

Testing Environment:

Tools & Methodology Used:

Postman

Postman is an API Development Environment. It allowed the team to generate multiple sets of API calls and organise them into collections for ease of use later on. It also allows us to verify json output automatically using scripting to minimise the need for manual inspection of results.

JSON Schema

We use JSON Schema as a tool to verify that the JSON objects returned by the API fit the requirements for the schema of the disease reports and articles. In particular, this checks that all required fields (**report:** event_date, locations, diseases, syndromes / **article:** url, date_of_publication, headline, main_text, reports) are filled with a sensible output of the right type. This check runs over every single test case to sanity check the output.

Jest

Jest JavaScript testing library that allows for writing well-structured tests. A series of unit tests were written to ensure correctness of functions. The test suite was re-run after major changes to ensure stability and bug free.

Limitations:

1. Testing the scraper was a challenge for the team since each run of the scraper gave back a different set of posts scraped. Additionally, it is not guaranteed that those posts are scraped in the same order, or that new posts are not added, or that posts are not deleted.
2. It is difficult to have multiple, simultaneous remote users call our API and test for performance under such conditions and thus the API has not been tested for scalability.

Test Cases and Data Overview:

The team wrote expected output objects and sample article objects on which we carried out assertion tests to ensure correctness of code.

Jest tests:

Missing Query Parameters:

Test Case	Data	Result
Start date missing from query parameter	<pre>query: { end_date: "2020-12-01T12:00:00", keyterms: "", location: "" }</pre>	Expected output returned
End Date missing from query parameter	<pre>query: { start_date: "2016-10-01T12:00:00", keyterms: "", location: "" }</pre>	Expected output returned
Keyterms missing from query parameter	<pre>query: { start_date: "2016-10-01T12:00:00", end_date: "2020-12-01T12:00:00", location: "" }</pre>	Expected output returned
Location missing from query parameter	<pre>query: { start_date: "2016-10-01T12:00:00", end_date: "2020-12-01T12:00:00", keyterms: "" }</pre>	Expected output returnedT

All params present	<pre> query: { start_date: "2016-10-01T12:00:00", end_date: "2020-12-01T12:00:00", keyterms: "", location: "" } </pre>	Expected output returned
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Date format tests:

Test Case	Data	Result
Date has an invalid month (Eg: start date has 19 for month)	<pre> query: { start_date: "2016-19-01T12:00:00", end_date: "2020-12-01T12:00:00", keyterms: "", location: "" } </pre>	Expected output returned
Date has an invalid time (Eg: start date has a time of 60:00:00)	<pre> query: { start_date: "2016-19-01T60:00:00", end_date: "2020-12-01T12:00:00", keyterms: "", location: "" } </pre>	Expected output returned
Start date occurs After end date	<pre> query: { start_date: "2019-19-01T60:00:00", end_date: "2016-12-01T12:00:00", keyterms: "", location: "" } </pre>	Expected output returned

Keyterm parameter testing:

Test Case	Data	Result
Checking if article contains one keyterm. Expected output here is true.	Eg: searching for 'outbreak' in document which has the word 'outbreak'	Expected output returned
Checking if article contains one keyterm. Expected output here is false	Eg: searching for 'corona' in document not containing the word 'corona'	Expected output returned

Checking is an article contains multiple keyterms. Expected output is true	Eg: searching for ['corona', 'fever', 'cough'] in document which has the word has those keywords	Expected output returned
Checking if an article contains an empty list of keyterms. Expected output is false	Eg: not providing keyterms	Expected output returned

Location parameter testing:

Test Case	Data	Result
Empty location parameter. Expected output is true	Eg: searching for china' in document which has the location 'china'	Expected output returned
Empty location parameter. Expected output is false	Eg: not providing location	Expected output returned

Schema Validation and Testing:

We created a schema for the articles and the reports within the articles using jsonschema. The API was then called with different combinations of parameters. The responses were then validated against the schema to see if it matched with what we expected.

Error Code Testing:

We used Postman to create collections and run api calls and test for various error codes returned.

Test Case	Error Code & Message
Missing query parameter	Error Code: 400 Message: "Bad Request - Some query parameters are missing."
Incorrect date format	Error Code: 400 Message: "Bad Request - Invalid date format."
Start date before end date	Error Code: 400 "Bad Request - start_date has to be before end_date."
Unable to fetch documents from database	Error Code: 500 Message : Internal server error, please try again.
Successful querying and fetching	200