

18_Data Quality

System Setup

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|-----------------------|--|-----------------|---|
| REDCap Version | LTS 10.0.5 | Application URL | https://redcaprvc.app.vumc.org/ |
| Browser Version | Google Version 89.0.4389.90 (Official Build) (64-bit) | OS Version | Windows 10 |
| Actual Execution Time | 1hr 42 mins(11:48-13:30) | | |
| Instructions | Reference User Guide for Community User | | |

Test Summary

Feature Category Description: Data Integrity - *Ensures accuracy and consistency of the data collected in the REDCap database.*

Test Purpose Details: *This test script validates the Data Quality module in REDCap to ensure errors in data that's been entered has been correctly and accurately captured, either by the pre-built tests or through the Customized ones.*

Functional Requirements:

- Data Quality
 - o 18.14, 18.15 The system shall provide default rules after installation of the application.
 - o 18.32, 18.41 The system shall support data quality rule creation.
 - o 18.21, 18.24, 18.28, 18.33, 18.38, 18.40, 18.42, 18.44, 18.50 The system shall support executing a rule.
 - o 18.15, 18.26, 18.36, 18.55 The system shall support executed all rules at the same time.
 - o 18.16, 18.18, 18.19, 18.33, 18.50, 18.55 The system shall support viewing discrepancies found in rule execution.
 - o 18.17, 18.59 The system shall support excluding discrepancies found in rule execution.
 - o 18.35 The system shall support editing of user defined rules.
 - o 18.46 The system shall support the deletion of a user defined rule.
 - o 18.51 The system shall support clearing discrepancies from rules executed.
 - o 18.56, 18.58 The system shall support the ability to run custom data quality rules real time.
 - o 18.61 The system shall support validating the unique event name used in custom rules for longitudinal projects.
 - o 18.63-18.67 The system shall support removal of exclusion of discrepancies.
 - o 18.71 The system shall support limiting rule viewing to a Data Access Group.
 - o 18.71 The system shall support limiting a rule viewing that references a field for which the user does not have access rights.

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Test Requirements

Test Users

| ID | Username | Password | Minimum User's Rights | DAGs and Other Settings |
|----|------------|------------|--|----------------------------------|
| 1. | admin1005 | Pswd_1103 | Administrator | Pre-existing administrator user |
| 2. | user1005_1 | 1005_1Pswd | Confirm that user has access to Create Records and to the Data Quality (Create / Edit and Execute Rules) | Pre-existing user on the project |
| 3. | user1005_3 | 1005_3Pswd | Confirm that user has access to Create Records but does not have access to the DQ Module. | Pre-existing user on the project |
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Project Setup

| ID | Description | Instructions |
|----|-------------------------------|--|
| 1. | Project: 18_DataQuality_v1005 | This project exists and was created from a copy of pre req 7 |
| 2. | Project Setup: | Go to the Data Types form and add in a text field called "Integer Field (values between 0 and 10)" that is a Integer with Min=0 and Max=10 and variable name integer_field Delete all existing data from the project. |
| 3. | Data Import File Name | N/A |
| 4. | Other Files> | N/A |

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Test Steps

| Step # | Action Step | Expected Result | Pass / Fail | Comments |
|-------------|---|--|--|--|
| <i>Help</i> | <i>You must perform the actions listed in this column.</i> | <i>After performing the actions in the 'Action Step' column, you should see the following.</i> | <i>Check 'Pass', if the actual results match the 'Expected Result'; otherwise, check 'Fail'.</i> | <i>Include unexpected results, suggestions. etc.</i> |
| 1. | Navigate to the test website's login page. Log in as admin1005. Go to the 18_DataQuality_v1005 project. | The user is logged in. Successful login. REDCap Project Home page is displayed. Confirm Data Quality is on the left navigation bar. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 2. | Confirm Data Quality is accessible by clicking on the link. | Taken to the Data Quality module. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 3. | Log out as admin1005. | Taken back to login screen. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 4. | Log in as user1005_1 Go to the 18_DataQuality_v1005 project. Confirm that 'Data Quality' is available on the left navigation bar. | Taken to the Project Home Page. Data Quality is available, below the link for "User Rights". | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 5. | Click Add / Edit Records. Click 'Add New record for the arm selected above'. | Taken to the Record Home Page. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 6. | Click on Text Validation. | Taken to the Form with the "Record ID", "Name" and "Email" fields. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 7. | In the Name field, enter user1005_1. In the Email, enter user1005_1@redcap.com. | Information is entered and displayed appropriately. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| 8. | Set the Form status to Complete and then click Save and Exit form. | The Text Validation bubble for Event 1 is now green. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 9. | Go into the Data Types form. Fill in the following: Name: User10051 (no underscore) Integer Field: 8 Text2: This is a test. Scroll down to Required. Fill in User10051 again. Set the form to Complete and then Click Save and Exit Form. | The Event 1 Arm1 form for the correct Record ID is shown. The Data Types bubble for Event 1 is now green. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 10. | Click on Add / Edit Records. Click on Add new Record for the Arm selected above. | Taken to the home page for Record 2. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 11. | Go into the Data Types form. | The Event 1 Arm1 form for the correct Record ID is shown. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 12. | Enter 213 into the Integer field. Click Close. | A message comes up indicating the value is out of range, but is permitted. Field should be red but able to proceed to the next field. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 13. | Change the status of the form to Complete and click Save and Exit form. | A message comes up indicating that a mandatory field was missed, and to provide a value for "Required". Click 'Ignore and leave record'. Data Types bubble for Event 1 should now be green. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 14. | Click on the Data Quality link on the left side. | There should be a list of 8 Data Quality checks (Rules A – I). Each should have an Execute button enabled. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 15. | Click on "ALL" that is to the right of Execute Rules. | Results should be returned. Blank Values: 29 Blank Values (required): 1 Field Validation Errors (out of range): 1 | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 16. | Click View for Rule A. | Window opens up with a series of rows, indicating Record, Discrepant Fields, Status and a link to exclude. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| 17. | Click on Exclude for the first three discrepancies. Click Close. | The first three rows turn red and indicate "Missing value" and the "Exclude" becomes "remove exclusion". Window closes and taken back to the Data Quality Rules. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 18. | Click View for Rule B. | Window opens up with Record 2 that did not have the "Required" field populated. Close the window. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 19. | Click View for Rule D. | Window opens up with Record 2 that had 213 entered as the Integer field. Close the window. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 20. | Click Clear at the top right. | All the Rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 21. | Click on "All Except A and B". | Rules C –I are now executed and give the same results as above. Rules A and B still show "Execute" and the buttons are enabled. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 22. | Execute Rules A and B separately by clicking the corresponding Execute buttons. | The results for A are now 3 less than what they were previously (See Step 15). | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 23. | Click on Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 24. | Click on the individual Execute buttons for each rule, one after the other. | All rules have been executed and provide the same results as the previous two run-throughs. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 25. | Click on Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 26. | Under the "Apply To" drop box select the Record 2 (the one with the 213 in the integer field). Click Execute All. | Results should now be returned but should be different from above for some of the results. --The count of blank values will display | | |

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| | | --The count of blank values required will display --The count of Field validation errors (out of range) will display | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 27. | Click Clear. | All rules are reset and the Apply To now shows "All Records". | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 28. | Select the same record again from the Apply To dropdown. Click All Except A & B. | Results should now be returned for Rules C – I, with same values for C-I when the check was run above. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 29. | Click Clear. | All rules are reset and the Apply To now shows "All records". | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 30. | Select the same record again from the Apply To drop down. Click Execute for each rule individually. | Results should be the same as when All Rules were executed for the same record. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 31. | Click Clear. | All rules are reset and the Apply To now shows "All Records". | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 32. | Add a new rule. Under Rule Name, enter Test. Under Rule Logic, enter [event_1_arm_1][integer_field]>200 and then click Add. | Rule #1 now appears, with an enabled Execute button. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 33. | Click on the Execute Button for Rule #1. Click on the "View" link. Click Close. | 1 Record is returned. Last record entered is now shown with value of 213. Window closes. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 34. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 35. | Click on the pencil that is to the right of the Rule Logic for the TEST rule (hover over the name if not automatically apparent). Change the [integer_field]>200 to [event_1_arm_1][integer_field]>201 and save. | The Rule is now editable. The field turns green with a checkmark and the rule now shows [integer_field]>201 | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| 36. | Click All. | All rules, including Rule #1, are now executed. Results are the same as previously seen. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 37. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 38. | Click All except A & B. | Rules C – I and Rule 1 have been executed with the same results. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 39. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 40. | Click All Custom. | Rule 1 alone is executed and gives the same result. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 41. | Add in a new rule: Name: Test2 Rule Logic: [event_1_arm_1][integer_field]>300 Add | The rule is now listed. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 42. | Execute Test2 by itself. | 0 Results are returned. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 43. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 44. | Click All Custom. | Both Test and Test2 are executed, giving 1 and 0 as results. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 45. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 46. | Click the "X" beside Test2 Click OK. | A message comes up saying "Are you sure you wish to delete Rule #2?". Test2 is now deleted, and only Test is available. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| 47. | Click All Custom. | Test is the only test that runs and returns a value of 1. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 48. | Click Clear. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 49. | Go back to Add / Edit Records and create a new Record; go into the Text Validation form. Leave the form blank and Incomplete. Click Save and Exit Form. | The Text Validation form is showing a Red circle, the others are still grey. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 50. | Go back to the Data Quality Module. Execute Rule H by itself. Click on View. | 1 error should be returned. Window should open indicating the record number having a missing calculation. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 51. | In the same window click on "Fix Calcs Now". Click Close. Click Clear. | Window should open indicating that "1 calculated values were successfully fixed". All the rules have now been reset. | <input checked="" type="checkbox"/> <input type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 52. | Execute Rule H again. | 0 errors should be returned. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 53. | Log out of the Project as user1005_1 and login as admin1005. Go to User Rights and select user1005_1. Click Edit User Privileges. Select "NO ACCESS" for the Data Types field. Click Save Changes. | A message with a green check mark indicates the user's changes have been saved. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 54. | Log out as admin1005 and log in as user1005_1. Navigate back to Add/Edit Records. Click Add New Record. | Confirm that the Data Types form does not show up. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 55. | Click on the Data Quality link. Run ALL rules. Click on VIEW for Rule #1 (Test). | All rules execute with the exception of Rule #1 (Test) that flags an error in the Total Discrepancies column. REDCap message indicates that "ERROR: Could not process Rule #1: Test. You do | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| | Click CLOSE. | <i>not have access rights to some of the fields used in the logic because you do not have user privileges to view the data entry forms on which those fields exist. Thus, you will not be able to view the results for this rule."</i> | | |
| 56. | Add a new rule called "Name Test" and enter the logic [ptname_v2_v2]=" Check off Real-time Execution and then click ADD. | Rule is saved and the Real-time execution column has a green checkmark. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 57. | Go to Add/Edit Records and click Add New Record (for Arm 1). Click the Text Validation form. | Taken to the Event 1 Arm 1 form. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 58. | Enter 'user@gmail.com' in the email field, leaving the name field blank. Complete the form and click "Save and Exit Form" Click close. | Pop-up window should appear indicating a Data Quality rule has been violated, and that the ptname_v2_v2 field is blank. Window closes. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 59. | Click Save and Exit form. Click Exclude. Close window. Save and Exit form. | Data Quality violation window appears. Row turns red and "Remove Exclusion" now appears. Taken back to the record home page. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 60. | Go to the Data Quality module. Run Name Test. Click View. | The Record ID from above should not appear. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 61. | Edit the logic for the Name Test by adding [event_1_arm_1] (as the variable prefix). Click save. Click Clear. | The field turns green with the checkmark to the right. All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 62. | Run all rules. | Rule runs and generates a list. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 63. | Click on "View" for Rule D. Click Exclude. Close the window. | A record is shown with integer_field = [cannot display data] (Reason: Lack of user privileges) | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |

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| | Clear all Rules. | Row and text turn red, and the "Exclude" link turns into "Remove Exclusion". All the rules have now been reset | | |
| 64. | Execute all Rules. | Rule D now shows 0, other results are unchanged. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 65. | Click on View for Rule D. Click on the "View" link. Click on "Remove Exclusion" Click "Close". | Window opens, message indicating 1 Exclusion is not displayed. A record is now shown, with a message on the left side the record is Excluded. The link on the right reads "Remove Exclusion". Row turns green, "Excluded" no longer shows on the left, link on the right now shows "Exclude". Window closes, taken back to Data Quality rules. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 66. | Clear all results. | All the rules have now been reset. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 67. | Run all rules. | Rule D now shows the expected 1 result. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 68. | Log out as user1005_1 and log in as admin1005. Create a DAG "DAG1". Add user1005_1 to the DAG. Log out as admin1005, and log back in as user1005_1. | User successfully added to the new DAG. | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 69. | Go to Add/Edit Records and click Add New Record. Go the Text Validation form. | User is taken to the New Record page. Record ID now indicates a prefix and record number (###-1 for example). | <input checked="" type="checkbox"/> Pass Fail <input type="checkbox"/> | |
| 70. | Enter the following: Name: <blank> Email: joe@gmail.com | | <input checked="" type="checkbox"/> Pass | |

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| | <p>Complete and save the form.</p> <p>Click Close on the Data Quality Rule window.</p> <p>Enter the name "JOE" and complete and save the form.</p> | <p>Confirm the Real Time Data Quality rule appears.</p> <p>Form is saved without the Data Quality Rule coming up again.</p> | <p>Fail <input type="checkbox"/></p> | |
| 71. | Go to the Data Quality Module and click ALL | Discrepancies are returned, Rule #1 (TEST) returns an error. Confirm that all discrepancies are for Record assigned to the DAG. | <p><input checked="" type="checkbox"/> Pass</p> <p>Fail <input type="checkbox"/></p> | |
| 72. | <p>Log out as user1005_1 and log in as admin1005. Execute all rules.</p> <p>Click View for each discrepancy with DAG1 and scroll to the very bottom</p> | <p>Confirm that:</p> <p>a) Total Discrepancies is now higher than previously run</p> <p>b) There is a new column to the right of the Total Discrepancies called DAG1 and that total matches what was seen when logged in as User1005_1</p> <p>c) the DAG Record is there</p> | <p><input checked="" type="checkbox"/> Pass</p> <p>Fail <input type="checkbox"/></p> | |
| 73. | Log in as user1005_3 as indicated above. | Go to the My Projects page and go to the 18_Data_Quality_1005 project. | <p><input checked="" type="checkbox"/> Pass</p> <p>Fail <input type="checkbox"/></p> | |
| 74. | Confirm the user does not have access to the Data Quality Module. | User does not see the link on the left navigation bar. | <p><input checked="" type="checkbox"/> Pass</p> <p>Fail <input type="checkbox"/></p> | |
| 75. | Log out of the project. | | <p><input checked="" type="checkbox"/> Pass</p> <p>Fail <input type="checkbox"/></p> | |
| | THIS ENDS THE TESTING FOR THIS SCRIPT | | | |



Validation Test Script

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Conclusion

Did the Actual Results for each test step match the Expected Results listed?

Yes

No

Comments/Additional Information: (Indicate the step number of the step you wish to comment on.)

Completed By

Lyndsey Castle

Date:

19Mar2021