Tests

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# Target URL

<http://computer-database.herokuapp.com/computers>

# Pre-requisites

1. From the platforms section, pick out a platform (Desktop/Tablet/Phone) and an OS.
2. Install the desired browser
3. Open the browser

# Functional Test Cases

## Test 1

Navigate to the target URL in the browser.

Expected Result: The header text “”[Play sample application — Computer database](https://computer-database.herokuapp.com/)” should be present with black background.

## Test 2

1. Navigate to the target URL in the browser.
2. Check the number of computers provided in the phrase “<X> computers found”.
3. Check the number of items in the table.

Expected Result: The number of items in the phrase and the table should match.

## Test 3

1. Navigate to the target URL in the browser.
2. Check for table columns and pagination

Expected Result: The table columns should be Computer Name, Introduced, Discontinued and Company. The pagination should have Next and Previous links for navigation and should display the number of records currently displayed in the table. Check if the columns are sortable.

## Test 3

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide valid information for all the fields.
4. Hit the “Create this computer” button.
5. On the ensuing page, navigate through the table (by clicking next) and check if the new computer has been added.

Expected Result: The new computer with all the added info should be present in the table. The success message should be displayed (“Done! <Computer Name> has been created”).

Subsequent step: Click on the computer name and verify on the ensuing page if all the details are correct.

## Test 4

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide valid information for all the fields.
4. Hit the “Create this computer” button.
5. The success message should be displayed (“Done! <Computer Name> has been created”).
6. On the ensuing page, provide the computer name in the search field and click Filter button.

Expected Result: The new computer with all the added info should be displayed.

Subsequent step: Click on the computer name and verify on the ensuing page if all the details are correct.

## Test 5

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, do not provide the computer.name
4. Hit the “Create this computer” button.

Expected Result:

The computer name field should be highlighted in Red.

## Test 6

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a non-ASCII value in the computer name field.
4. Hit the “Create this computer” button.

Expected Result:

The new computer with all the added info should be displayed.

Subsequent step: Click on the computer name and verify on the ensuing page if all the details are correct.

## Test 7

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a blank string (“”) in the computer name field.
4. Hit the “Create this computer” button.

Expected Result:

The computer name field should be highlighted in Red.

## Test 8

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Introduced field, provide an invalid date format, not in the yyyy-mm-dd format as specified. (12-12-9999)
5. Hit the “Create this computer” button.

Expected Result:

The Introduced field should be highlighted in Red.

## Test 9

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Introduced field, provide a date with an invalid month. (9999-13-12)
5. Hit the “Create this computer” button.

Expected Result:

The Introduced field should be highlighted in Red.

## Test 10

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Introduced field, provide a date with an invalid day. (9999-12-32)
5. Hit the “Create this computer” button.

Expected Result:

The Introduced field should be highlighted in Red.

## Test 11

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Introduced field, provide a date with an invalid year. (-12-32)
5. Hit the “Create this computer” button.

Expected Result:

The Introduced field should be highlighted in Red.

## Test 12

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Discontinued field, provide an invalid date format, not in the yyyy-mm-dd format as specified. (12-12-9999)
5. Hit the “Create this computer” button.

Expected Result:

The Discontinued field should be highlighted in Red.

## Test 13

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Discontinued field, provide a date with an invalid month. (9999-13-12)
5. Hit the “Create this computer” button.

Expected Result:

The Discontinued field should be highlighted in Red.

## Test 14

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Discontinued field, provide a date with an invalid day. (9999-12-32)
5. Hit the “Create this computer” button.

Expected Result:

The Discontinued field should be highlighted in Red.

## Test 15

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide a valid string in the computer name field.
4. In the Discontinued field, provide a date with an invalid year. (-12-32)
5. Hit the “Create this computer” button.

Expected Result:

The Discontinued field should be highlighted in Red.

## Test 16

1. Navigate to the target URL in the browser.
2. Navigate through the table by clicking Next till the Next is disabled.

Expected Result:

The records should be sorted alphabetically by computer name.

## Test 17

1. Navigate to the target URL in the browser.
2. Navigate through the table by clicking Next till the Next is disabled.
3. Navigate back to the first page of the table by clicking Previous till the Previous button is disabled.

Expected Result:

Going back, the records should be sorted in the reverse alphabetical order by computer name.

## Test 18

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide all the information
4. Hit the “Create this computer” button.
5. Provide newly added computer (by name) in the search field and hit Filter.

Expected Result:

The new computer with all the added info should be displayed.

Subsequent step:

Click on the computer name and you will be taken to the computer detail page. Click Delete This Computer.

Expected Result:

The message “**Done!** Computer has been deleted” should be displayed.

Subsequent step:

Provide newly deleted computer (by name) in the search field and hit Filter.

Expected Result:

The message “Nothing to display” should be displayed.

## Test 19

1. Navigate to the target URL in the browser.
2. Click the Add Computer link.
3. In the subsequent page, provide all the information
4. Hit the “Create this computer” button.
5. Provide newly added computer (by name) in the search field and hit Filter.

Expected Result:

The new computer with all the added info should be displayed.

Subsequent step:

Click on the computer name and you will be taken to the computer detail page. Update the Introduced field and click “Save this computer”.

Expected Result:

The message “**Done!** Computer has been updated” should be displayed.

Subsequent step:

Provide newly updated computer (by name) in the search field and hit Filter.

Expected Result:

The computer record should be displayed.

Subsequent step:

Click on the computer name and verify on the ensuing page if all the details are correct.

# Internationalization Tests

This needs to be tested after getting the “localized” build for the UI. Ensure that the strings are correctly displayed in the locale language. If required, check for right->left languages like Arabic and languages with non-ASCII characters like Hindi. (Care should be taken to ensure that the colors/words are appropriately sensitized to the locale)

# Accessibility Tests

The following scenarios come into play:

1. Ensure that all of the functional test cases can be executed with keyboard only.
2. Turn on high contrast mode and interact with the site using the functional test cases.

# Performance Test Cases

For this section, the pre-requisites are that the performance benchmarks are provided for each scenario. The functional test cases need to be executed with a high bandwidth, 5G connectivity, low bandwidth Internet, 3G or lower strength connectivity and the response time needs to be checked.

# Security Test Cases

1. Using Fiddler or Wireshark, check if any data is sent over HTTP from the UI site to the backend server. See if that data can be manipulated.
2. Check for server-side scripting (I checked for a couple) by inserting code fragments and SQL queries in the text fields.

# Stress Tests

A subset of the functional test cases needs to be run to stress the web server till the breaking point is reached. This allows to catch the weakest link in the system (the DB Capacity, the server memory etc.)

# Load Tests

A subset of the functional test cases needs to be run till 120% of the expected load. This allows us to see if the site performs as expected during peak season.

# Platforms

1. Desktop OS: (Latest and one version prior) for Windows, OSX, Linux
2. Phone OS: (Latest and one version prior) for iOS, Android
3. Tablet OS: (Latest and one version prior) for iOS, Android
4. Browsers: (Latest and one version prior) for Internet Explorer, Chrome, Safari, Firefox

# Automation Design

The automation has been designed with TestNG and Selenium. TestNG is used to execute the test cases whereas Selenium is used to interact with the UI. The starting point is the build.xml which has two ant build targets “run-regression-chrome” and “run-regression-firefox” named after the respective browsers. All the needed JARs are packaged under the lib folder. The TestNG test suites are packaged under the configuration folder. When one of the above ant targets is executed, the corresponding TestNG suite file is executed which then runs the test cases present in the src folder using the properties file in the same src folder. (This file contains strings for the en-US locale. For other locales, new properties files need to be added as desired).

## Caveat

In the interest of time, I’ve executed the test case automation on a Mac using Catalina OS on both Chrome and Firefox.

# Future Plans for Automation

The AWS Device Farm is a great place to execute automation over a wide variety of devices. We can consider running automation there.