**API AND API CONTRACTS & JSON**

**What is an API?**

**API -Application Programming Interface**

It is a software intermediary that allows two applications to talk to each other. They are an accessible way to extract and share data within and across organizations.

**Characteristics of modern API**

1. Modern APIs adhere to specific standards (typically HTTP and REST), which enable APIs to be developer-friendly, self-described, easily accessible, and understood broadly.
2. APIs are more standardized, hence they can be monitored and managed for both performance and scale
3. They have much stronger discipline for security and governance.

**API CONTRACTS**

-We define an API contract as a formal agreement between a software provider and a consumer that abstractly communicates how to interact with each other

-This contract defines how API providers and consumers interact, what data exchanges looks like, and how to communicate success and failure cases.

The provider and consumers do not have to share the same programming language, only the same API contracts.

For the Family Cash Card domain, let’s assume that currently there's one contract between the Cash Card service and all services using it. Below is an example of that first API contract:

Request

URI: /cashcards/{id}

HTTP Verb: GET

Body: None

Response:

HTTP Status:

200 OK if the user is authorized and the Cash Card was successfully retrieved

401 UNAUTHORIZED if the user is unauthenticated or unauthorized

404 NOT FOUND if the user is authenticated and authorized but the Cash Card cannot be found

Response Body Type: JSON

Example Response Body:

{

"id": 99,

"amount": 123.45

}

**Why Are API Contracts Important?**

API contracts are important because they communicate the behavior of a REST API. They provide specific details about the data being serialized (or deserialized) for each command and parameter being exchanged. The API contracts are written in such a way that can be easily translated into API provider and consumer functionality, and corresponding automated tests. We'll implement both API provider functionality and automated tests in the labs.

**JSON**

JSON (Javascript Object Notation) provides a data interchange format that represents the particular information of an object in a format that you can easily read and understand. We'll use JSON as our data interchange format for the Family Cash Card API.

{

"id": 99,

"amount": 123.45

}

Other popular data formats include YAML (Yet Another Markup Language) and XML (Extensible Markup Language). When compared to XML, JSON reads and writes quicker, is easier to use, and takes up less space. You can use JSON with most modern programming languages and on all major platforms. It also works seamlessly with Javascript-based applications.