The following test cases represent the CRUD / ‘happy path’ requirements for standard UAT of the “Play sample application – Computer database” application. With no explicit stories to follow they are the result of exploratory testing of the website.

Following the test scripts are a number of observations about the user experience of the site.

In the absence of a ‘shared step’ system, some actions contain instructions to complete steps from previous tests to save repetition of lengthy test steps.

Input data are highlighted by “red in quotes” text – expected text is “**bold in quotes”**

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| **Test #1 Add a new computer** | | | |
| **Step** | **Action** | | **Outcome** |
| 1 | Open a browser and navigate to this URL “<http://computer-database.herokuapp.com/computers>”  Return to:  [Test 2](#Test2Step2) [Test 3](#Test3Step2) [Test 4](#Test4Step2) [Test 5](#Test5Step1) [Test6](#Test6Step1) [Test7](#Test7) [Test8](#Test8) [Test9](#Test9)  [Test10](#Test10) [Test11](#Test11) | | Landing page is displayed containing a table displaying the first 10 entries of the number of “**computers found”** (page heading). Also displayed are a text box “**Filter by computer name…**”, 2 x buttons “**Filter by name**” & “**Add a new computer**” and a “**Next**” hyperlink. Computer names are also hyperlinks |
| 2 | Click the “**Add a new computer**” button  Return to:  [Test 5](#Test5Step2) [Test 6](#Test6Step2) [Test7](#Test7) [Test8](#Test8) [Test9](#Test9)  [Test10](#Test10) | | “**Add a computer**” page is displayed containing 3 x text boxes “**Computer name**”, “**Introduced date**”, and “**Discontinued date**”; a dropdown box “**Company**” listing company names and 2 x buttons “**Create this computer**” and “**Cancel**”. Computer name is a ‘Required’ field and the date fields show an expected format next to them |
| 3 | Enter “NewAce Pooter” into “**Computer name**” text box | | Input text is displayed (Suggested text is displayed and text box turns green if text has been entered previously) |
| 4 | Enter “2015-01-01” into the “**Introduced date**” text box in the correct format | | Input text is displayed (Suggested text is displayed and text box turns green if text has been entered previously) |
| 5 | Enter “2016-01-01” into the “**Discontinued date**” text box in the correct format | | Input text is displayed (Suggested text is displayed and text box turns green if text has been entered previously) |
| 6 | Select “**OQO**” from the “**Company**’ dropdown menu | | “**OQO**” is displayed in the text area of the dropdown box |
| 7 | Click the “**Create this computer**” button | | Landing page described in step 1 is displayed with an additional green bar above the button containing the phrase “**Done! Computer NewAce Pooter has been created**” |
| **Test #2 Search for Computer** | | | |
| **Step** | **Action** | **Outcome** | |
| 1 | Ensure **Test #1** has been completed prior to attempting this test | “NewAce Pooter” computer exists in the computer database | |
| 2 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** | |
| 3 | Enter “NewAce Pooter” into “**Filter by computer name…**” text box | Input text is displayed (Suggested text is displayed and text box turns green if text has been entered previously) | |
| 4 | Click the “**Filter by name**” button | Page heading will be ”**One computer found**” or “X **computers found**” where “X” is the numbers of rows in the table – Table on screen displays headings of “**Computer name**”, “**Introduced**”, “**Discontinued**” and “**Company**” containing “**NewAce Pooter**”(hyperlink), “**01 Jan 2015**”, “**01 Jan 2016**” and “**OQO**” respectively in bottom row. The page also contains the populated filter text box, “**Filter by name**” and “**Add a new computer**” buttons and “**Previous**” and “**Next**” navigation hyperlinks (active when needed) either side of text giving current display details | |

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| **Test #2a Search for Computer with Partial Name** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Ensure **Test #1** has been completed prior to attempting this test | “NewAce Pooter” computer exists in the computer database |
| 2 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 3 | Enter “**Sony**” into “**Filter by computer name…**” text box | Input text is displayed (Suggested text is displayed and text box turns green if text has been entered previously) |
| 4 | Click the “**Filter by name**” button | Page heading will be “X **computers found**” where “X” is the numbers of rows in the table – Table on screen displays headings of “**Computer name**”, “**Introduced**”, “**Discontinued**” and “**Company**” containing “**Sony** ”(hyperlink) and any other data associated with each entry. |

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| **Test #3 Update Computer Entry** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Ensure **Tests #1** has been completed prior to attempting this test | “NewAce Pooter” computer exists in the computer database |
| 2 | Successfully complete **Test #2** | Results page has been filtered to show only “**NewAce Pooter**” data |
| 3 | Click the last or bottom “**NewAce Pooter**” hyperlink | “**Edit computer**” page heading is displayed with “**Computer name**”, “**Introduced date**”, “**Discontinued date**” text and “**Company**” dropdown boxes prepopulated with “**NewAce Pooter**”, “**2015-01-01**”, “**2016-01-01**” and “**OQO**” respectively.  “**Save this computer**”, “**Cancel**”, and “**Delete this computer**” buttons are also displayed |
| 4 | Make a note of the date and time of the test in the following format: YYMMDDHHMM (e.g. 8th March 2017 @ 7:50 pm = 1703081950).  Append the above “datetime” to the existing “**NewAce Pooter**” so that you have something like “**NewAce Pooter** 1703081950” | Updated text is displayed in the “**Computer name**” text box |
| 5 | Increment the 2 date fields by one day | “**Introduced date**” and “**Discontinued date**” now read “**2015-01-02**” and “**2016-01-02**” |
| 6 | Select “**Thinking Machines**” from the “**Company**” dropdown box | “**Thinking Machines**” is displayed |
| 7 | Click the “**Save this computer**” button | Landing page described in step 1 is displayed with an additional green bar above the button containing the phrase “**Done! Computer NewAce Pooter** 1703081950 **has been updated**” where non-bold text is the date time of the update noted in step 4 |
| 8 | Enter the new name of the computer (including the date time) into the “**Filter by computer name…**” text box and click the “**Filter by name**” button | Page heading is “**One computer found**” and the results table displays “**Computer name**” hyperlink and dates and company name details |
| 9 | Check that the details match the fields updated in steps 4, 5 and 6 | “**Computer name**”, “**Introduced**”, “**Discontinued**” and “**Company**” columns contain:  “**NewAce Pooter** 1703081950”, “**02 Jan 2015**”, “**02 Jan 2016**” and “**Thinking Machines**”where non-bold text is the date time of the update noted in step 4 |

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| **Test #4 Delete Computer Entry** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Ensure **Tests #1 and Test #3** has been completed prior to attempting this test | “NewAce Pooter” computer exists in the computer database and the data entry has been updated with a date/time suffix to make it unique |
| 2 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 3 | Enter the noted name of the computer (from **Test #3 Step 4**) into the “**Filter by computer name…**” text box and click the “**Filter by name**” button | Page heading is “**One computer found**” and the results table displays “**Computer name**” hyperlink and dates and company name details |
| 4 | Click the “**Computer name**” result hyperlink | Page heading “**Edit computer**” is displayed as well as the “**Delete this computer**” button |
| 5 | Click the “**Delete this computer**” button | Landing page described in step 1 is displayed with an additional green bar above the button containing the phrase “**Done! Computer has been deleted**” |
| 6 | Enter the noted name of the computer (from **Test #3 Step 4**) into the “**Filter by computer name…**” text box and click the “**Filter by name**” button | Page heading is “**No computers found**” |

# Observations

During exploratory testing of the site a number of observations were made that may affect the user experience or performance of the site:

1. It would be good to have the ability to select the number of rows displayed per page
2. Individual page links as well as first and last page links would enable the user to advance through the pages faster.
3. A back button other than the browser back button would be useful
4. Multiple entries of identical data can be made. Being made aware of this would be helpful
5. The error checking on date fields in inadequate.
   1. Year entries do not have to conform to the ‘YYYY’ format requested
   2. Introduced date can be after Discontinued date
6. There are no error messages to explain what is wrong with the entry
7. Order rows by column name does not work correctly
8. Computer name has no size restriction.

The following test cases represent some of the ‘edge’ requirements for standard UAT of the “Play sample application – Computer database” application. Some of these are based on observations listed above. In addition, the following ‘edge’ tests relate to text box entries and it is recommended that tests are duplicated for both **create** and **edit** pages of the application.

In the absence of a ‘shared step’ system, some actions contain instructions to complete steps from previous tests to save repetition of lengthy test steps.

Input data are highlighted by “red in quotes” text – expected text is “**bold in quotes”**

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| **Test #5 Attempt Create Without Data** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Click the “**Create this computer**” button | “**Computer name**” and “**Required**” text turn red and are contained in a red bar |

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| **Test #6 Overload Required Field on Create** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Open Wikipedia via the following link “<https://en.wikipedia.org/wiki/Portal:Featured_content>” | Wikipedia “**Portal:Featured content**” page loads in browser |
| 4 | Click anywhere on the Wikipedia page and then click **CTRL+a** to select all on the page | All page content is highlighted |
| 5 | Click **CTRL+c** to copy all selected text |  |
| 6 | Return to the **Computers database** website | “**Add a computer**” page is displayed |
| 7 | Click in the “**Computer name**” text box | “**Computer name**” text box is highlighted with blue edge |
| 8 | Click **CTRL+v**  to paste all of the copied text from Wikipedia into the text box | Text is displayed in the “**Computer name**” text box |
| 9 | Click the “**Create this computer**” button | Currently an “**Application error**” is displayed with the following text “**An error occurred in the application and your page could not be served. If you are the application owner, check your logs for details**” |

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| **Test #7 Input Incorrect Date 01** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Enter any short text into “**Computer name**” | Text is displayed in “**Computer name**” text box |
| 4 | Enter “**2015-22-01**” into the “**Introduced date”** text box | “**2015-22-01**” is displayed in the “**Introduced date”** text box |
| 5 | Click the “**Create this computer**” button | “**Introduced date**” and “**Date (yyyy-MM-dd**” text turn red and are contained in a red bar |
| 6 | Repeat steps 4 and 5 for “**Discontinued date**” | “**Discontinued date**” and “**Date (yyyy-MM-dd**” text turn red and are contained in a red bar |

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| **Test #8 Input Incorrect Date 02** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Enter any short text into “**Computer name**” | Text is displayed in “**Computer name**” text box |
| 4 | Enter “**2015-02-31**” into the “**Introduced date”** text box | “**2015-02-31**” is displayed in the “**Introduced date”** text box |
| 5 | Click the “**Create this computer**” button | “**Introduced date**” and “**Date (yyyy-MM-dd**” text turn red and are contained in a red bar |
| 6 | Repeat steps 4 and 5 for “**Discontinued date**” | “**Discontinued date**” and “**Date (yyyy-MM-dd**” text turn red and are contained in a red bar |

Currently, boundaries for “**-MM-dd**” in date fields for both **create** and **edit** functions are verified and therefore variations of **Test #7** and **#8** can be attempted where values and characters outside of those specified can be tested.

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| **Test #9 Input Incorrect Date 03** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Enter “**1111**” into “**Computer name**” | Text is displayed in “**Computer name**” text box |
| 4 | Enter “**1-1-1**” into the “**Introduced date”** text box | “**1-1-1**” is displayed in the “**Introduced date”** text box |
| 5 | Click the “**Create this computer**” button | Landing page is displayed with the message “**Done! Computer 1111 has been created**” and the new “**1111**” computer is displayed at the top of the list. “**Introduced**” date should also read “**01 Jan 0001**” but currently reads “**03 Jan 0001**” |
| 6 | Click “**1111**” hyperlink to edit the entry | “**Edit computer**” page opens with “**Computer name**” and “**Introduced date**” prepopulated with data entered in steps 3 and 4 with date field padded out with zeros to meet formatting requirements |
| 7 | Enter “**1-1-1**” into the “**Discontinued date”** text box | “**1-1-1**” is displayed in the “**Discontinued date”** text box |
| 8 | Click the “**Save this computer**” button | Landing page is displayed with the message “**Done! Computer 1111 has been updated**” and the new “**1111**” computer is displayed at the top of the list. “**Discontinued**” date should also read “**01 Jan 0001**” but currently reads “**03 Jan 0001**” |

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| **Test #10 Check Introduced and Discontinued Date Verification** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Complete [Test #1, Step 2](#Test1Step2) | As **Test #1, Step 2** |
| 3 | Enter “**2222**” into “**Computer name**” | Text is displayed in “**Computer name**” text box |
| 4 | Enter “**22222222-01-01**” into the “**Introduced date”** text box | “**22222222-01-01**” is displayed in the “**Introduced date”** text box |
| 5 | Enter “**1-1-1**” into the “**Discontinued date”** text box | “**1-1-1**” is displayed in the “**Discontinued date”** text box |
| 6 | Click the “**Create this computer**” button | Landing page is displayed with the message “**Done! Computer 2222 has been created**” and the new “**2222**” computer displayed near the top of the list. “**Discontinued**” date should also read “**01 Jan 0001**” (but currently reads “**03 Jan 0001**”) and “**Introduced**” date reads “**01 Jan 22222222**” |
| This test demonstrates that “**Introduced**” date can be after the “**Discontinued**” date which should not be logically possible. It also demonstrates that no verification is made on the “**YYYY**” part of the date field and therefore dates which are many millennia in the past and future can be added | | |

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| **Test #11 Check Simple SQL Injection** | | |
| **Step** | **Action** | **Outcome** |
| 1 | Complete [Test #1, Step 1](#Test1Step1) | As **Test #1, Step 1** |
| 2 | Make a note of the number of “ **computers found**” and the details of the first item in the top row of the table |  |
| 3 | Enter “ **’ OR ‘1’ = ‘1’ --**” into “**Filter by computer name…**” text box | Text is displayed in text box |
| 4 | Click the “**Filter by name**” button | “**No computers found**” page heading is displayed and “**Nothing do display**” message is displayed |
| 5 | Hover the curser over the “**Filter by computer name…**” text box and click the “**X**” that appears | “ **’ OR ‘1’ = ‘1’ --**” is removed and “**Filter by computer name…**” is displayed in the text box |
| 6 | Click the “**Filter by name**” button | Landing page is displayed. Compare the values noted in step 2 with the current values on the screen. They should be the same. |
| Additional checks should be made in the logs on hosting servers and the backend DB to observe if the attack has been noted or any disruption has taken place. | | |