AXUR Technical assessment: Quality Assurance Analyst

This document outlines the test strategy for validating the project requirements designed for a specific application. This app browses a website in search of a user-supplied term and lists the URLs where the term was found.

Considering the Rest API contract and other instructions on how the user should interact with the application as described in the project requirements, a list of positive and negative/destructive test scenarios were designed in order to map the features to be validated into executable test cases.

The functional and performance test cases are categorized into Status Code Validations, Response Payload Validations, Correct Application State Validations, Baseline Response Time, and Caching Performance.

In the absence of front-end elements, to execute this test plan it was decided that the best approach for manual testing would be to assemble a Test Collection using Postman. All JSON structures are detailed in this document.

All documents and assets generated for this assessment are also available on the GitHub repository.

Important considerations:

Although the project requirements document does not specify the responses for requests with errors, negative scenarios were designed considering the directives recommended by OpenAPI and HTTP Status Code, even though they cannot be tested.

API Testing Test Plan

The test cases were detailed to individually validate each test scenario within the context of positive/negative scenarios: test cases TC01 to TC06 validates both SC01 and SC02 individually; and TC07 to TC11 test cases were designed to validate test scenarios SC03 to SC09, individually. For example: TC01 validates HTTP status code for SC01 (POST successfull operation) and SC02 (GET successfull operation).

Test Scenarios by Scope (positive / negative)	Test Case (TC) Description (validate individually each SC)	Test Validation Category
Positive testing		
Execute API operations with valid required parameters: SC01: Initiate a search (POST) informing valid required parameters	TC01: Validate HTTP status code on requests response after API operation Expected results: – GET and POST requests should return 200 OK	API Functional Testing - Status Code Validation

SC02: Query for search results (GET) for a valid path parameter	TC02: Validate response structure is a JSON object formed according to data model (schema validation, field types, and mandatory types) Expected results: – for POST requests: Body displays a key 'id' formed by an 8-character alphanumeric code automatically generated – for GET requests: Body displays a key 'id' formed by an 8-character alphanumeric code automatically generated; a key 'status' with values 'active' / 'done'; a key 'urls' formed by a list of links related to the keyword searched.	API Functional Testing - Response Payload Validation
	TC03: Validate request Content-Type in HTTP headers Expected results: – for GET and POST: the Content-Type in HTTP headers ‘application/json’	API Functional Testing - Response Payload Validation
	TC04: Validate that ‘urls’ field content’s on search result response is base URL related Expected results: – for GET requests: the links returned in the 'urls' list on search result response must comply with the base URL, either relative or absolute. *– for POST requests: Not Applicable*	API Functional Testing - Response Payload Validation
	TC05: Validate response is received in a timely manner (as defined in the requisites/user story).	API Performance Testing - Baseline Response Time
	TC06: Validate response mandatory ‘urls’ field for simultaneous identical searches (GET) Expected results: – for GET requests: when key ‘status’ value is equals ‘done’ for both search results responses, the values on ‘urls’ list must be identical. *– for POST requests: Not Applicable*	API Performance Testing - Caching Performance
Negative/destructive testing – invalid input		
Execute API operations with invalid/wrong inputs: SC03: Attempting to initiate a search without filling 'keyword' key SC04: Attempting to initiate a search informing 'keyword' key formed by less than 4 / over than 32 characters SC05: Attempting to initiate a search removing 'keyword' key from the request payload	TC07: Validate HTTP status code on requests response after API operation Expected results: – for GET and POST: an erroneous HTTP status code is sent in accordance with error case as defined in spec – Missing specific information on spec (review documentation)	API Functional Testing - Status Code Validation
	TC08: Validate an error response structure is received and is a JSON object formed according to data model Expected results: - Missing information on spec (review documentation)	API Functional Testing - Response Payload Validation

SC06: Attempting to initiate a search adding invalid key in the request payload SC07: Attempting to initiate a search results informing wrong Content-Type in HTTP headers SC08: Attempting to query search results without informing invalid id in path SC09: Attempting to execute unsupported methods for endpoints, such as PUT, DELETE, PATCH	TC09: Verify error response description is correct for this error case and in accordance with spec Expected results: - Missing information on spec (review documentation)	
	TC10: Verify that there is a clear and friendly descriptive error response message Expected results: - Missing information on spec (review documentation)	
	TC11: Ensure error is received in a timely manner (as defined in the requisites/user story)	API Performance Testing - Baseline Response Time

API Execution Collections (POSTMAN)

Collection's Test Case	Scenario Validated	JS Script

TC01-Status Code Validation	SC01: Initiate a search (POST) informing valid required parameters	pm.test("Status code is 200", function () {
		  pm.response.to.have.status(200);
		});

TC02-Status Code Validation	SC02: Query for search results (GET) for a valid path parameter	pm.test("Status code is 200", function () {
		  pm.response.to.have.status(200);
		});

TC02-Response Payload Validation	SC01: Initiate a search (POST) informing valid required parameters	var expectedSchema = {
		  "type": "object",
		  "properties": {
		  "id": {
		  "type": "string",
		  "pattern": "^[a-zA-Z0-9]{8}$"
		  }
		  },
		  "required": ["id"]
		}
		
		pm.test('response matches JSON schema', () => {
		  pm.response.to.have.jsonSchema(expectedSchema);
		});

TC02-Response Payload Validation	SC02: Query for search results (GET) for a valid path parameter	var expectedSchema = {
		 "type": "object",
		 "properties": {
		  "id": {
		  "type": "string"

		},
		"status": {
		"type": "string"
		},
		"urls": {
		"type": "array",
		"items": {
		"type": "string",
		"format": "uri"
		}
		}
		},
		"required": ["id", "status", "urls"]
		};
		
		pm.test('response matches JSON schema', () => {
		pm.response.to.have.jsonSchema(expectedSchema);
		});

TC03-Response Payload Validation	SC01: Initiate a search (POST) informing valid required parameters	pm.test("Content-Type is present and have expected values", function () {
		pm.response.to.have.header("Content-Type", "application/json");
		});

TC03-Response Payload Validation	SC02: Query for search results (GET) for a valid path parameter	pm.test("Content-Type is present and have expected values", function () {
		pm.response.to.have.header("Content-Type", "application/json");
		});

TC04-Response Payload Validation	SC02: Query for search results (GET) for a valid path parameter	const baseURL = "http://hiring.axreng.com/";
		const urls = pm.response.json().urls;
		
		urls.forEach((url, index) => {
		pm.test(`Link have base URL`, function () {
		pm.expect(url).to.have.string(baseURL);
		});
		});

TC05-Baseline Response Time	SC01: Initiate a search (POST) informing valid required parameters	pm.test("Verify response time is less than 5 seconds", function () {
		const fiveSecondsMs = 5_000; // 5 seconds in milliseconds
		pm.expect(pm.response.responseTime).to.be.below(fiveSecondsMs);
		});

TC05-Baseline Response Time	SC02: Query for search results (GET) for a valid path parameter	pm.test("Verify response time is less than 5 seconds", function () {
		const fiveSecondsMs = 5_000; // 5 seconds in milliseconds
		pm.expect(pm.response.responseTime).to.be.below(fiveSecondsMs);
		});