Viriciti export assignment

A fun and interesting code challenge.

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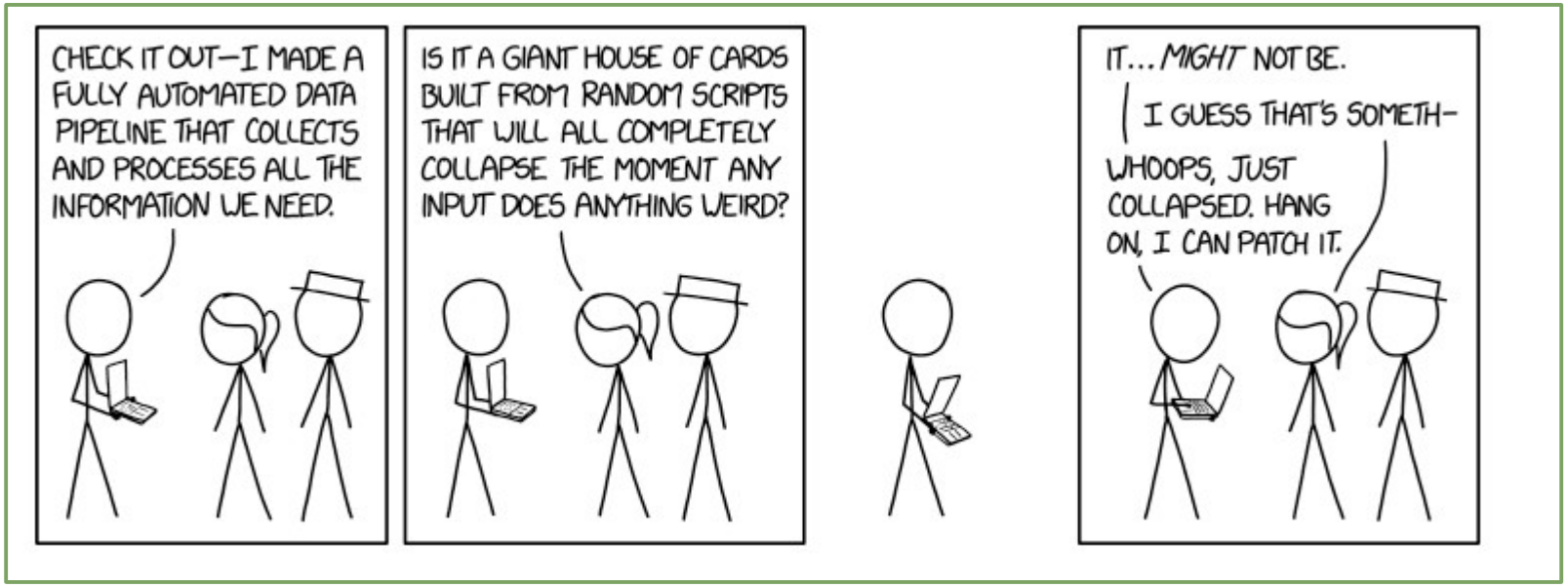
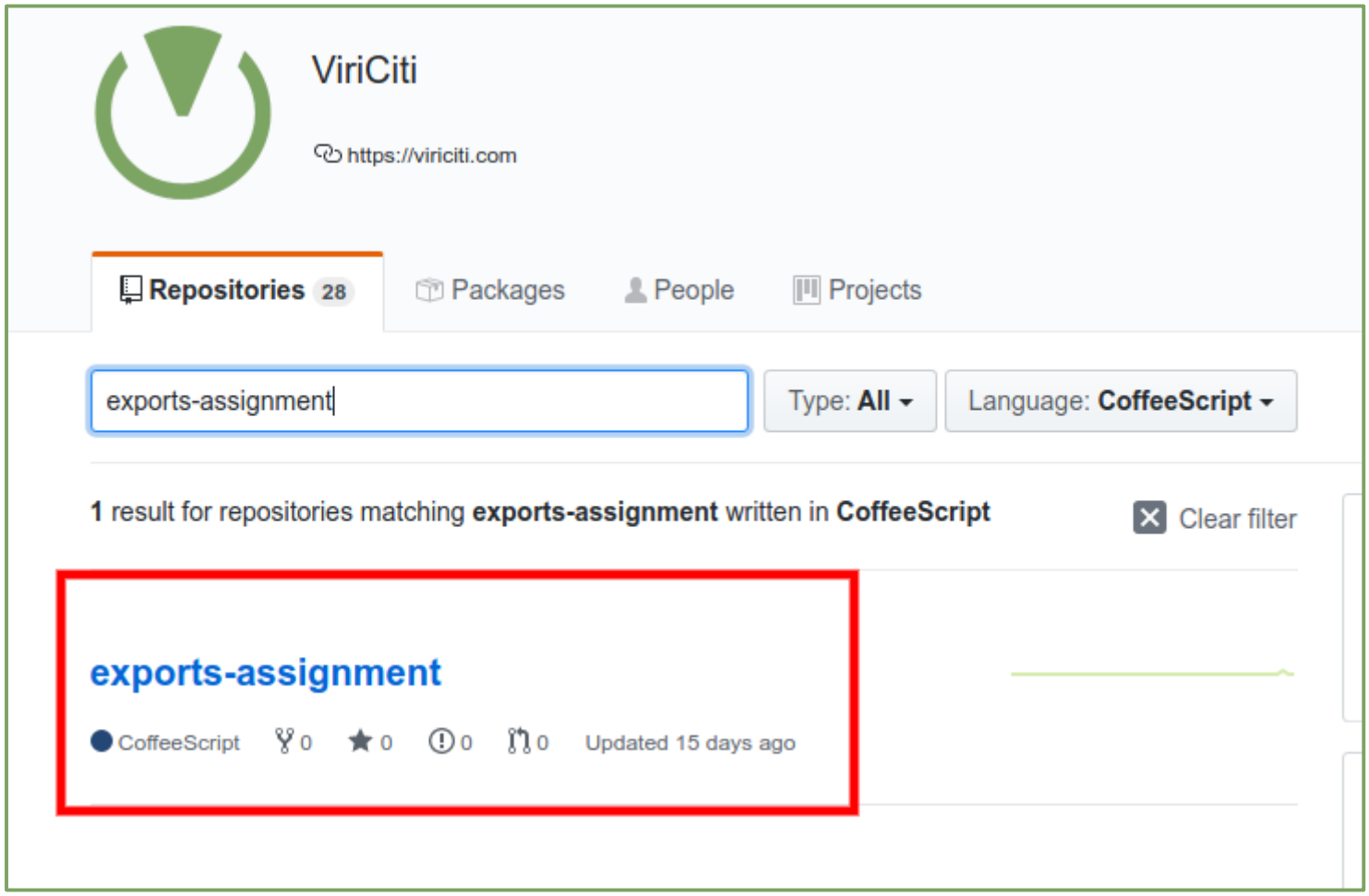
November 28, 2019

Introduction

In order to be able to better assess my technical expertise, the kind folks at Viriciti assigned me the following code challenge.



Repository


ViriCiti
https://viriciti.com
Repositories 28
Packages
People
Projects
exports-assignment
Type: All
Language: CoffeeScript
1 result for repositories matching exports-assignment written in CoffeeScript
Clear filter
exports-assignment
CoffeeScript
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Code challenge

Build an CSV export system exposing an API.

For a given vehicle and range of dates, return a data set of measured attributes.

Must NOT overflow the database system when a lot of export requests are issued.

(Optional) Build a front-end that accesses a robust back-end.

Plan of attack 1/2

Brush up on MongoDB.

Rewrite the unwind utility and test ES6/TypeScript.

Verify that the rewritten test works with MongoDB.

Create a MongoDB docker container and import the data dump.

Tried to learn Express Gateway but time too short.

Instead used NestJS (more familiar).

Build the back-end API server.

Plan of attack 2/2

Check out Balena (formerly resin.io) but time limited.

Learn Redis quickly.

Create a Redis docker container as cache.

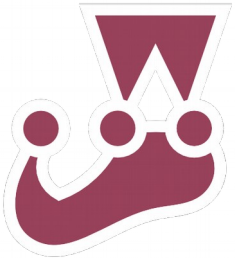
Build a responsive Angular front-end.

Dockerize everything.

Finalize the readme.

Practice this presentation in front of the mirror.

Open source

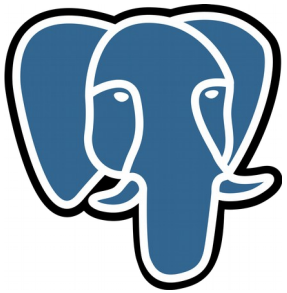



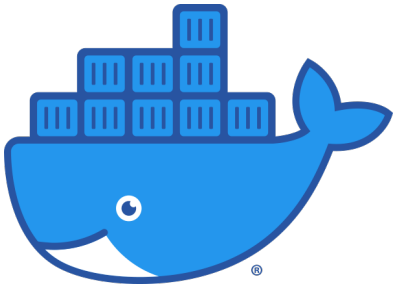










Open source

ANGULAR

JEST

REDIS

NESTJS

COCA-COLA

JASMINE

CHAI

CHARTJS

GIT

MONGODB

D3JS

NODE

POSTGRES

MATERIAL

DOCKER

Specifications 1/2

Ensure that the export service will remain robust during periods of high traffic.

Support intensive usage by multiple users exporting large volumes of data simultaneously.

The MongoDB will not become overloaded and that no performance hits arise for those trying to export the data.

After some thought, I came up with the following strategy...

Specifications 2/2

Restrict access to authorized users (JWT).

Use a rate limiter to throttle the API requests.

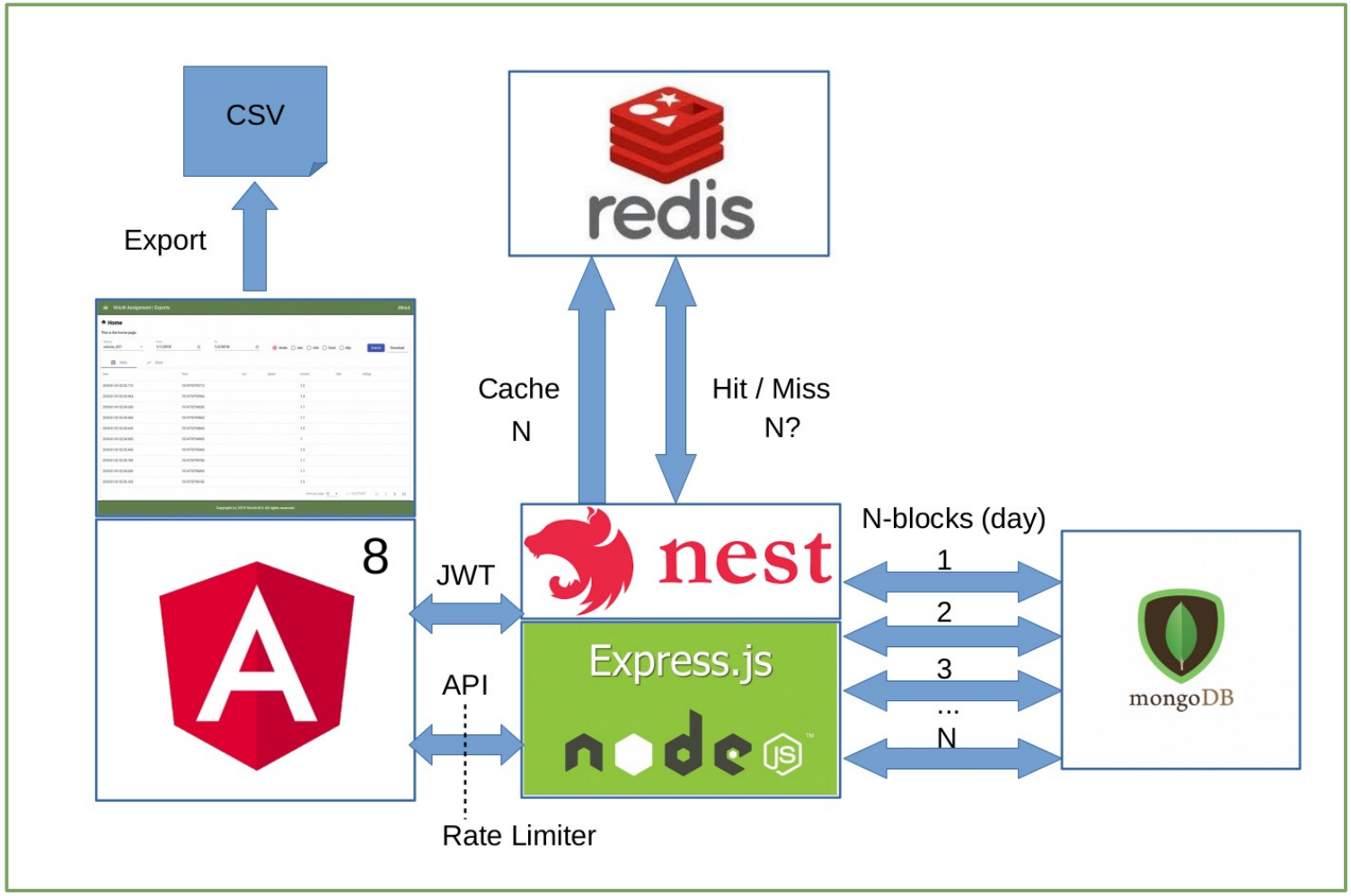
Cache the data set results for recurring API requests.

Slice the date ranges into common blocks (days).

Offload the actual export to the front-end client.

Allow users to interact with the data set: date ranges, filters, sorting, etc.

Architecture



Code walk-through

```
@Controller( prefix: 'vehicles')
@UseGuards(AuthGuard())
export class VehiclesController {

    private logger = new Logger( context: 'VehiclesController');

    constructor(private vehiclesService: VehiclesService) {
    }

    @Get( path: '/:id/values')
    getVehicleValuesById(
        @Query( property: 'fromDate') fromDate,
        @Query( property: 'toDate') toDate,
        @Param( property: 'id', ParseIntPipe) id: number,
        @GetUser() user: User,
    ): Promise<IValue[]> {
        this.logger.log(`getVehicleValuesById() user='${ user }' id='${ id }' fromDate='${ fromDate
        return this.vehiclesService.getVehicleValuesById(id, user, fromDate, toDate);
    }
```

Demo

VIRICITI

Assignment | Exports

Kiffin

Start

Time to do something fun and exciting.

Vehicle: vehicle_001 | From: 1/1/2018 | To: 1/2/2018

☐ soc ☐ speed ☐ current ☐ odo ☐ voltage

◉ msec ○ sec ○ min ○ hour ○ day

Filter

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Table | Charts

Date	Time	Soc	Speed	Current	Odo	voltage
2018-01-01 02:39:53.713	1514770793713			1.2		
2018-01-01 02:39:53.964	1514770793964			1.4		
2018-01-01 02:39:54.265	1514770794265			1.1		
2018-01-01 02:39:54.565	1514770794565			1.1		
2018-01-01 02:39:54.665	1514770794665			1.2		
2018-01-01 02:39:54.965	1514770794965			1		
2018-01-01 02:39:55.465	1514770795465			1.3		
2018-01-01 02:39:55.765	1514770795765			1.1		
2018-01-01 02:39:56.065	1514770796065			1.1		
2018-01-01 02:39:56.165	1514770796165			1.3		

Items per page: 10 | 1 – 10 of 71637

To do (rainy day)

Implement BSON to compress data exchange.

Create fancier graphs with D3js.

Measure performance and tweak the code accordingly.

Optimize Redis configuration options.

Optimize MongoDB configuration options.

Smaller interval slices, hours or minutes or even dynamic.

Offload to a separate microservice for Redis caching.

Aggregate time mean sequences: seconds, minutes, hours and days.

End

Thanks for your time and attention.