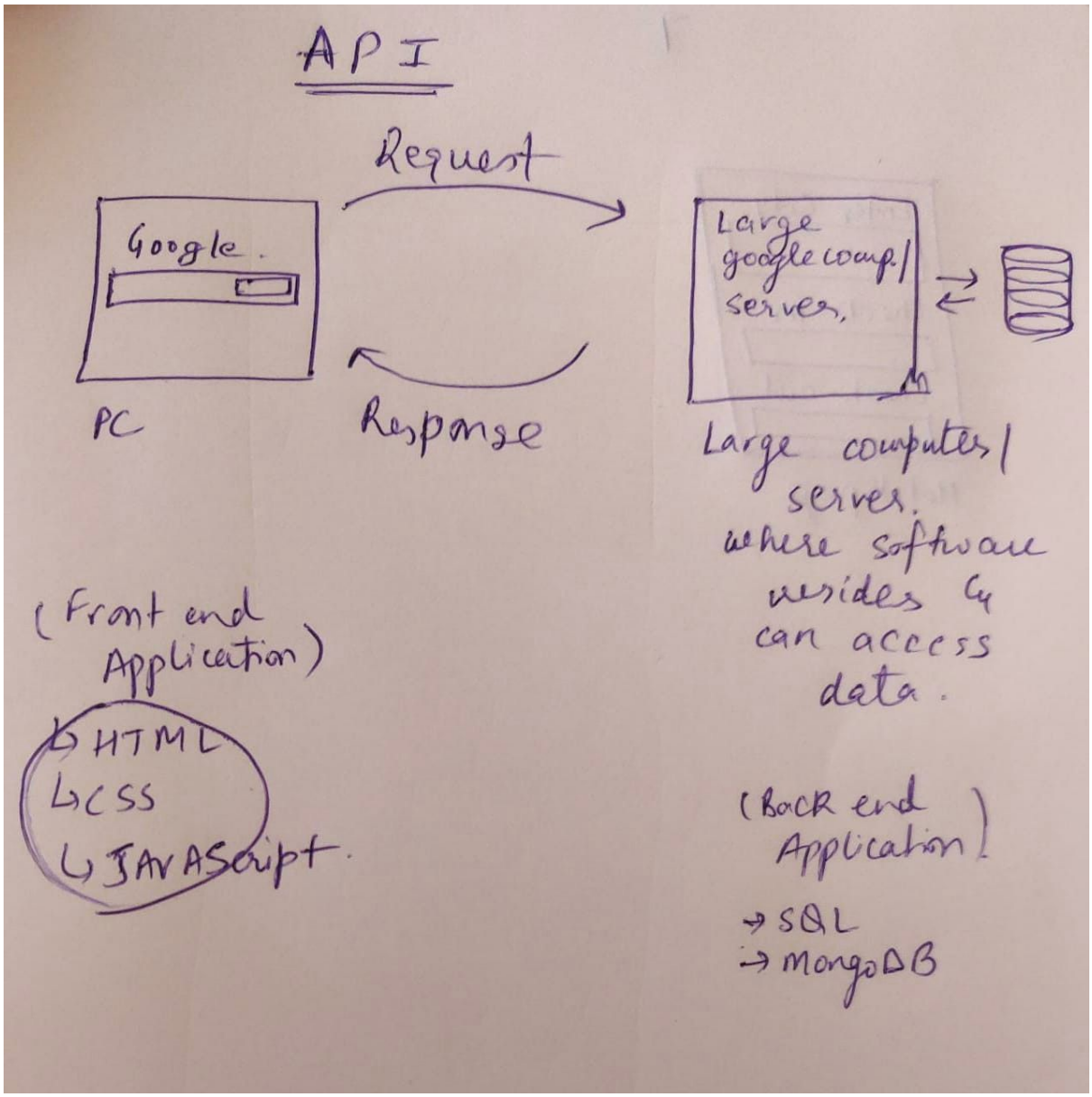
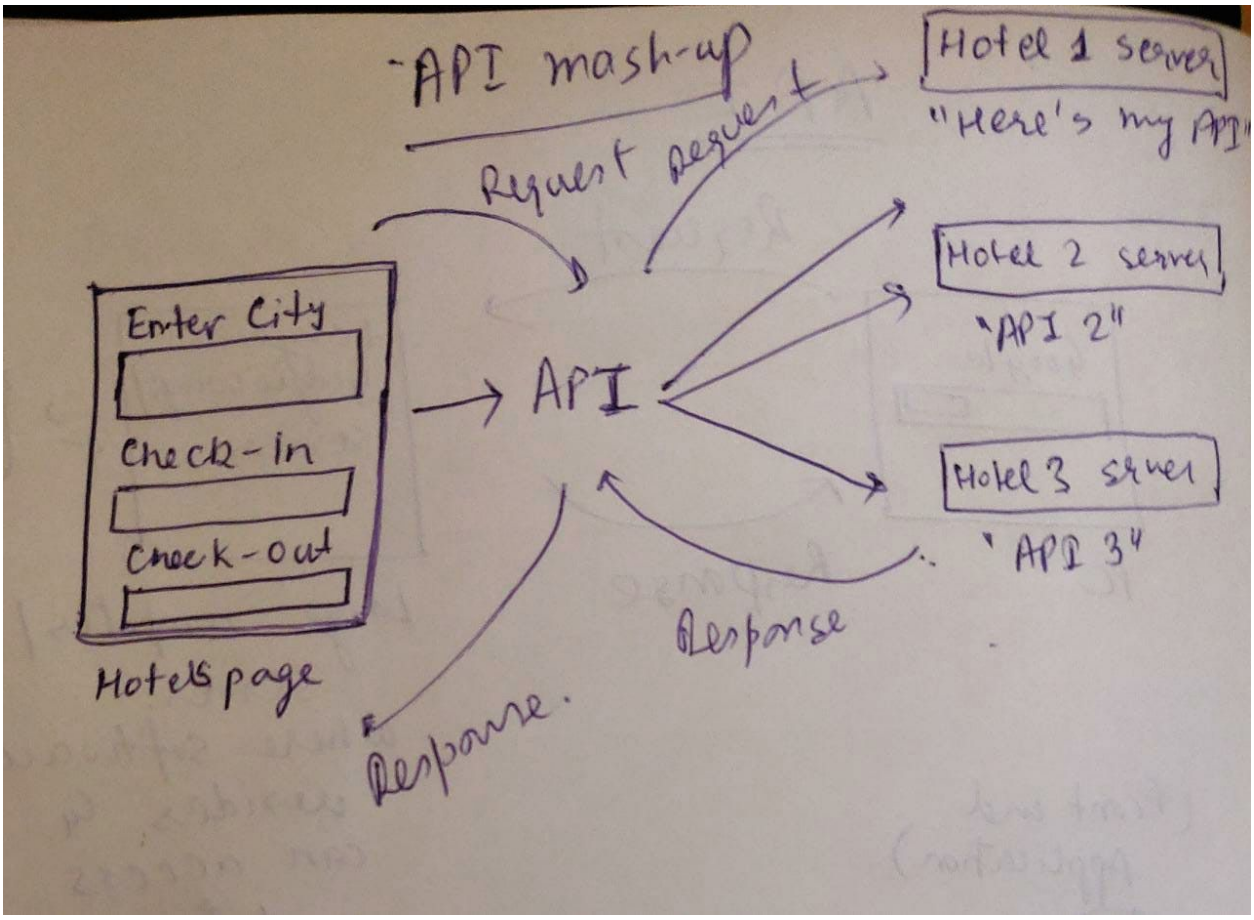
2: APIs and REST

WHAT IS API?

1. **Context:** When I google “APIs definition”, the common analogy given is that of a restaurant. A customer in a restaurant looks at the menu. He selects what he wants. Then calls the waiter to place the order. The waiter then takes the order to the chef. Chef prepares the order and the waiter brings it to back to the customer.
2. Now, in tech parlance, the customer is **the user,** the menu is **the interface,** the waiter is **the API** and the Chef is **the Application which performs the task.**
3. What this example makes clear:
    - INTERFACE is a page/screen which a USER understands clearly (human readable format) and hence interacts with.
    - INTERFACE is a junction between the USER and the API.
    - API is a function/code/program that can be called within the interface.
    - API looks at the request and takes it to the Application in a way Application understands.
    - Application is a software within a large computer that has all the data (ingredients), Application on receiving the right request knows how to access that data, process it and share with the API.
    - API sends the response in a human readable format.



Conclusion: API is a function that communicates between 2 Applications. It works on a request and response cycle.



WHAT ARE WEB SERVICES?

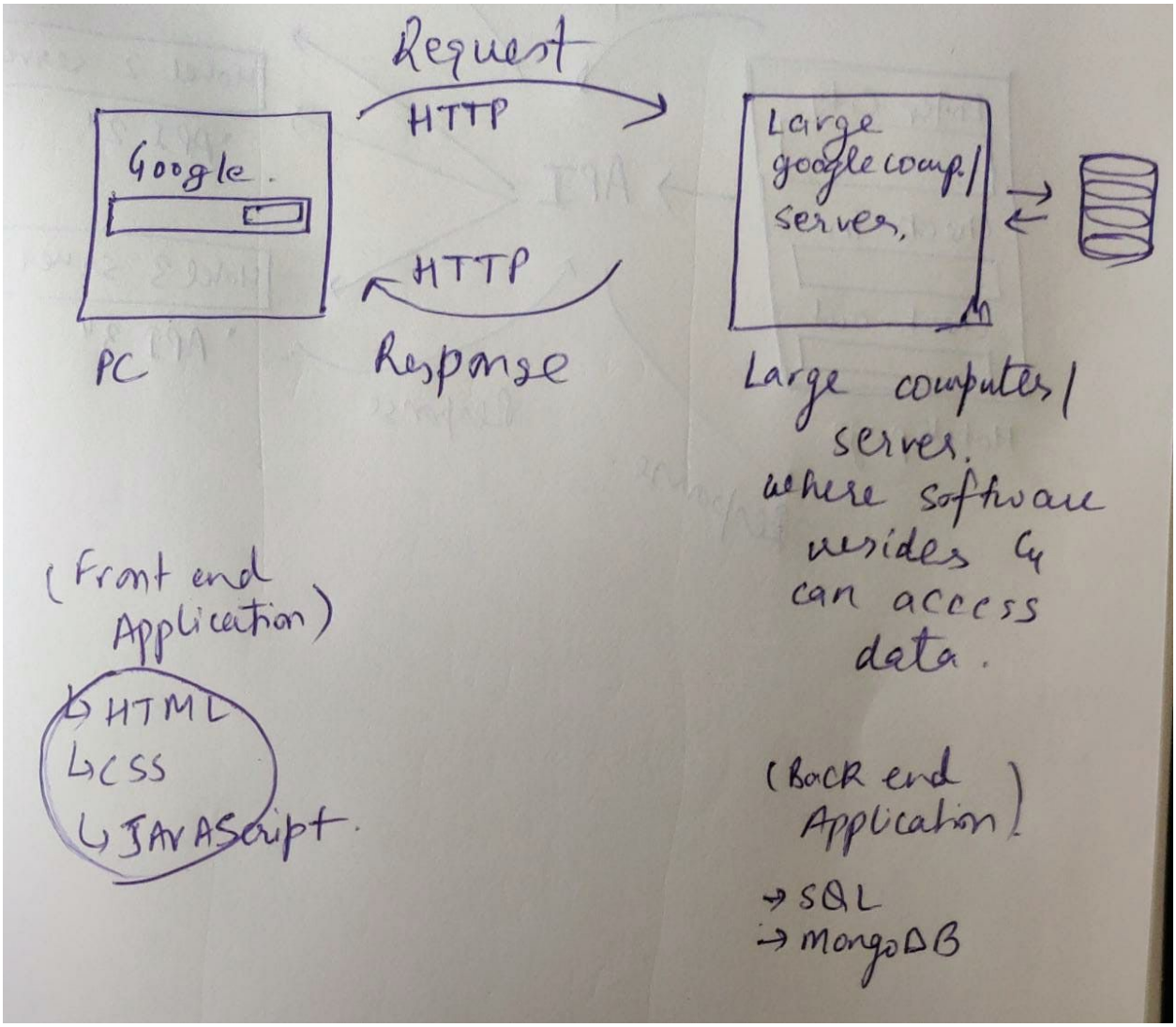
Web means Internet

Services is API.

So API which runs on the Internet (as discussed in the example above) are Web Services.

WHAT IS HTTP?

1. Hypertext transfer Protocol
2. Hyper means jump. So, HyperText means ‘A simple text that can help you jump to a page’. For eg. www(dot)google(dot)com is a text. But when we add http:// to it, it can jump to google webpage.
3. Protocol simply means set of rules.
4. So, HTTP are the set of rules that we/applications need to follow/are followed while making API requests/responses.



WHAT ARE 4 PARTS OF HTTP?

1. Start line
2. Headers
3. Blank line: Separates Header with Body.
4. Body: Content sent to/from the API

Aa HTTP	Request	Response	Files

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Startline	Http version, Method (**Get:** Read/Get information **Put**: Update information **Delete:** Delete information **Post:** Create new information)	Http Version, Status code (1xx, 2xx, 3xx, 4xx). eg. 200 OK	
Headers	Host name: Google Token Accepted language (for content management) List of HTTP header fields Content types: JSON, XML	Cookies Server name	http://www.google.com/favicon.ico https://en.wikipedia.org/static/favicon/wikipedia.ico
Blank Line			
Body	Content For eg. we are creating new account, then body will contain new username and password.	HTML webpage	

WHAT ARE XML AND JSON?

TL;DR: XML and JSON are Content types. Basically, APIs send and receive data in multiple DATA TYPES eg. Strings, Integers, Boolean etc. XML and JSON help in sending primarily Strings eg. you make a new GMAIL account, username and password will be sent using JSON and XML.

The Media type such as images and videos use other content types and not JSON and XML.

XML: eXtensible markup language

Header line: Content-Type: application/xml

XML is like HTML. XML is used to store and transport data whereas HTML is used to display the data. XML, unlike HTML, has no pre-defined tags.

JSON: JavaScript Object Notation

Uses key value pairs (KEY: VALUE eg. SIZE: SMALL)

WHAT ARE REST APIs?

REST API (Introduction) - GeeksforGeeks

1. REST: Representational state transfer
2. REST is an architectural style which uses methods (Get, Put, Post, Delete) to create web services (APIs used on the internet)
3. REST API Architectural Constraints - GeeksforGeeks

WHAT IS A SANDBOX?

A simulated environment for developers to test the API responses of an application.

REFERENCES

1. https://www.udemy.com/course/api-and-web-service-introduction/
2. www.json.org
3. PM Tech Lessons