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# Generate Code that Doesn't Suck

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# Who is this guy?



**codemonkey.fm**



Sonatype  
**Nexus**

**Maven™**

{okta}

# Overview

---

- What is Swagger / OpenApi
- What is generated code?
- Why generate code?
- Why is it perceived as bad?
  - Examples of code that sucks
- How do we make it better?
  - Examples of code that doesn't suck

# What is Swagger?

The screenshot shows the Swagger UI interface for a Pet store API. At the top left, there's a dropdown menu labeled "Schemes" with "HTTP" selected. To the right of the dropdown is a green "Authorize" button with a lock icon. Below this, the main content area has a title "pet Everything about your Pets" followed by a link "Find out more: <http://swagger.io>". Underneath, there are three API endpoints listed:

- POST /pet** Add a new pet to the store (green background)
- PUT /pet** Update an existing pet (orange background)
- GET /pet/findByStatus** Finds Pets by status (blue background)

Each endpoint row includes a small lock icon on the right side.

# What is Swagger?

The screenshot shows the Swagger UI interface for a 'pet' resource. At the top left is a 'Schemes' dropdown set to 'HTTP'. On the right is an 'Authorize' button with a lock icon. Below the header, the word 'pet' is followed by the text 'Everything about your Pet'. A search bar contains the placeholder 'Find something more: http://swagger.io'. The main content area displays three API operations:

- POST /pet**: Add a new pet to the store. (Locked)
- PUT /pet**: Update an existing pet. (Locked)
- GET /pet/findByStatus**: Finds Pets by status. (Locked)

# Swagger

```
basePath: "/api"
paths:
  "/pet":
    post:
      operationId: addPet
      consumes:
        - application/json
      produces:
        - application/json
      parameters:
        - in: body
          name: body
          required: true
          schema:
            "$ref": "#/definitions/Pet"
definitions:
  Pet:
    type: object
    properties:
      id:
        type: integer
      name:
        type: string
```

# Parts of Swagger

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- Swagger Editor
- Swagger UI
- Swagger Codegen

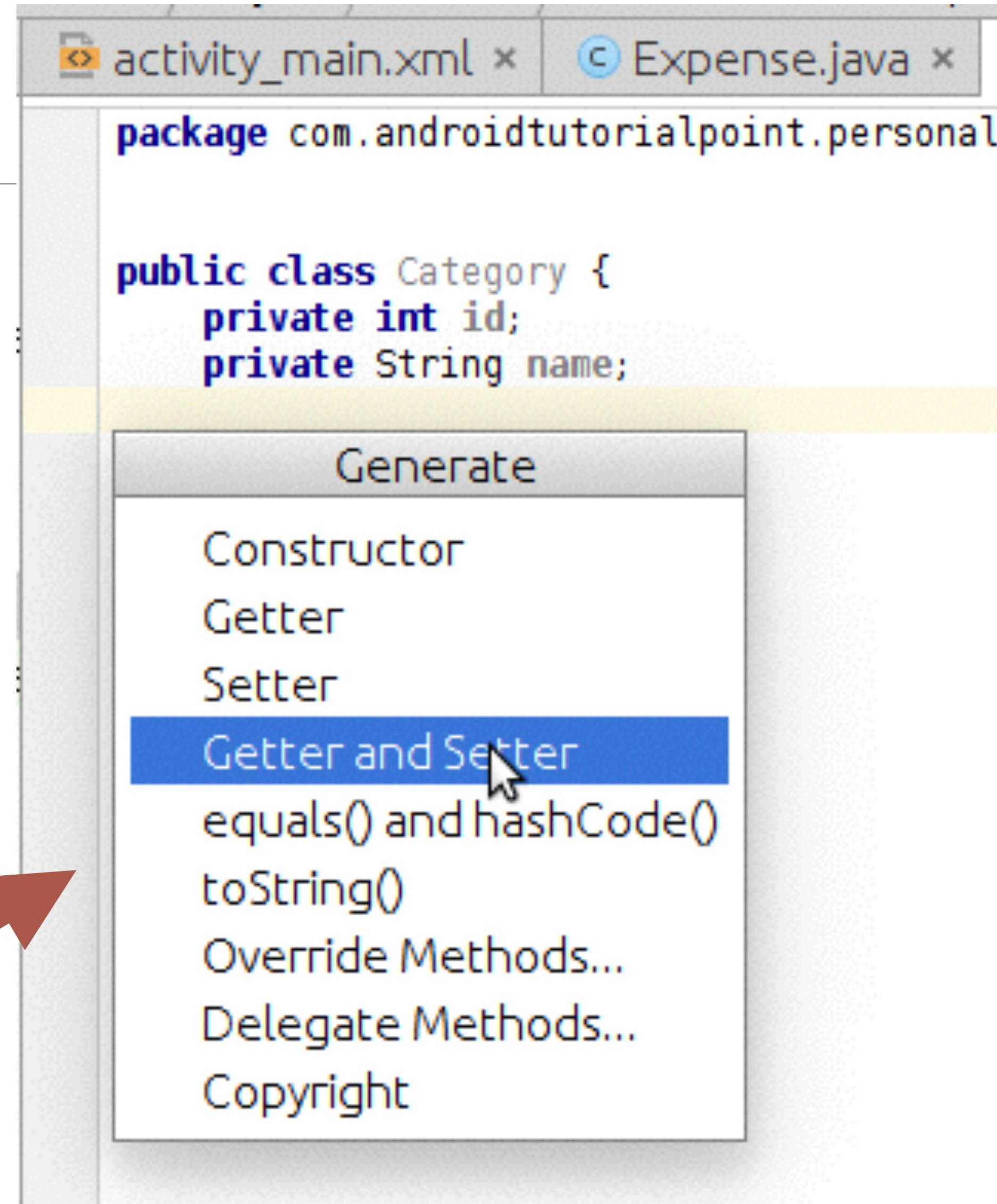
“Sweet! It can generate code too!”

**–Nobody, Ever**

# What is Generated Code

- NOT talking about IDE generated or boiler plate
- Code you do **not** change directly
- Code you do **not** check in (depending on the language)
- Has some sort of **manifest** (swagger.json, WSDL, RAML)

Not this



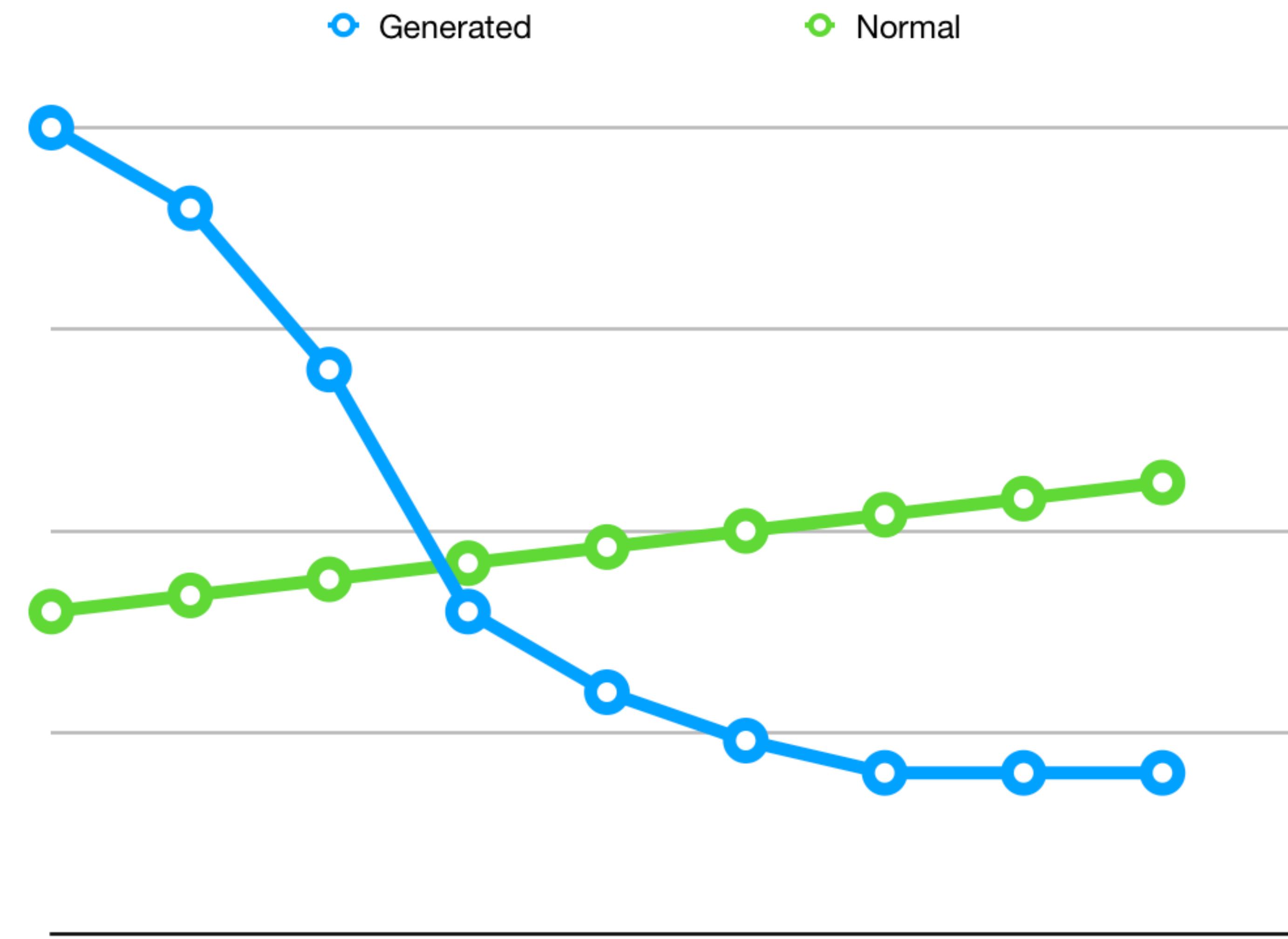
```
@Data  
public class Company {  
    private final Person founder;  
    private String name;  
    private List<Person> employees;  
}
```

```
<databaseChangeLog>
    <changeSet id="1" author="bob">
        <createTable tableName="department">
            <column name="id" type="int">
                <constraints primaryKey="true" nullable="false"/>
            </column>
            <column name="name" type="varchar(50)">
                <constraints nullable="false"/>
            </column>
            <column name="active" type="boolean"
                   defaultValueBoolean="true"/>
        </createTable>
    </changeSet>
</databaseChangeLog>
```

# Why?



# Cost of Code Over Time (we hope)

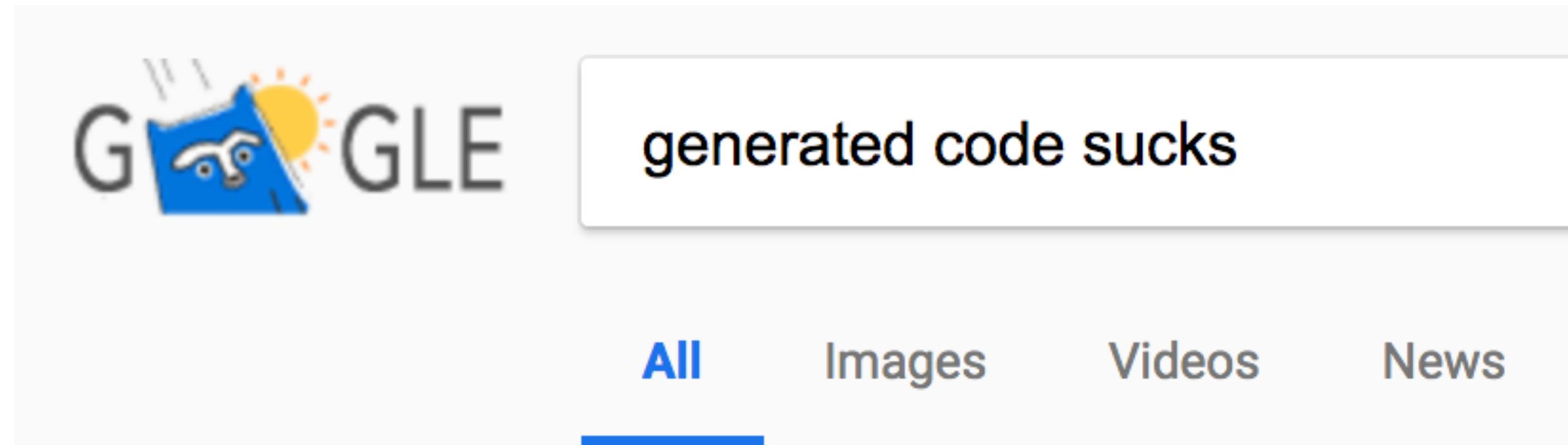


# Why is it perceived as bad?

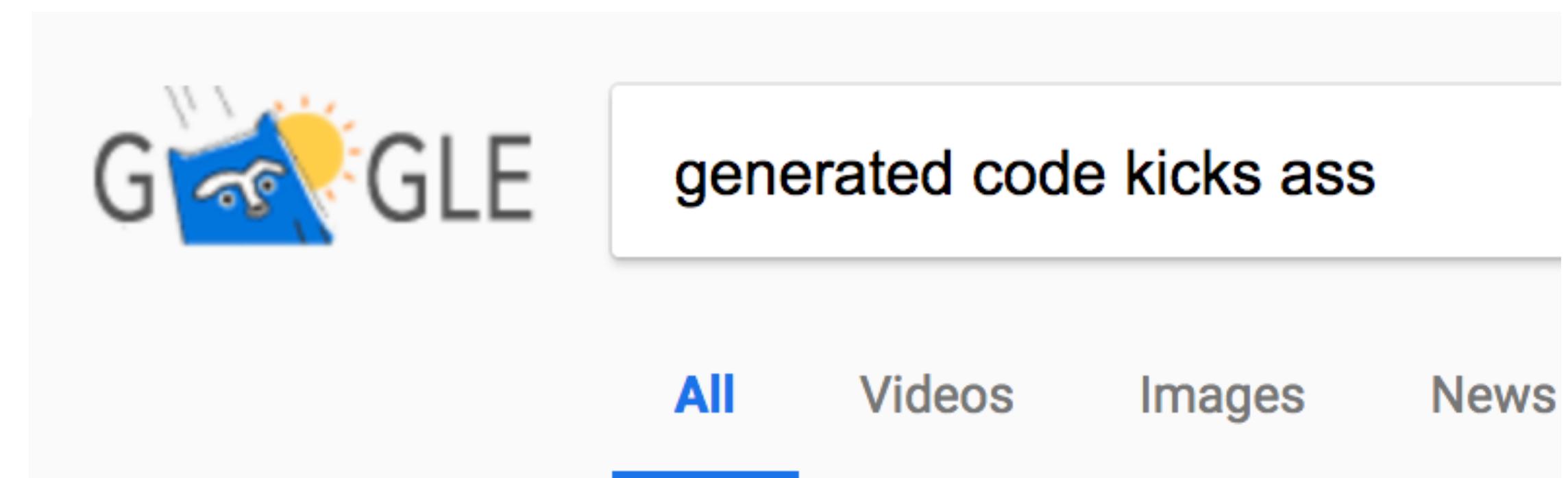
- Past stigma
- Complexity
- Ego
- Rigid output



# Why do we think it sucks?



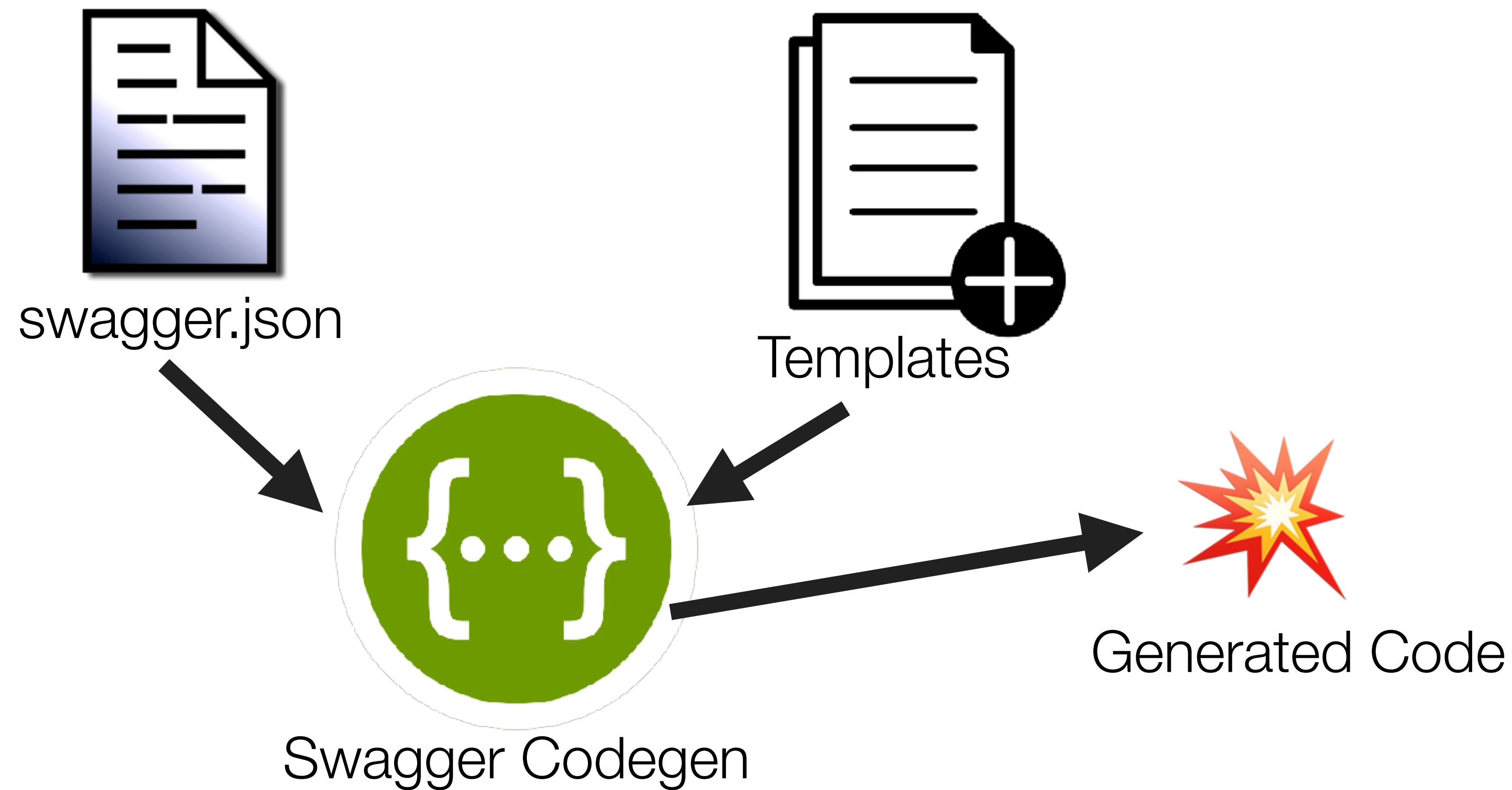
A screenshot of a Google search results page. The search bar at the top contains the query "generated code sucks". Below the search bar, there are four navigation links: "All" (which is highlighted in blue), "Images", "Videos", and "News". A horizontal blue line is positioned below the "All" link. The main search results area displays the text "About 4,400,000 results (0.44 seconds)".



A screenshot of a Google search results page. The search bar at the top contains the query "generated code kicks ass". Below the search bar, there are four navigation links: "All" (which is highlighted in blue), "Videos", "Images", and "News". A horizontal blue line is positioned below the "All" link. The main search results area displays the text "About 611,000 results (0.58 seconds)".

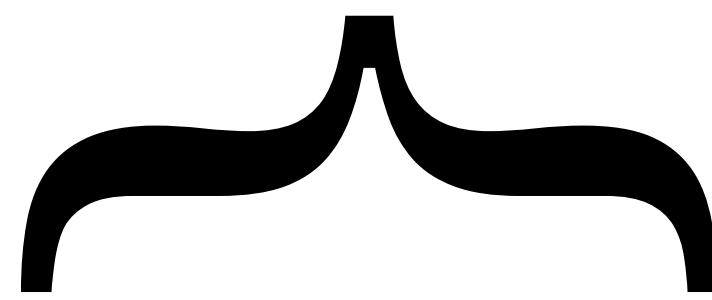


# How to Generate Code with Swagger



# Mustache

---



Logic-less templates.

Except:

`{{#returnType}}{{{returnType}}} {{/returnType}}{{{^returnType}}}void {{/returnType}}`

# Swagger CodeGen Maven plugin

```
<plugin>
  <groupId>io.swagger</groupId>
  <artifactId>swagger-codegen-maven-plugin</artifactId>
  <version>2.3.1</version>
  <executions>
    <execution>
      <goals>
        <goal>generate</goal>
      </goals>
      <configuration>
        <inputSpec>swagger.yaml</inputSpec>
        <language>java</language>
      </configuration>
    </execution>
  </executions>
</plugin>
```



# Jump out to standard-swagger

# Issues with this approach

---

- Generates lots of crap
- No interfaces
- Generates separate models and client
- Exposes underlying implementations
- Generates non changing boiler plate

## How do we make it better?

---

- Understand the effort involved
- Don't generate the world
- Stub out a non-generated example
- Generate only the code that repeats
- Use Interfaces!



# Example Maven Dependencies

```
<dependency>
    <groupId>com.okta.example.sdk</groupId>
    <artifactId>okta-example-sdk-api</artifactId>
    <scope>compile</scope>
</dependency>
<dependency>
    <groupId>com.okta.example.sdk</groupId>
    <artifactId>okta-example-sdk-impl</artifactId>
    <scope>runtime</scope>
</dependency>
<dependency>
    <groupId>com.okta.example.sdk</groupId>
    <artifactId>okta-example-sdk-httpclient</artifactId>
    <scope>runtime</scope>
</dependency>
```

# A better Swagger plugin for Maven

```
<plugin>
  <groupId>org.zalando.maven.plugins</groupId>
  <artifactId>swagger-codegen-maven-plugin</artifactId>
  <executions>
    <execution>
      <id>swagger-codegen-api</id>
      <goals>
        <goal>codegen</goal>
      </goals>
      <configuration>
        <language>custom_java</language>
      </configuration>
    </execution>
  </executions>
</plugin>
```

# Jump out to custom-swagger

# Don't generate everything

---

- Hand write the complex bits
- Be careful of with secrets
- Models and methods can coexist
- Do **NOT** generate tests



# Common Mistakes

---

- Generating clients on the fly
- Not testing
- Generating unfamiliar languages
- Set it and forget it



# Ways to improve

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- Generate for use as a transport layer
- Let your users generate the code
- Think of the user experience
- Don't generate it



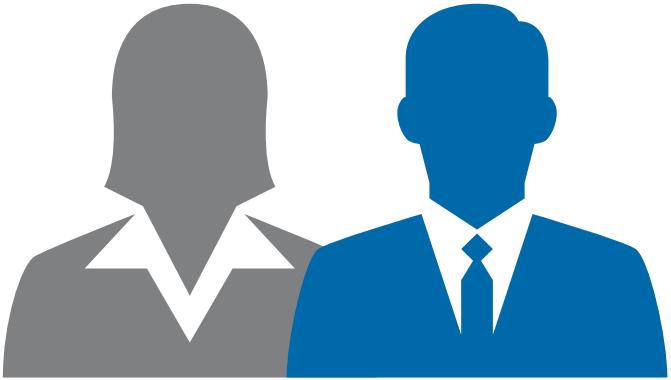
# When Not Too

---

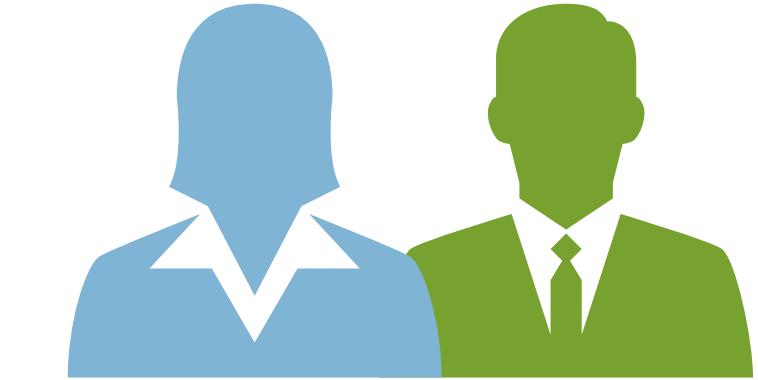
- Tightly coupled
- Only a few objects to expose
- Complex logic
- Doesn't improve over a DIY



# Okta Enables Companies to Do Both IT & API



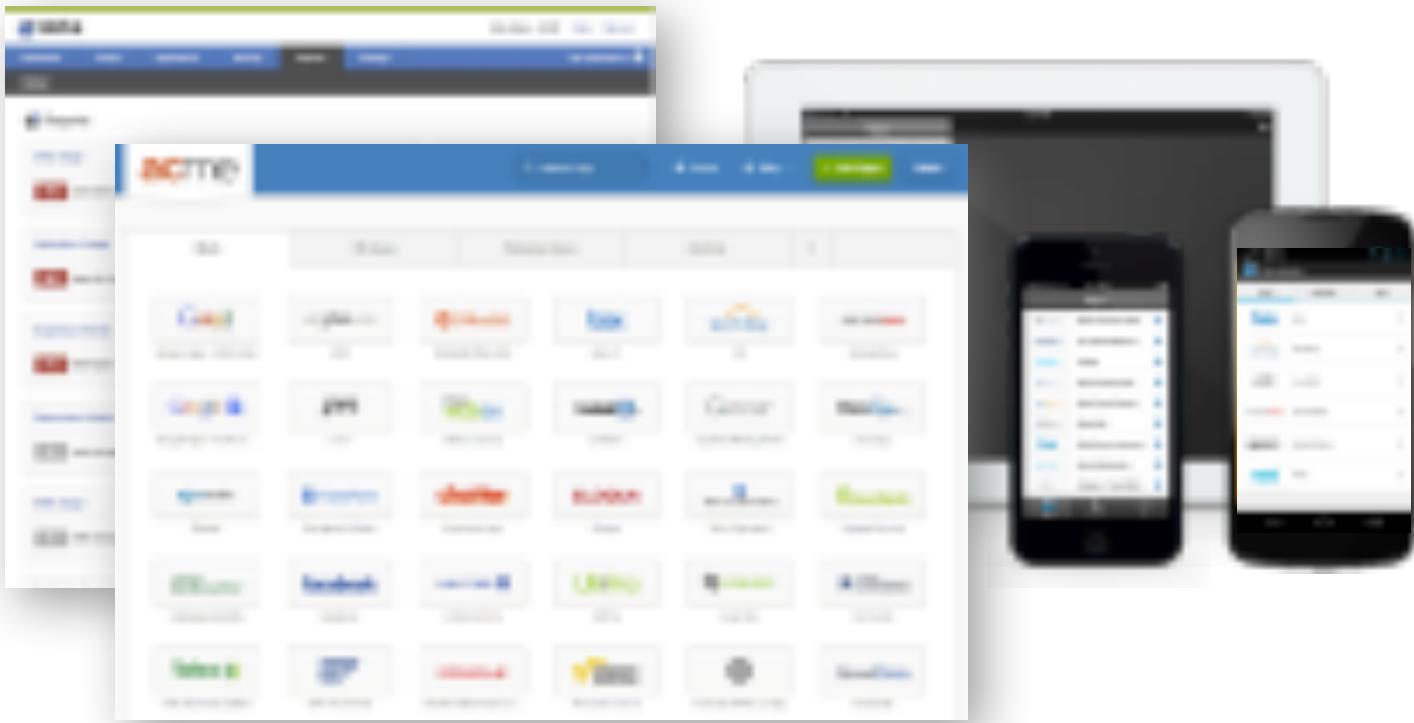
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Contractors



Partners,  
Customers



**Identity Service:**  
Identity Management  
Strong Authentication



**Identity API Products:**  
Identity API for Any App  
Developer Tools  
and Community



# Questions?



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