the tools needed for this end

Goals of the presentation

- To show a process of type-proofing of a simple app
- To show the tools needed for this end
- To examine the state of the ecosystem

Non-goals

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- Evangelisation for a concrete technology

Non-goals

- Evangelisation for a concrete technology
- Convincing anyone that they must do it

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GraphQL

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- A different paradigm of creating API. No fixed endpoints.

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- Schema is a part of the standard

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- A different paradigm of creating API. No fixed endpoints.
- Schema is a part of the standard
- Tools for code generation also available

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Elm

Elm

- Not a JavaScript variant at all

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- Not a JavaScript variant at all
- A very well-thought type system

Elm

- Not a JavaScript variant at all
- A very well-thought type system
- Purely functional coding

Strawberry-graphql/FastAPI

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- Schema based on annotations

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- Full support for asyncio

Strawberry-graphql/FastAPI

- Schema based on annotations
- Full support for asyncio
- Very immature

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Takeaways

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- There are tools for code safety enforcement in a Python stack that are worth consideration
- They are not yet perfect and we can't expect to catch all errors
- Whether you want to use this depends on the project

Tools used

- django-stubs A distribution of code annotations for django complete with a mypy plugin
- spectacular A schema generator for django-rest-framework
- openapi-generator Code generator that can create boilerplate code for several languages/frameworks based on OpenAPI3.