EXPEDITION JSQL

JSON Query Language

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Mission Crew

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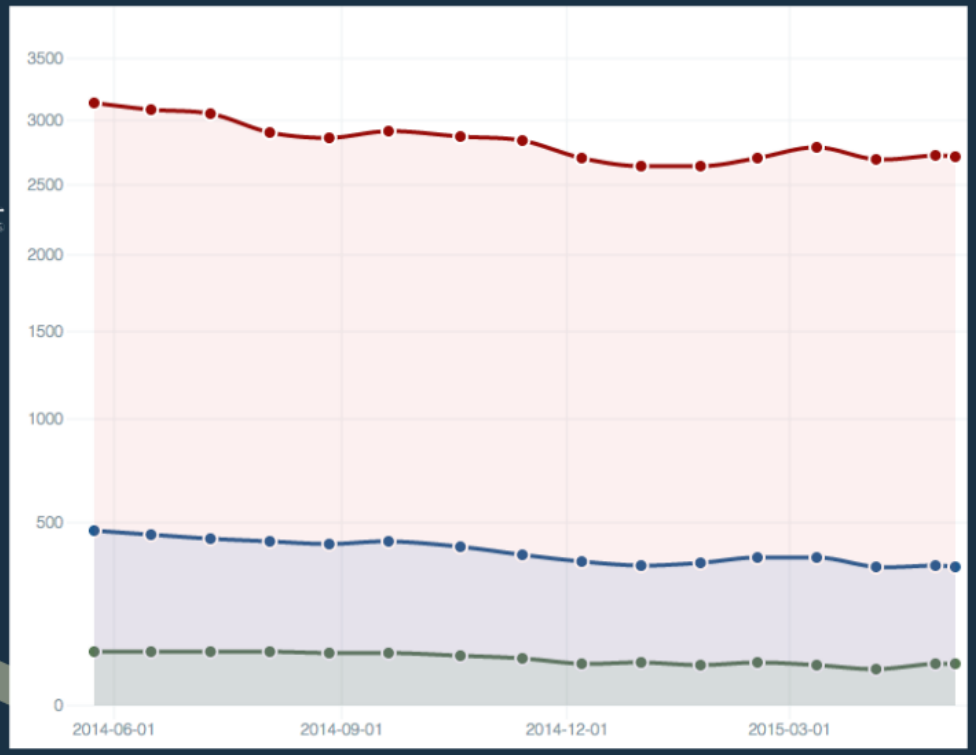
X a.k.a Tester

JSON's Popularity



JSQL Motivation

Get a JSON Object from a file or URL

```
JsonList jsonArray = readJsonListFromFile(“path/to/file.txt”)
```

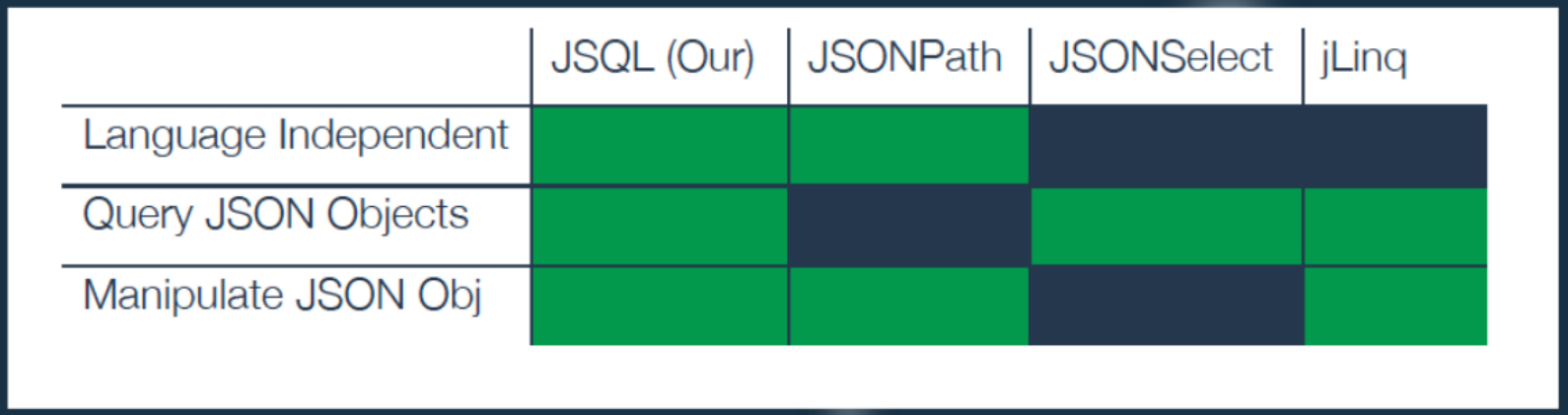
Being able to Query a JSON

```
JsonList selectFirstName = jsonList.Select("FirstName");
JsonList jsonList = jsonList.Where("FirstName = Seth");
```

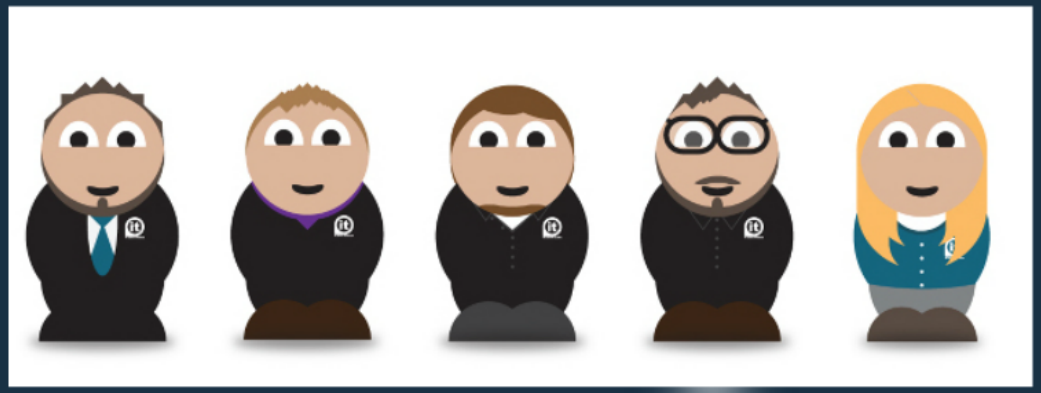
Being able to manipulate JSONs

Union, Intersection, Add, Subtract

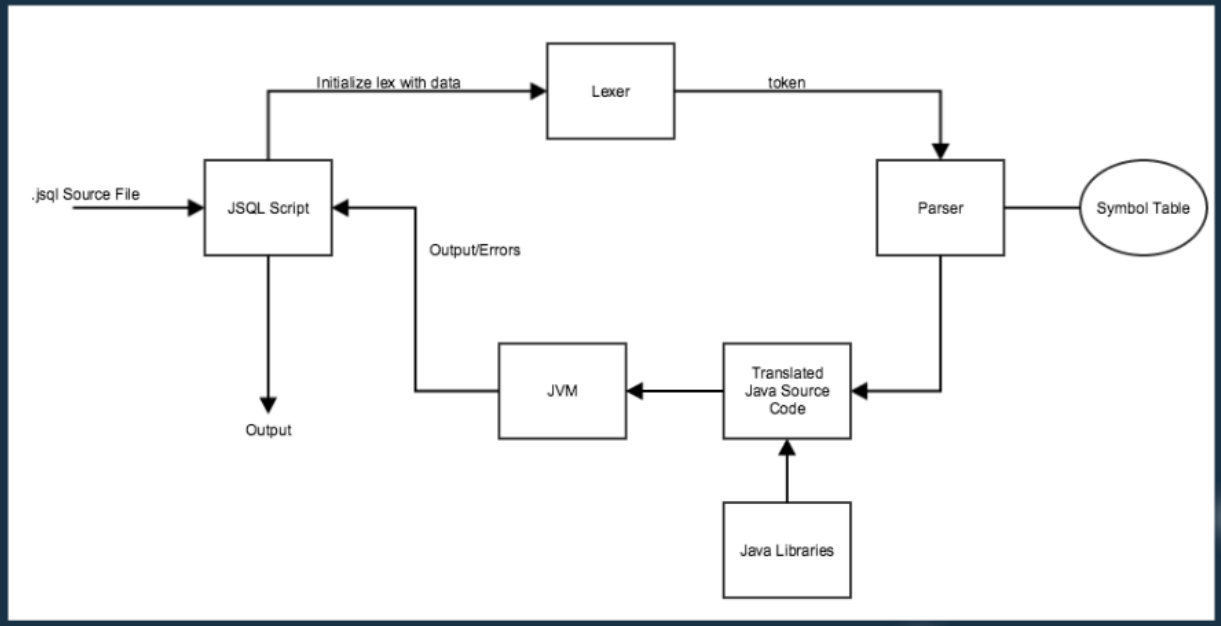
Existing JSON Related Languages



Project Management



ARCHITECTURE






Syntactic Construct

JSON Operators

<> Union
>< Intersection
<< Addition
>> Subtraction

JSON Types

Number
Boolean
Json
Json List
String

Basic Operators

+ Addition
- Subtraction
* Multiplication
/ Division
> Greater than
< Less than
% Modulo

Example

Adds fields from object Account 2 to Account 1 that do not exist in object Account 1

account1 = { "Name": { "First":"Abhyuday", "Last":"Polineni" }, "Username": "Abhi", “Password": “password”, "Age" : 25, "Courses": ["CV", “PLT"] }
account2 = { "Name": { "First":"Abhyuday", "Last":"Polineni" }, "Username": "Abhyuday", “Password": “password2”, “City” : “Hyderabad”}

account1 << account2 = { "Name": { "First":"Abhyuday", "Last":"Polineni" },
"Username": "Abhi", “Password": “password”, "Age" :25, "Courses": ["CV", “PLT"] , “City”: “Hyderabad”}

Syntactic Construct

JSON LIST Queries

SELECT	JsonList selectFirstName = jsonList.Select("FirstName");
ORDER BY	JsonList sortAsc = jsonList.OrderBy("FirstName", “Ascending”);
WHERE	JsonList jsonList = jsonList.Where("FirstName = Seth");
LIMIT	JsonList limitArray = jsonList.Limit(5);

Translation

JSQL

```
void main(){
        json obj = “{ “message” = “hello world” }”;

        Number a = 1;
        Number b = 2;
        print a+b;

        if (a>1) {
                print "Print to console";
        }

}
```

JAVA

```
Class JSQLClass{
        public static void main(String args[]){
                JsonWorker obj = new
                JsonWorker("{"message" = "hello
                world"}");

                double a = 1;
                double b = 2;
                System.out.println(a+b);

                if( a > 1) {
                        System.out.println("Print to
                        console");
                }
```

JAVA IMPLEMENTATION

-Java was used as a target language whose compiler we relied on instead of building our own
-Wrote classes in Java which simulated the functionality of our language's objects
-Relied on Java in-part for error-handling
-Json-Simple is a Java library that we used to generate json objects and parse raw strings into jsons

DEV & RUN TIME ENVIRONMENT

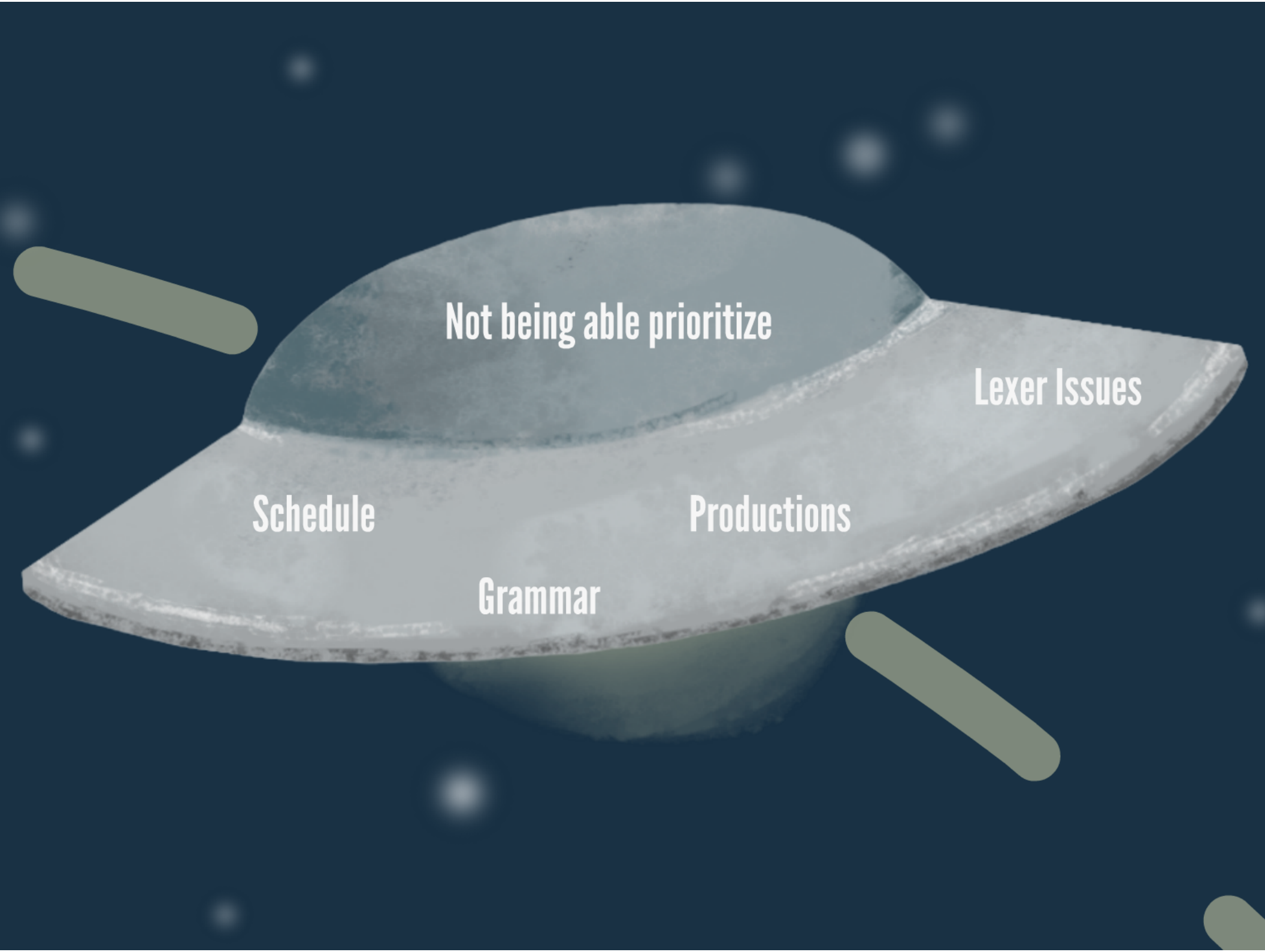
- Python Script
- Compiling JAVA Program
- Error Handling

TESTING

Testing Philosophy
- Robustness
- What could go wrong

Tests
- Operators
- JSON Operations
- In-Built Functions
- Errors
- Use Case Testing

Testing Script
- Compare pre-populated results with output


Not being able prioritize
Lexer Issues
Schedule
Productions
Grammar


JSQL
Demo

Future Explorations

- Get JSON from URL
- Distributed Query Support
- Regex Query Support

Lesson Learned

- Start Early
- Small Goals, Big Vision
- Prioritize
- Test First Development?

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