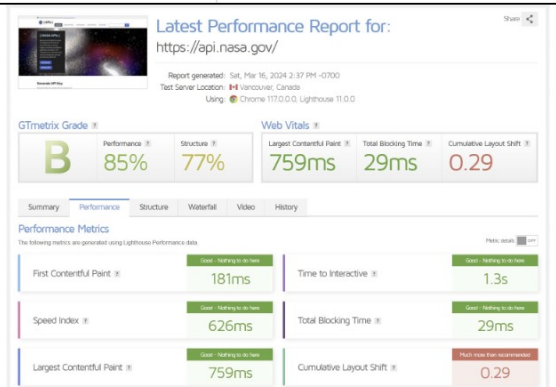
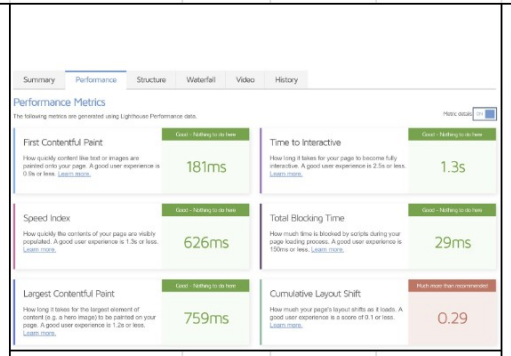
Test Object:	https://api.nasa.gov/
User Interface (UI):	* Ensure that the UI of the NASA API website is user-friendly, efficient, and error-free, providing a seamless experience for users accessing various space-related data. The testing will focus on validating functionality, performance, compatibility, and visual consistency across different platforms and devices.
API-Objectives:	* Verify that the NASA API functions correctly and meets specified criteria.
Key Goals:	* **Functionality Testing:** Verify that all UI elements such as buttons, links, forms, and navigation menus work as intended. * **Usability Testing:** Assess the ease of use and intuitiveness of the UI, ensuring that users can accomplish their tasks without confusion or difficulty. * **Performance Testing:** Check the responsiveness of the UI under various conditions, including load times and data retrieval efficiency. * **Compatibility Testing:** Ensure the UI displays correctly and functions on different browsers, operating systems, and devices. * **Visual Testing:** Confirm that the UI maintains visual consistency and alignment with NASA's branding guidelines. * **Security Tests:** Security testing focuses on identifying vulnerabilities and ensuring data protection.
Description:	* The testing will be conducted systematically, with detailed documentation of test cases and results to support continuous improvement of the website's UI. * The requirements should align with the overall goals of the NASA API website and contribute to its success in serving users and the broader community. * Each requirement is categorized, and additional details are provided where necessary.

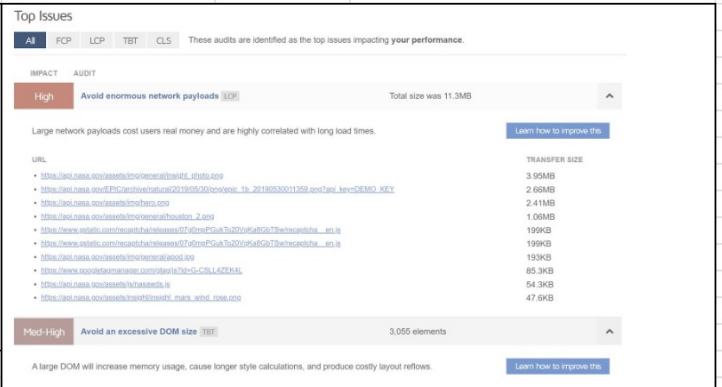
Category/Module	Objective	Requirement ID	Requirements
Homepage	Create an engaging and user-friendly landing page that effectively communicates the website's purpose and provides easy access to key features and content.	REQ 1	- A visually appealing homepage with easy navigation.
		REQ 2	- Quick access to key features and services offered by the website.
User Authentication and Authorization	Ensure secure access to the website's features and data by implementing robust authentication and authorization mechanisms.	REQ 3	- Different levels of access should be implemented based on user roles (e.g., DEMO, regular user).
		REQ 4	- Users should be able to create accounts and log in securely.
API Accessibility and Usability	Ensure that the API is accessible and user-friendly.	REQ 5	- The API should be publicly accessible without authentication for exploration purposes.
		REQ 6	- Users should be able to easily navigate and understand the available endpoints.
API Key Management	Manage API keys efficiently.	REQ 7	- Users should be able to generate their own API keys.
		REQ 8	- Rate limits should be set to prevent abuse while allowing legitimate usage.
		REQ 9	- Users should be able to check their current rate limit and usage details.
Search Functionality	Enable users to quickly find relevant information or content within the website by implementing a powerful and intuitive search functionality.	REQ 10	- Users should be able to search for content, services, or information efficiently.
		REQ 11	- Search results should be relevant and displayed in a user-friendly manner.
User Profile Management	Empower users to manage their profiles effectively, update personal information, and customize preferences to enhance their overall experience on the website.	REQ 12	- Users should be able to manage their profiles, including updating personal information and preferences.
Responsive Design	Ensure that the website is accessible and user-friendly across various devices and screen sizes, providing a consistent experience to all users regardless of the device they use.	REQ 13	- The website should be responsive and compatible with various devices (desktops, tablets, smartphones).
		REQ 14	- Compatibility with different web browsers should be ensured.
Performance and Scalability	Optimize website performance to deliver fast loading times and minimal latency, while also ensuring scalability to accommodate increasing traffic and user load.	REQ 15	- The website should be optimized for performance, with fast loading times and minimal latency.
		REQ 16	- Scalability should be considered to handle varying levels of traffic and user load.
Security	Safeguard user data and prevent unauthorized access by implementing robust security measures, thereby building trust and confidence among users regarding the website's security.	REQ 17	- Implementation of security measures to protect user data and prevent unauthorized access.
		REQ 18	- Regular security audits and updates to address potential vulnerabilities.
Astronomy Picture of the Day (APOD)	Showcase daily astronomy pictures.	REQ 19	- Display the latest APOD prominently on the website.
		REQ 20	- Provide image details, descriptions, and relevant metadata.
		REQ 21	- Allow users to explore past APOD images.
Asteroid Information	Enable users to search for asteroid data.	REQ 22	- Implement a search bar for asteroid names or IDs.
		REQ 23	- Display accurate information about asteroids, including size, distance, and impact risks.
Mars Rover Photos	Allow users to explore Mars rover photos.	REQ 24	- Provide sections for each rover (Curiosity, Opportunity, Spirit).
		REQ 25	- Display rover photos in a grid format with captions and dates.
		REQ 26	- Enable users to view photos in larger sizes.
Earth Imagery	Provide access to satellite imagery of Earth.	REQ 27	- Implement a map interface for selecting locations.
		REQ 28	- Display recent satellite images for selected areas.
		REQ 29	- Allow users to toggle between different layers (e.g., cloud cover, vegetation).
		REQ 30	- Organize missions by type (robotic, crewed, planetary).

Project Name:	NASA	NASA APIs		
Type of Testing:	Positive Testing			
Test prepared by:	Sergei Orlov			
Test prepared Date:	3/16/2024			
Test Executed by:	Sergei Orlov			
Test Execution Date:	3/16/2024			
Device:	Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz 2.59 GHz	Browser:	Google Chrome	
OS:	Windows 11 Home/64	Version:	122.0.6261.129 (Official Bui	
Version:	22H2			

Key	Test Name	Objective	Precondition	Priority	Estimated Time	Coverage (Issues)	Test Script (Step-by-Step)	Test Script (Step-by-Step) - Test Data	Expected Result	Actual Results	Status: Pass/Fail
TC-15.1	Evaluate the performance of the https://api.nasa.gov/ website using the GTMetrix tool.	To assess the performance of the https://api.nasa.gov/ website using GTMetrix performance indicators, ensuring that it meets or exceeds the specified benchmarks.	* Access to the GTMetrix tool: https://gtmetrix.com/ * A stable internet connection.	Normal	0:20	REQ-15	1. Navigate to the GTMetrix website.	https://gtmetrix.com/	The website is accessible.	Same as expected.	FAIL
	Automated						2. Enter the URL "https://api.nasa.gov/" in the provided field.	Input: https://api.nasa.gov/	The entered URL is visible in the input field.	Same as expected.	
							3. Initiate the performance test.		The test is running.	Same as expected.	
							4. Observe the performance indicators.		* "Performance Score" is 80% or above it; * "First Contentful Paint" is 0.9s or less; * "Speed Index" is 1.3s or less; * "Largest Contentful Paint" is 1.2s or less; * "Time to Interactive" is 2.5s or less; * "Total Blocking Time" is 150ms or less;	Performance Score = 85% First Contentful Paint = 11ms Speed Index = 626ms Largest Contentful Paint = 759ms Time to Interactive = 1.3s Total Blocking Time = 29ms	
									* "Cumulative Layout Shift" score is 0.1 or less.	Cumulative Layout Shift = 0.29 > 0.1	







Project Name:	NASA	NASA APIs
Type of Testing:	Positive / Negative	
Test prepared by:	Sergei Orlov	
Test prepared Date:	3/18/2024	
Test Executed by:	Sergei Orlov	
Test Execution Date:	3/20/2024	
Device:	Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz 2.59 GHz	
OS:	Windows 11 Home/64	
Version:	22H2	
Browser:	Google Chrome	
Version:	122.0.6261.129 (Official Build) (64-bit)	

REQUIREMENT: REQ-7

TC ID:	Positive / Negative	Test Priority:	Module Name:	Test Title (REQ):	Precondition	Steps Description:	Test Data:	Expected Result:	Actual Result:	AUTOMATED	STATUS (Pass/Fali):
TC-7.2	Positive	High	API Key Management	Verify the form is titled “Generate API Key”.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Observe the form title.	Homepage	The form is titled “Generate API Key”.	Same as expected.	AUTOMATED	PASS
TC-7.3	Positive	High	API Key Management	Verify The form displays mandatory input fields	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Observe the input fields.	Homepage	The mandatory input fields for “First Name”, “Last Name”, and “Email” are displayed.	Same as expected.	AUTOMATED	PASS
TC-7.4	Positive	High	API Key Management	Verify that mandatory input fields are marked with an asterisk (*) to indicate that they are required.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Observe the input fields.	Homepage	Each of these fields is marked with an asterisk (*).	Same as expected.	AUTOMATED	PASS
TC-7.5	Positive	High	API Key Management	Verify The form displays an optional text field labeled “How will you use the APIs?”.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Observe the optional text field.	Homepage	The optional text field labeled “How will you use the APIs?” is displayed.	Same as expected.	AUTOMATED	PASS

Project Name:	NASA	NASA APIs	TC ID:	Positive / Negative	Test Priority:	Module Name:	Test Title (REQ):	Precondition	Steps Description:	Test Data:	Expected Result:	Actual Result:	AUTOMATED	STATUS (Pass/Fali):
			TC-7.6	Positive	High	API Key Management	Verify that the form has the "Signup" button.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Observe the “Signup” button.	Homepage	The form includes a “Signup” button for submission.	Same as expected.	AUTOMATED	PASS
			TC-7.7	Positive	High	API Key Management	Verify The system generates an API key for the user and the user can view and copy this API key.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Fill in all the required fields with valid data 4. Click the “Signup” button.	Homepage Faker.com	The system generates an API key for the user and the user can view and copy this API key.	Same as expected.	AUTOMATED	PASS
			TC-7.8	Negative	High	API Key Management	Verify that an error message is displayed if a required field "First Name" left empty.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Leave the required field "First Name" empty. 4. Enter the valid information in the other input fields. 5. Click the “Signup” button.	Homepage Faker.com	An error message "Fill out this field" is displayed.	Same as expected.	AUTOMATED	PASS
			TC-7.9	Negative	High	API Key Management	Verify that an error message is displayed if a required field "Last Name" left empty.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Leave the required field "Last Name" empty. 4. Enter the valid information in the other input fields. 5. Click the “Signup” button.	Homepage Faker.com	An error message is displayed.	Same as expected.	AUTOMATED	PASS

Project Name:	NASA	NASA APIs	TC ID:	Positive / Negative	Test Priority:	Module Name:	Test Title (REQ):	Precondition	Steps Description:	Test Data:	Expected Result:	Actual Result:	AUTOMATED	STATUS (Pass/Fali):
			TC-7.10	Negative	High	API Key Management	Verify that an error message is displayed if a required field "Email" left empty.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Leave the required field "Email" empty. 4. Enter the valid information in the other input fields. 5. Click the “Signup” button.	Homepage Faker.com	An error message "Enter an email address." is displayed.	Same as expected.	AUTOMATED	Pass
			TC-7.11	Negative	High	API Key Management	Verify An error message is displayed if the email address is not valid.	https://api.nasa.gov is accessible.	1. Open Website https://api.nasa.gov 2. Scroll down to the signup form. 3. Enter an invalid email address in the “Email” field. 4. Enter the valid information in the other input fields. 5. Click the “Signup” button.	Faker.com 1. john.doe.example.co 2. jane_smith123@ (mi 3. @company.com (mis 4. bob.smith@com (inc 5. john.doe@example.	An error message is displayed indicating that the email address is not valid.	Some invalid email formats were accepted.	AUTOMATED	FAIL

Project Name:	*NASA APIs*	https://api.nasa.gov/

Traceability Matrix:

Test prepared by:	Sergei Orlov
Test prepared Date:	18/3/2024
Test Executed by:	Sergei Orlov
Test Execution Date:	20/3/2024

Device:	Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz 2.59 GHz	**Browse**	Google Chrome
OS:	Windows 11 Home/64	**Version**	122.0.6261.129 (Official Build) (64-bit)
Version:	22H2		

Requirement Traceability		Requirements											
		REQ-15	REQ-7										
Test Caces ID:	TC-15.1	F											
	TC-7.2		P										
	TC-7.3			P									
	TC-7.4				P								
	TC-7.5					P							
	TC-7.6						P						
	TC-7.7							P					
	TC-7.8								P				
	TC-7.9									P			
	TC-7.10										P		
	TC-7.11											F	

Test Summary:	
Total Tests performed:	11
Tests Passed:	9
Tests Faild:	2