SWE Internship at Visa

Presenter: Abbad Vakil
Faculty Advisor: Min Chen

About Visa

Visa is a financial services company whose main service is the facilitation of electronic funds transfers throughout the world. Mostly through debit cards, credit cards, and prepaid cards.

The Bellevue office (where I worked) is home to Cybersource and the MAPPD org, a company which facilitates payments for online merchants.

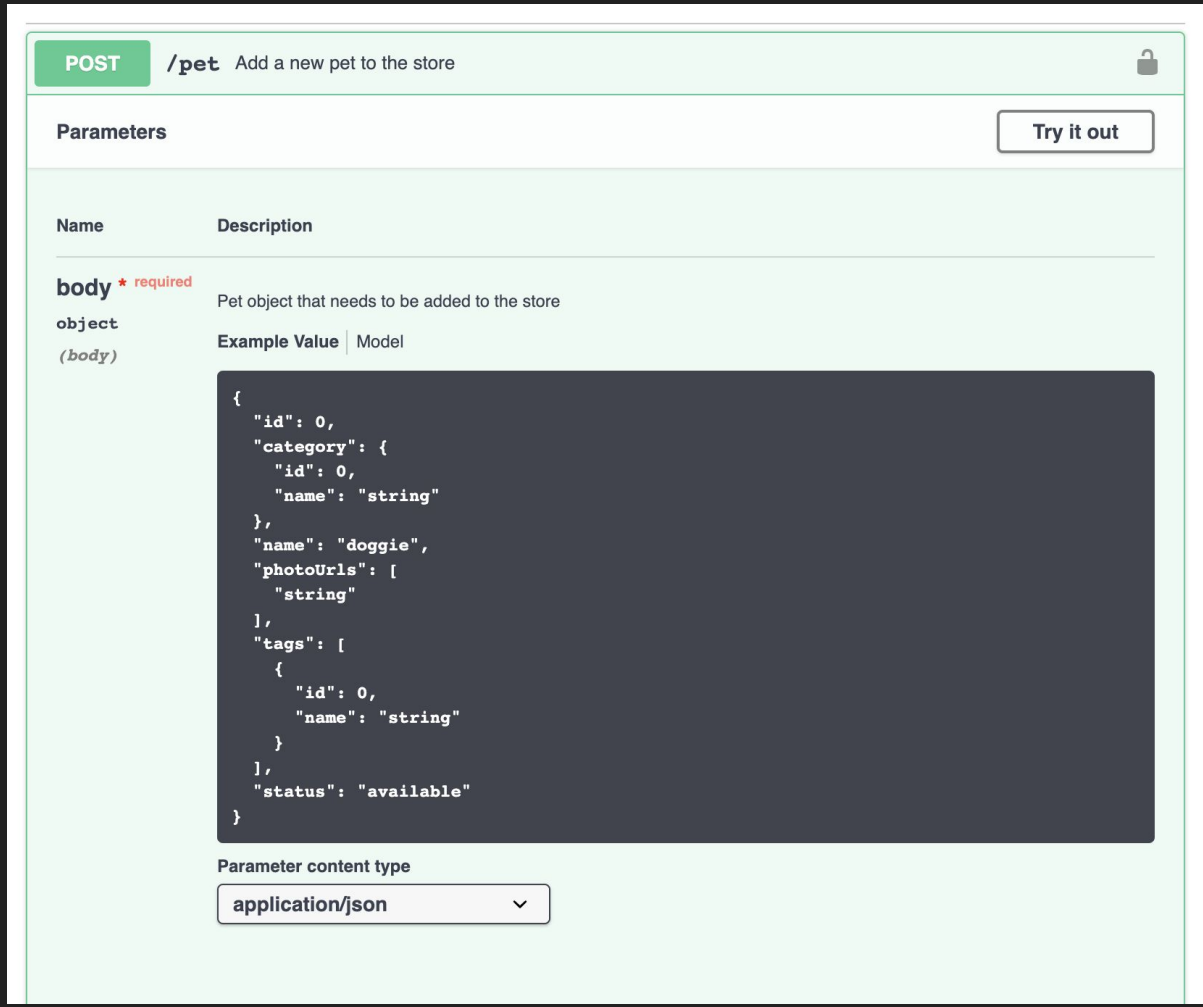
Problem

- At MAPPD (Merchant & Aquirrer Processing), many teams build and maintain Rest APIs which QA teams build integration tests for using an internal testing framework (CAT framework)
- Often times, the simpler (yet essential) tests can take a lot of time to put into the CSV format required
- This leaves less time for QA engineers to work on validation tests which require more ‘creativity’ and TIME

Goals

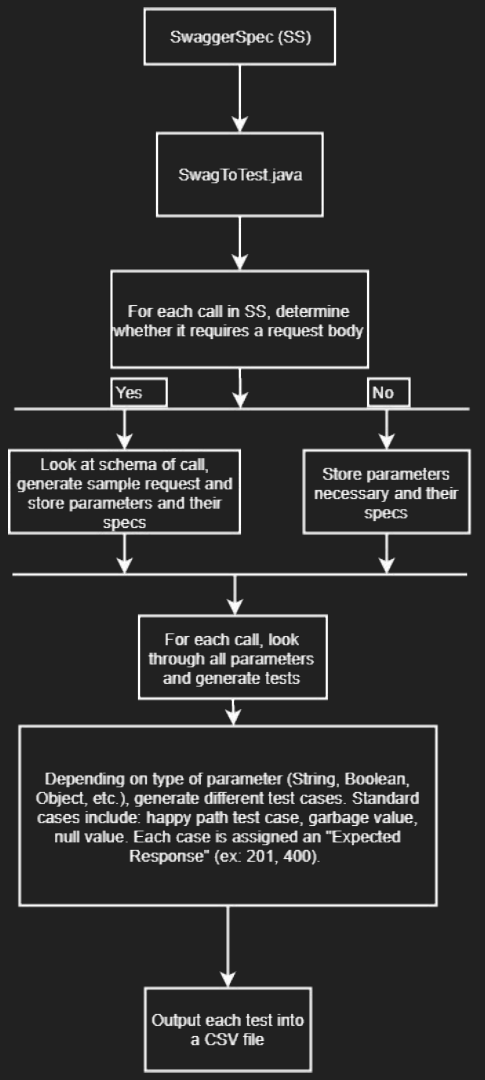
- To automate most tests for the services
- Because every API is detailed in a SwaggerSpec, this process could, in theory, be automated
- End goal was to create a command line tool that could be used by QA engineers and devs to build tests quickly in hopes of speeding up the process and providing more robust test

Swagger Example



Design

- Java program which is passed the path of a SwaggerSpec in JSON format
- For each call in the SwaggerSpec, pull the required parameters, their types, their definitions, and build a ‘dummy call’
- For each dummy call, replace the parameters with their tests (example: a String variable might be passed a garbage value, null value, a String greater than its maxLength, less than its minLength, etc.)



Accomplishments

- Developed fully functional project which, when passed a SwaggerSpec in JSON format, spits out a CSV file with 8 tests per parameter per call (100s of tests in total)
- Presented project at Intern Showcase in office, garnered interests from teams and worked with a few engineers to integrate the tool into their testing process

What I Have Learned

- I’ve gained a better understanding of the software production process and the tools used by big companies to accomplish it
- I’ve learned a bit about testing, specifically testing for API’s
- I’ve learned more about development in Java, specifically when using a build automation tool such as Maven
- I’ve learned a lot about writing production quality code

Related Coursework

- CSS 343 - Data Structures & Algorithms II
- CSS 350 - Management Principles for Computing Professionals
- CSS 360 - Software Engineering
- CSS 475 - Database Systems
- CSS 370 - Analysis and Design

Acknowledgements

Thanks to:

- Visa and the MAPPD Org
- My team and mentor, Anusha
- Faculty Advisor, Min Chen
- CSS Department

Questions

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Software Engineer Internship at Visa

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Faculty Mentor: Min Chen

VISA

Company Overview

- Visa is a multinational financial services corporation, it facilitates electronic funds transfers throughout the world
- The Bellevue location (where I was at) is home to Cybersource
  - Allows customers to process online payments, streamline fraud management, and simplify payment security

Objectives

- At the Bellevue office, most teams maintain their own services (Rest APIs), QA engineers spend time creating unit tests based off of the SwaggerSpecs of those APIs
- My team realized that this process could be automated
- My project was to take the SwaggerSpec of any service and generate 100s of unit tests that would otherwise take QA engineers hours to write

Technology Used

Java, Maven, {...}, JIRA

Accomplishments

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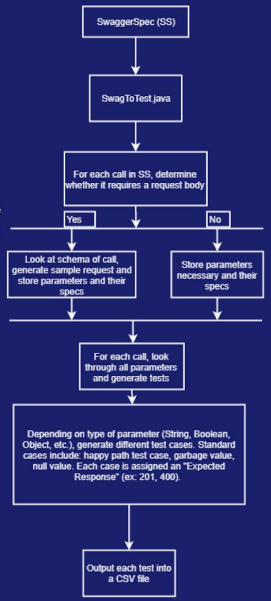
Project Flow

- The SwaggerSpec of a Rest service details the API URI's, the request and response
- Within the Spec is information on the parameters the request requires and the business rules for it
- CAT Framework test cases can be generated from this information
- Test cases vary depending on the type of the parameter, ex:
  - String
    - Happy path case
    - Empty string
    - Null value
    - > max length
    - Garbage value



Outcomes

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Acknowledgements

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