

Speeding up Jackson JSON parsing 3x

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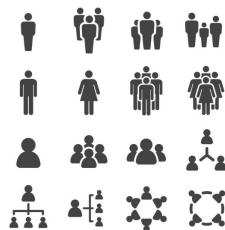
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Background - Norwegian Population Registry

- FREG

- 11 million people (JSONS)
 - $\approx 5,6$ m alive
 - GDPR - store pr customer
- ≈ 1000 customers
- ≈ 100 full copies of FREG
- Periodically $> 60\,000$ JSONs pr hour
- We have to handle $> 1\,000\,000$ pr hour.



- OpenAPI generates Kotlin classes.
- Jackson uses reflection to create objects.
- Reflection is slow
- Spec contains all info needed to deserialize
- Generating the deserializer

- Standard to describe RestAPIs
 - Http Calls
 - JSON model for input and output data
- Generate model:
 - Code for most languages
 - Model classes
 - HTTP clients

Jackson: 3 levels of parsing

1 JsonTokenizer

- Reads JSON as a stream, and divides into tokens
- FIELD, VALUE, START_OBJECT, ...

2 NodeTree

- Reads JSON into a generic tree structure
- Primitives, Map<String, JsonNode>, List<JsonNode>

3 Custom Kotlin / Java Objects (Value)

- MyObj, List<MyObj>, Map<String, MyObj>
- Uses reflection to map to Kotlin objects
- Reflection is slow

Number 3 is what we want

How OpenAPI generate classes

- Include Deserializer `data_class.mustache`
- Deserializer `jackson_deserializer.mustache`
- Value deserializer `deserialize_value.mustache`

Generate Code

```
1  # Delete old code
2  rm -rf ./src/main/kotlin/im/kny/jacksonspeedup/offentligmedhjemmel
3
4  # Generate code
5  java -jar openapi-generator-cli.jar generate \
6  -g kotlin \
7  --global-property models,modelDocs=false \
8  -c openapi-generator-config.yaml \
9  --template-dir ./openapi-templates \
10 -i src/main/resources/openapi/freg-api-offentlig-med-hjemmel.json \
11 --package-name im.kny.jacksonspeedup.offentligmedhjemmel
12
13 # Compile the project
14 mvn clean
15 mvn test
```

- Need to ensure that our mapping works!
- Compare output from generated and reflection deserializer.

- Speedup ≈ 3.0
- Faster startup-time (unit-tests)

Thank you for your attention

If you want to see example code:

<https://github.com/kny78/jackson-speedup/>