Software Construction and Testing

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End-to-End Testing: Exploring Manual, API, and Performance Dimensions ("Final Report")

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Milestone 1 summary of the Findings and Manuel Test Results

Test Case Execution Status:

The testing process for the website " Browser Stack Demo" involved a total of 168 test cases. Among these, 91 test cases were successfully passed, indicating that the majority of functionalities met the expected criteria. However, 22 test cases failed to meet the set standards. Additionally, 55 test cases were blocked due to dependencies that needed before execution.

Defects Status based on Priority:

Within the current build, a total of 22 defects were identified in the website " Browser Stack Demo." Among these defects, 5 were classified as high priority, demanding immediate attention due to their potential impact on critical functionalities. Additionally, 13 medium priority defects were noted, signifying issues that might not be critical but still require prompt resolution. Furthermore, 4 low priority defects were identified, indicating minor issues that may not significantly affect user experience or functionality but should be addressed eventually.

Defects Status based on Type:

The defects in the website " Browser Stack Demo" were categorized based on their type. Out of the total 22 defects, a significant majority of 20 were functional defects. These issues directly impacted the functionalities or behaviors of the website. Moreover, 2 defects were related to UI/UX, highlighting issues in the user interface or user experience aspects of the website. These findings emphasize the need for comprehensive attention to both functional and user interface aspects to ensure a smoother user experience.

This comprehensive breakdown showcases the status of test case execution and defects encountered during the evaluation of the " Browser Stack Demo" website, providing insights into the areas that require immediate attention and improvement to enhance the overall quality and functionality of the site.

Milestone 2 summary of the Findings and API Test Results

In this milestone, our testing team diligently conducted API testing for the RestfulBooker website, meticulously evaluating a total of 8 APIs through a series of 25 tests 3 tests for each API. The testing responsibilities were divided among three dedicated teams.

Team 1 (Mohamed Ibrahim and Omar Mohamed):

- Create Token API
- Create Booking API
- Health Check API

Team 2 (Mohamed Bassem and Mina Ehab):

- Update Booking API
- Partial Update Booking API
- Delete Booking API

Team 3 (Ahmed Refaat and Ahmed Ashraf):

- GetBookingIds API
- GetBooking API

Overall, the testing process yielded positive results, with 23 out of the 25 tests meeting the expected criteria at a success percentage of 92%. However, two tests, specifically T73 and T74, encountered failures, leading to an 8% failure rate. T73, which revolved around the Create Booking API, faced an inconsistency between the expected status code of 200 and the received status code of 403. Likewise, T74, focusing on the Authentication Token API, expected a successful 200 OK response but instead received a 500 status code.

Examples of the tests conducted included verifying the matching of response bodies with expected strings, ensuring a status code of 200 for the token API, confirming the success of POST requests, and validating response times and data formats.

Moving forward, we recommend a thorough investigation into the root causes of the identified failures, urging collaboration between development and testing teams for swift resolution. Additionally, we suggest expanding the test suite to enhance coverage and conducting collaborative reviews to refine test scenarios. These efforts will contribute to the overall reliability and robustness of the RestfulBooker website APIs.

Milestone 3 performance Testing Summary of the Findings

Website blazedemo

Test Case Summary: The test case consisted of a total of 8100 samples. The overall error percentage was very low, at 0.025%. The average throughput recorded was 1.51217, indicating the number of requests processed per unit of time. The average received and sent data rates were 13.02 KB/sec and 1.77 KB/sec, respectively. The average size of the responses, measured in bytes, was 8815.3.

Individual Sample Analysis:

1. The first sample, which involved accessing the URL "https://blazedemo.com/reserve.php," had a total of 1800 samples. The average response time for this sample was 531 ms, with a minimum of 0 ms and a maximum of 30001 ms. The standard deviation was 855.31 ms, indicating the variability in response times. The error percentage was 0.000%, indicating that no errors occurred during the sample execution. The throughput was recorded at 0.34177, and the received and sent data rates were 2.45 KB/sec and 0.28 KB/sec, respectively. The average response size was 7341.0 bytes.

2. The second sample, labeled "Click find Flights," comprised 900 samples. The average response time was 1063 ms, with a minimum of 0 ms and a maximum of 30571 ms. The standard deviation was 1245.98 ms, reflecting the variability in response times. The error percentage was 0.000%, indicating that no errors occurred during the sample execution. The throughput was recorded at 0.17089, and the received and sent data rates were 2.45 KB/sec and 0.28 KB/sec, respectively. The average response size was 14682.0 bytes.

3. The third sample involved accessing the URL "https://blazedemo.com/purchase.php" and had a total of 1800 samples. The average response time for this sample was 443 ms, with a minimum of 0 ms and a maximum of 16327 ms. The standard deviation was 737.76 ms. The error percentage was 0.000%, indicating no errors during sample execution. The throughput was recorded at 0.34066, and the received and sent data rates were 2.23 KB/sec and 0.29 KB/sec, respectively. The average response size was 6715.0 bytes.

4. The fourth sample, labeled "Choose this Flight," comprised 900 samples. The average response time was 886 ms, with a minimum of 0 ms and a maximum of 18724 ms. The standard deviation was 1185.90 ms. The error percentage was 0.000%. The throughput was recorded at 0.16992, and the received and sent data rates were 2.23 KB/sec and 0.29 KB/sec, respectively. The average response size was 13430.0 bytes.

5. The fifth sample involved accessing the URL "https://blazedemo.com/confirmation.php" and had a total of 1800 samples. The average response time for this sample was 543 ms, with a minimum of 0 ms and a maximum of 25308 ms. The standard deviation was 1131.80 ms. The error percentage was 0.056%, indicating that a small percentage of errors occurred during sample execution. The throughput was recorded at 0.33745, and the received and sent data rates were 1.90 KB/sec and 0.33 KB/sec, respectively. The average response size was 5778.3 bytes.

6. The last sample, labeled "Purchase Flight," comprised 900 samples. The average response time was 1087 ms, with a minimum of 0 ms and a maximum of 30027 ms. The standard deviation was 1747.62 ms. The error percentage was 0.111%, indicating that a small percentage of errors occurred during sample execution. The throughput was recorded at 0.16852, and the received and sent data rates were 1.90 KB/sec and 0.33 KB/sec, respectively. The average response size was 11556.6 bytes.

Aggregate

The test case consisted of a total of 8100 samples with an overall error percentage of 0.025%. The average throughput was 1.51217 requests processed per unit of time. The received and sent data rates were 13.02 KB/sec and 1.77 KB/sec, respectively.

Sample 1, involving "https://blazedemo.com/reserve.php," had 1800 samples with an average response time of 531 ms. The error percentage was 0.000%, and the throughput was 0.34177.

Sample 2, labeled "Click find Flights," had 900 samples with an average response time of 1063 ms. The error percentage was 0.000%, and the throughput was 0.17089.

Sample 3, involving "https://blazedemo.com/purchase.php," had 1800 samples with an average response time of 443 ms. The error percentage was 0.000%, and the throughput was 0.34066.

Sample 4, labeled "Choose this Flight," had 900 samples with an average response time of 886 ms. The error percentage was 0.000%, and the throughput was 0.16992.

Sample 5, involving "https://blazedemo.com/confirmation.php," had 1800 samples with an average response time of 543 ms. The error percentage was 0.056%, and the throughput was 0.33745.

Sample 6, labeled "Purchase Flight," had 900 samples with an average response time of 1087 ms. The error percentage was 0.111%, and the throughput was 0.16852.

Website PetShopdemo

The test case includes a total of 8500 samples with various labels representing different actions performed on the pet store website. The average response time across all samples is 166 ms, with a minimum response time of 0 ms and a maximum response time of 1610 ms. The standard deviation of response times is 142.63 ms.

Individual Sample Analysis:

1. The action "https://petstore.octoperf.com/actions/Account.action?signonForm=" had 500 samples with an average response time of 146 ms. The minimum response time was 0 ms, and the maximum response time was 499 ms. The throughput was 0.69668, received data rate was 3.01 KB/sec, and sent data rate was 0.36 KB/sec. The average response size was 4417 bytes.

2. The action "https://petstore.octoperf.com/actions/Account.action" had 500 samples with an average response time of 177 ms. The minimum response time was 0 ms, and the maximum response time was 551 ms. The throughput was 0.69375, received data rate was 3.48 KB/sec, and sent data rate was 1.02 KB/sec. The average response size was 5136 bytes.

3.Theaction"https://petstore.octoperf.com/actions/Catalog.action?viewCategory=&categoryId=DOGS" had 500 samples with an average response time of 152 ms. The minimum response time was 0 ms, and the maximum response time was 710 ms. The throughput was 0.67769, received data rate was 2.72 KB/sec, and sent data rate was 0.40 KB/sec. The average response size was 4112 bytes.

4. The action "https://petstore.octoperf.com/actions/Catalog.action" had 500 samples with an average response time of 103 ms. The minimum response time was 0 ms, and the maximum response time was 722 ms. The throughput was 0.67979, received data rate was 3.26 KB/sec, and sent data rate was 0.38 KB/sec. The average response size was 4909 bytes.

5. The action "Sign in" had 500 samples with an average response time of 579 ms. The minimum response time was 0 ms, and the maximum response time was 1118 ms. The throughput was 0.65672, received data rate was 11.91 KB/sec, and sent data rate was 2.06 KB/sec. The average response size was 18574 bytes.

6. The action "https://petstore.octoperf.com/actions/Catalog.action?viewCategory=&categoryId=FISH" had 500 samples with an average response time of 116 ms. The minimum response time was 0 ms, and the maximum response time was 1069 ms. The throughput was 0.67653, received data rate was 2.53 KB/sec, and sent data rate was 0.40 KB/sec. The average response size was 3828 bytes.

7. The action "choose an animal" had 500 samples with an average response time of 116 ms. The minimum response time was 0 ms, and the maximum response time was 1069 ms. The throughput was 0.67413, received data rate was 2.52 KB/sec, and sent data rate was 0.40 KB/sec. The average response size was 3828 bytes.

8.Theaction"https://petstore.octoperf.com/actions/Catalog.action?viewProduct=&productId=FI-SW-01" had 500 samples with an average response time of 142 ms. The minimum response time was 0 ms, and the maximum response time was 922 ms. The throughput was 0.68331, received data rate was 2.67 KB/sec, and sent data rate was 0.41 KB/sec. The average response size was 4004 bytes.

9. The action "choose a product" had 500 samples with an average response time of 142 ms. The minimum response time was 0 ms, and the maximum response time was 922 ms. The throughput was 0.66983, received data rate was 2.62 KB/sec, and sent data rate was 0.40 KB/sec. The average response size was 4004 bytes.

10.Theaction"https://petstore.octoperf.com/actions/Cart.action?addItemToCart=&workingItemId=EST-1" had 500 samples with an average response time of 108 ms. The minimum response time was 0 ms, and the maximum response time was 708 ms. The throughput was 0.68425, received data rate was 3.05KB/sec, and sent data rate was 0.41 KB/sec. The average response size was 4568 bytes.

11. The action "add the product to cart" had 500 samples with an average response time of 108 ms. The minimum response time was 0 ms, and the maximum response time was 708 ms. The throughput was 0.67900, received data rate was 3.03 KB/sec, and sent data rate was 0.40 KB/sec. The average response size was 4568 bytes.

12. The action "https://petstore.octoperf.com/actions/Order.action?newOrderForm=" had 500 samples with an average response time of 106 ms. The minimum response time was 0 ms, and the maximum response time was 615 ms. The throughput was 0.67778, received data rate was 3.52 KB/sec, and sent data rate was 0.39 KB/sec. The average response size was 5325 bytes.

13. The action "go to checkout" had 500 samples with an average response time of 106 ms. The minimum response time was 0 ms, and the maximum response time was 615 ms. The throughput was 0.66693, received data rate was 3.47 KB/sec, and sent data rate was 0.38 KB/sec. The average response size was 5325 bytes.

14. The action "https://petstore.octoperf.com/actions/Order.action" had 500 samples with an average response time of 228 ms. The minimum response time was 0 ms, and the maximum response time was 1610 ms. The throughput was 0.65473, received data rate was 2.86 KB/sec, and sent data rate was 0.76 KB/sec. The average response size was 4468 bytes.

15. The action "enter payment details" had 500 samples with an average response time of 228 ms. The minimum response time was 0 ms, and the maximum response time was 1610 ms. The throughput was 0.62423, received data rate was 2.72 KB/sec, and sent data rate was 0.72 KB/sec. The average response size was 4468 bytes.

16.Theaction"https://petstore.octoperf.com/actions/Order.action?newOrder=&confirmed=true" had 500 samples with an average response time of 130 ms. The minimum response time was 0 ms, and the maximum response time was 674 ms. The throughput was 0.63721, received data rate was 3.21 KB/sec, and sent data rate was 0.37 KB/sec. The average response size was 5153 bytes.

17. The action "confirm order" had 500 samples with an average response time of 130 ms. The minimum response time was 0 ms, and the maximum response time was 674 ms. The throughput was 0.62706, received data rate was 3.16 KB/sec, and sent data rate was 0.37 KB/sec. The average response size was 5153 bytes.

Aggregate

The first action recorded in the data is accessing the sign-on form at "https://petstore.octoperf.com/actions/Account.action?signonForm=". This action was performed 500 times, with an average response time of 146 milliseconds. The median response time was 85 milliseconds, and 90% of the responses were completed within 358 milliseconds. The throughput for this action was 0.69668 requests per second, and the average data received and sent were 3.01 KB/sec and 0.36 KB/sec, respectively.

The next action is accessing the account action page without the sign-on form parameter. It was also performed 500 times, with an average response time of 177 milliseconds. The median response time was 161 milliseconds, and 90% of the responses were completed within 211 milliseconds. The throughput for this action was 0.69375 requests per second, and the average data received and sent were 3.48 KB/sec and 1.02 KB/sec, respectively.

Moving on to the catalog actions, accessing the catalog page for dogs was performed 500 times. The average response time for this action was 152 milliseconds, with a median response time of 98 milliseconds. 90% of the responses were completed within 278 milliseconds. The throughput for this action was 0.67769 requests per second, and the average data received and sent were 2.72 KB/sec and 0.40 KB/sec, respectively.

Similarly, accessing the general catalog page without specifying a category was performed 500 times. The average response time for this action was 103 milliseconds, with a median response time of 81 milliseconds. 90% of the responses were completed within 149 milliseconds. The throughput for this action was 0.67979 requests per second, and the average data received and sent were 3.26 KB/sec and 0.38 KB/sec, respectively.

The next action recorded is signing in, which was performed 500 times. The average response time for this action was 579 milliseconds, with a median response time of 577 milliseconds. 90% of the responses were completed within 751 milliseconds. The throughput for this action was 0.65672 requests per second, and the average data received and sent were 11.91 KB/sec and 2.06 KB/sec, respectively.

Accessing the catalog page for fish and choosing an animal were both performed 500 times. The average response time for these actions was 116 milliseconds, with a median response time of 84 milliseconds. 90% of the responses for both actions were completed within 229 milliseconds. The throughput for these actions was 0.67653 requests per second, and the average data received and sent were 2.53 KB/sec and 0.40 KB/sec, respectively.

Similarly, accessing a specific product in the catalog and choosing a product were performed 500 times each. The average response time for these actions was 142 milliseconds, with a median response time of 90 milliseconds. 90% of the responses for both actions were completed within 253 milliseconds. The throughput for these actions was 0.68331 requests per second, and the average data received and sent were 2.67 KB/sec and 0.41 KB/sec, respectively.

Adding a product to the cart and accessing the order form were performed 500 times each. The average response time for these actions was 108 milliseconds, with a median response time of 83 milliseconds. 90% of the responses for both actions were completed within 218 milliseconds. The throughput for these actions was 0.68425 requests per second, and the average data received and sent were 3.05 KB/sec and 0.41 KB/sec, respectively.

Finally, proceeding to checkout and accessing the order action page were performed 500 times each. The average response time for these actions was 106 milliseconds, with a median response time of 83 milliseconds. 90% of the responses for both actions were completed within 204 milliseconds. The throughput for these actions was 0.67778 requests per second, and the average data received and sent were 3.52 KB/sec and 0.39 KB/sec, respectively.

The last two actions recorded are entering payment details and confirming the order. Each of these actions was performed 500 times. The average response time for both actions was 228 milliseconds, with a median response time of 234 milliseconds. 90% of the responses for both actions were completed within 330 milliseconds. The throughput for these actions was 0.65473 requests per second, and the average data received and sent were 2.86 KB/sec and 0.76 KB/sec, respectively.