

REDCap Version 8 Functionality Changes and Improvements

And timeline as to when implemented in REDCap Standard Release

Version 8.1.0 - (released 12/11/2017) NEW FEATURES, IMPROVEMENTS & CHANGES:

- **New action tag: @MAXCHOICE**
 - Causes one or more specified choices to be disabled (i.e., displayed but not usable) for a checkbox, radio button, or drop-down field after a specified amount of records have been saved with that choice. For example, @MAXCHOICE(0=50,1=75,2=50) would imply that once 50 records have selected the '0' coded choice, that choice will become disabled for any record viewed afterward that does not have that choice saved, such as when the form/survey is opened for a new record, and thus 75 records for choice '1', 50 for choice '2', etc.
 - The format must be the action tag name followed by the choice designations inside parentheses, in which each will follow the format of ChoiceCode=MaxCount with each choice separated by commas. Note: For longitudinal projects, when counting the number of choices saved for records, it will treat all events as separate, meaning that in the example above, choice '0' can have a max number of 50 selections in EACH event in the project.
 - Note: This action tag not only gets employed when a form or survey is loaded but also when a form or survey is submitted in order to prevent users/respondents from going over the max amount specified. If a user submits a form/survey, at which point the maximum has been reached due to simultaneous users entering data just before them, it will not save that field's value (but will save all the other fields on the form/survey), and it will reload the form/survey and tell the user to make another selection for the field.
- **New action tag: @MAXCHECKED** - Allows a checkbox field to have a maximum number of checkboxes that can be checked. If other checkbox options are clicked after the maximum has been reached, those choices will not be able to be checked. The format must be @MAXCHECKED=#, in which # is a positive integer. For example, @MAXCHECKED=3 will allow a maximum of 3 checkbox choices to be checked. NOTE: This action tag can only be utilized by Checkbox fields, and it does not get enforced during data imports.
- **New feature: New option to allow respondents to return to a partially completed or fully completed survey response without needing a return code.** When enabling "Save & Return Later" for a survey on the Survey Settings page, it will still default to requiring a return code in order for a respondent to continue the survey where they left off. But a user may opt to allow respondents to return to and continue their survey with only the survey link (i.e., without needing a return code in addition to the link) to view and modify their previous responses on that survey. Note: A warning exists in bold text in the informational popup for this feature that states the following: "If you are collecting identifying information (e.g., PII, PHI), for privacy reasons it is HIGHLY recommended that you leave the option unchecked so as to enforce a return code."
- **Change:** For PDF exports of data entry forms with data, if a field that is normally removed from exports due to users having export rights of "De-Identified" or "Remove all tagged Identifier fields" is being used in the Custom Record Label or Secondary Unique Field value in the PDF file, that field value will no longer be piped in the PDF file but will instead be redacted (i.e., replaced with the text "[*DATA REMOVED*]"). This change is made to increase security/privacy regarding de-identification of data in data exports.

- Change: Changed the word "approve" in the production changes email sent to REDCap administrators so that it is now replaced with "review & approve" for clarity.

Version 8.0.3 - (released 12/1/2017) IMPROVEMENTS & OTHER CHANGES:

- **Improvement:** The datediff() function can now utilize the "now" variable as one of the two date/time parameters (in a similar way as the "today" variable). This is not only true for calc fields, but also for ASI logic, DQ rules, report filters, etc. You may use a time, date, datetime, or datetime_seconds field with the "now" parameter in datediff. Note: If using a date field with "now", it will assume midnight (00:00) for the time component for the date field.
- **Improvement:** Fields whose values have numbers with a comma as the decimal mark (e.g., "3,14" - European number format) now work in calculated fields. In previous versions, using a number with a comma would result in a blank returned value for the calc field. Note: The calculated value that is returned from a calculation will still have a dot/period as the decimal mark (if it contains a decimal), so in this way, it will convert into all calc field input values into dot/period format when performing the calculation, thus still returning numbers in dot/period format as all previous versions have.
- Change: When piping field values into an @DEFAULT action tag when the piped value is blank/non-existent, it now no longer replaces the [variable] with "_____" but instead replaces it with "" (i.e., nothing), which is viewed as more preferable since the value is being input as a field value. This is only true for piping specifically within the @DEFAULT tag and not for piping in general. (Ticket #23454)
- Change/improvement: External Modules now supports modules with the module version in X.Y.Z format. In previous versions, only X.Y versioning was allowed.
- Change: Account Managers no longer have the ability to delete administrator accounts (via the Browse Users page). Also, the following text has been added for clarification in the instructions on the "Designating REDCap Administrators and Account Managers" page: "Account managers have powers such as deleting users, which could thus impact projects, so this role is not intended to be delegated to those operating as project managers or ordinary users". (Ticket #26191, #31020)
- Change: The field validation for North American phone numbers is now more permissible and allows a greater variety of numbers to be used, such as 8XX and 900 numbers.
- Change: When clicking the "No Access" option for an instrument in Data Entry Rights when adding/editing a user's privileges on the User Rights page, it now automatically deselects the "Edit survey responses" checkbox if the instrument has been enabled as a survey.

Version 8.0.2 - (released 11/17/2017) IMPROVEMENTS & CHANGES:

- Change: The REDCap::evaluateLogic() method was changed slightly with regard to what it returns. This has been changed so that if the logic parameter string is not syntactically correct or if any of the parameters are invalid (e.g., record or event does not exist), it will now return NULL. In previous versions, it would return FALSE in this case, which made it difficult to troubleshoot issues with incorrect parameters being used.
- Change: For added flexibility, the Survey Queue setup dialog in the Online Designer will now display the project's first data collection instrument (assuming the instrument has been enabled as a survey), whereas previous versions did not allow the first instrument to be enabled in the Survey Queue.
- Change: When viewing a repeating instrument's data entry form for a record in a project, the "current instance" drop-down displayed near the top of the page no longer displays the instance number in a fraction format where it shows the total instances following by a slash (e.g., 2/5). It now only displays the instance number (and the custom label, if defined). This was changed because it led to confusion in cases where some instances were deleted, thus leaving gaps in the

middle but still showing the max instance as the total instances, which is not the same thing and is confusing.

Version 8.0.1 - (released 11/9/2017) IMPROVEMENTS & CHANGES:

- **Improvement:** Added new plugin/hook/module method named `REDCap::evaluateLogic()`, which returns whether a string of logic (e.g., branching logic) evaluates as true or false based on the data of a given record in a given project.
- **Improvement:** New "clickjacking prevention" option at the bottom of the "Security & Authentication" page in the Control Center allows administrators to enable this option if they want to prevent REDCap pages from being embedded in external websites (e.g., embedding a survey page inside an iframe on another website). Preventing clickjacking is often regarded as an improvement to security. Note: If you wish to allow REDCap users to embed REDCap pages in external websites, do not enable this option but leave it as "Allow...".

Version 8.0.0 - (released 11/3/2017) NEW FEATURES, IMPROVEMENTS & CHANGES::

- **New feature: External Modules**
 - External Modules are individual packages of software that can be downloaded and installed by a REDCap administrator. Modules can extend REDCap's current functionality, and can also provide customizations and enhancements for REDCap's existing behavior and appearance at the system level or project level. Modules can utilize REDCap hooks and also can have REDCap plugin pages as part of them.
 - A new page in the Control Center allows administrators to navigate to the REDCap Repo (Repository of External Modules) and download any module listed in the REDCap Repo. Only administrators may enable modules, either at the system level or project level, although the permissions regarding who can configure a module (after it has been enabled for a project) is something that can be set at the module level by an administrator on the Control Center's Module Manager page. Each module has its own set of configuration options, which are all defined by the creator of the module.
 - If you or your users experience any issues with a given module, you are encouraged to notify the author of the module rather than posting a Bug Report on the REDCap Community site.
- **Improvement:** On the Public Survey Link page in a project, a new button "Open Public Survey + Logout" has been added to increase security in case users want to open the public survey while ensuring that the participant cannot access their REDCap account in the other browser tab. (Ticket #29686)

Version 7.6.10 - (released 10/25/2017) IMPROVEMENTS & CHANGES:

- **Improvement:** Emails sent from REDCap now follow a more standardized format by including both HTML text and plain text in each email, thus making emails a bit more likely to be received by their recipients without them getting flagged as spam.
- **Change:** For PDF exports of data entry forms with data, if a field that is normally removed from exports due to users having export rights of "De-Identified" or "Remove all tagged Identifier fields" is being piped into a label, field note, etc. in the PDF file, that field value will no longer be piped in the PDF file but will instead be redacted (i.e., replaced with the text "[*DATA REMOVED*]"). This change is made to increase security/privacy regarding de-identification of data in data exports.

Version 7.6.9 - (released 10/18/2017) IMPROVEMENTS & CHANGES:

- **Improvement:** Updated the Help & FAQ page with new content.

Version 7.6.8 - (released 10/10/2017) IMPROVEMENTS & CHANGES:

- **Improvement:** When a calc field's value is changed, it will now display a red border on the right edge of the calc field's text box to subtly indicate that the displayed value is different from the

stored value in the database. And if the calculated value gets changed so that its value matches the stored value again, the red border will disappear. This will help users make note of when calculations have been triggered and if there is any disparity between the displayed value and the stored value.

Version 7.6.7 - (released 10/2/2017) IMPROVEMENTS & CHANGES:

- Change: Added a new flag on the General Configuration page in the Control Center to note if the REDCap server is a development/test/staging server (i.e., a non-production server). If the server is indeed flagged as a development/test/staging server, then REDCap will enable full PHP error reporting, thus outputting all PHP errors to the user interface in the event of an error. This can be used to aid developers or other technical folks when troubleshooting certain REDCap errors or PHP issues.
- **Version 7.6.5 - (released 9/22/2017) IMPROVEMENTS & OTHER CHANGES:**
- **Improvement: Attach PDF of responses in confirmation email** - When using the "Send confirmation email" option on the Survey Settings page for a survey, that section now contains an additional option to "Include PDF of completed survey as attachment", which will add the PDF of their responses sent to the participant in their confirmation email. This new option contains the following warning as a reminder to users: "WARNING: Since email is not considered a secure form of communication, the PDF attachment option is NOT recommended if the survey contains questions asking for identifying information (e.g., PHI).".

Version 7.6.4 - (released 9/13/2017) IMPROVEMENTS & OTHER CHANGES:

- **Improvement: Record auto-numbering for data imports** (Data Import Tool, API, and Mobile App). For the Data Import Tool, the user may enable the new setting "Force record auto-numbering", and in the API, the new parameter `forceAutoNumber=true` can be used, which will create new record names that are auto-generated by REDCap during the import process. In an upcoming version of the REDCap Mobile App, the mobile app will provide this API parameter automatically for records created in the app that did not previously exist in the project on the server. Note: This feature can only be utilized for projects with record auto-numbering enabled. Also, a record number must still be provided as a placeholder during the data import (to associate multiple rows with the same record), but that record name will be automatically changed to a new record ID generated by REDCap.
- **Improvement:** When adding new choices for a multiple choice field in the Online Designer, it will now display an error message if any choices have duplicate codings (e.g., two choices both coded as "4" - "4, Pink" and "4, 4"), thus letting the user know that they should remove any duplicates because duplicates will be automatically removed when saving the field.
- Change: A record's survey queue now only displays surveys that have been explicitly enabled in the survey queue for the project. In previous versions, it would display all completed surveys for that record, regardless of whether they were enabled in the queue. From here on out, if a user wants a survey to appear in the queue, then it should explicitly be enabled in the queue when set up on the Online Designer page. (Ticket #25965)
- Bug fix: When using both Repeating Instruments and Repeating Events in a project, on certain occasions the Record Home Page might mistakenly display a "stack" form status icon (representing multiple instances of data) for instruments that actually have no data. (Ticket #26094)
- Bug fix: If an SQL field has choices with values that contain commas, apostrophes, or quotes, then in some cases the drop-down might mistakenly not have the correct value pre-selected for the field when a data entry form or survey page is loaded, in which the field would appear blank with no option selected. (Ticket #26176)

- Change: When setting a new URL for a project's Data Entry Trigger, it would remove the URL from the text box if the URL failed to be verified as a valid web address. It now no longer removes the value from the text box on failure but leaves it as-is. (Ticket #26315)
- Change: When a data export takes longer than three minutes, it provides an extra notice in the progress popup (i.e., "Exporting data...") that informs the user that the export process may possibly take longer than 30 minutes and recommends that they not stop then restart the process, as it may cause it to take longer than usual. This message is to prevent users from repeatedly attempting long data exports, which in some cases could create performance issues on the REDCap server.
- Change: In the CSV Labels export data set, it now translates the choice labels Yes/No, True/False, and Checked/Unchecked in the CSV file if the project's language has been set to another language other than the default English. (Ticket #26279)
- Bug fix: If the REDCap server's PHP.INI configuration has the post_max_size variable set in units of gigabytes ("G") rather than megabytes ("M"), it might display an erroneous error on certain occasions saying that it has "exceeded the REDCap server's maximum submission size". (Ticket #26966)

Version 7.6.3 - (released 8/23/2017) IMPROVEMENTS & CHANGES:

- Change: For a repeating instrument or an instrument on a repeating event, in which the instrument is enabled as a survey, if the current instance of the repeating instrument/event has not yet been saved, then it will now disable the Survey Options drop-down list at the top of the data entry form until the form has first been saved. And if a user tries to click the drop-down before that repeating form/event has first been saved, it will tell them to click the "Save & Stay" button before they can access the Survey Options. This will prevent ghost/placeholder instances from appearing in the Participant List, which occurred in previous versions. The previous behavior was regarded as generally undesirable, although not necessarily considered a bug. (Ticket #21843)

Version 7.6.2 - (released 8/10/2017) IMPROVEMENTS & CHANGES:

- Change: When using the Data Resolution Workflow's dashboard for data queries that have been opened via a custom Data Quality rule that contains two or more fields in its rule logic, it now displays the record number in the dashboard as a clickable link that goes to the Record Home Page for the record. Whereas in previous versions, the record number was not a link but only text. (Ticket #24960)
- Change: Modified the explanation text for @NOW and @TODAY action tags for greater clarity with regard to their usage. (Ticket #24847)
- Change: Added new note at top of Online Designer (when viewing an instrument's fields) that mentions using Action Tags and includes a link to open the Action Tag documentation popup to learn more about them.

Version 7.6.1 - (released 8/4/2017) IMPROVEMENTS & CHANGES:

- Change/improvement: The "Require Reason for Change" feature, which can be enabled in the Additional Customizations popup on the Project Setup page, no longer requires a reason when adding data to an empty data entry form (i.e., having a gray status icon). In previous versions, it would prompt the user for a reason even when adding new data to a form that had never had data entered before, which was deemed as unnecessarily aggressive, thus making the feature less useful to many users. So now in the event that data has never before been entered on the current instrument for a given record, the user will not be prompted for a reason (that is, until they return to the instrument at a later time and add/edit/delete data). Note: The Regulatory & Software Validation Committee has reviewed this change, and has approved it for general use.

- Change: The text of an error message has been modified for greater clarity when an administrator goes to approve production changes but there are no changes to approve. This happens when a user has taken the project back out of draft mode after initially requesting their changes be approved. (Ticket #24774)

Version 7.6.0 - (released 7/27/2017) IMPROVEMENTS & CHANGES:

- **Improvement:** Improved accessibility on surveys when using screen readers. Additionally, tabbing now works correct when tabbing through “Enhanced Radios and Checkboxes”, and the spacebar can be used to select a choice, as is always the case with standard radios and checkboxes.
- **New action tag: @CHARLIMIT** - Sets the maximum number of characters that can be entered into a Text field or Notes field, and also displays the number of characters remaining. The format must follow the pattern @CHARLIMIT=??, in which ?? is the desired max character count (alternatively, the number value can be inside single or double quotes). NOTE: This action tag cannot be used at the same time as @WORDLIMIT for the same field. NOTE: This action tag does *not* get applied during any data imports (via API or Data Import Tool) but only operates when viewing survey pages and data entry forms.
- **New action tag: @WORDLIMIT** - Sets the maximum number of words that can be entered into a Text field or Notes field, and also displays the number of words remaining. The format must follow the pattern @WORDLIMIT=??, in which ?? is the desired max word count (alternatively, the number value can be inside single or double quotes). NOTE: This action tag cannot be used at the same time as @CHARLIMIT for the same field. NOTE: This action tag does *not* get applied during any data imports (via API or Data Import Tool) but only operates when viewing survey pages and data entry forms.
- **New action tag: @RANDOMORDER** - Randomizes the order of multiple choice field options as displayed on survey pages and data entry forms, in which their order will be different each time the page is loaded. NOTE: This action tag can only be utilized for the following field types: Checkbox, Radio, Drop-down, Yes-No, and True-False. This tag also works for enhanced radios and checkboxes on surveys.
- **New action tag: @HIDECHOICE** - Hides one or more choices of a multiple choice field. This action tag is useful if you wish to retire a particular choice after utilizing it for a while in data collection, thus allowing you to hide the choice from that point after without orphaning any of the choice's data, which would happen if you simply deleted the choice. The format must follow the pattern @HIDECHOICE='??', in which the coded values should be inside single or double quotes for the choice(s) you wish to hide. If more than one choice needs to be hidden, then provide all the coded values separated by commas. For example, to hide the choice 'Monday (1)', you would have @HIDECHOICE='1', but if you wanted to additionally hide 'Tuesday (2)', you would have @HIDECHOICE='1,2'. NOTE: If the hidden choice has already been selected for a given record, then the choice will not be hidden on the survey or form for that record/event. NOTE: Hidden choices will still appear in reports and data exports. NOTE: This action tag can only be utilized for the following field types: Checkbox, Radio, Drop-down, Yes-No, and True-False. NOTE: This action tag works only in limited fashion with a matrix of fields, in which it will simply hide the checkbox/radio but still display the column for that choice in the matrix.
- **New action tag: @NONEOFTHEABOVE** - Allows for the designation of a checkbox choice to be a 'none of the above' option, thus ensuring that no other choices are checked if that one choice is selected. This means that if that particular option is selected, it will alert the user that all other checked-off choices will be unchecked. And if the 'none of the above' option is already checked when the user checks off another choice, it will automatically uncheck the 'none of the above' option. This action tag makes it possible to have a 'none of the above' option without the risk of

users mistakenly having other choices selected at the same time. The format must follow the pattern @NONEOFTHEABOVE=??, in which ?? is the coded value of the 'none of the above' checkbox choice - e.g., @NONEOFTHEABOVE=98. Alternatively, it is possible to set multiple options as a 'none of the above' option at the same time, in which the coded values must be comma delimited inside single or double quotes - e.g., @NONEOFTHEABOVE='45,99'. This is useful for certain situations, such as if you have a 'none of the above' option and also have a 'refuse to answer' option, thus allowing either of those to be the only option that can be selected at a time. NOTE: This action tag can only be utilized by Checkbox fields.

- Improvement: **New "Save & Exit Record" button** on data entry forms - After being clicked, the user is taken back to the Record Home Page to select another record or create a new one.
- Improvement: **New "Save & Go To Next Record" button** on data entry forms - After being clicked, the user is taken to the Record Home Page for the record that follows the record just edited (according to the record order seen on the Record Status Dashboard).
- Minor security fix: The Bootstrap framework was upgraded to the latest version (3.3.7) due to a minor vulnerability in the framework.
- Improvement: The Configuration Check page in the Control Center will now **detect if any non-versioned files**(that reside in the main "redcap" directory but are not inside a version directory) are out-of-date, and if so, will provide a zip file of the files to be replaced.
- Improvement: Branching logic now begins to get executed slightly earlier when leaving a text field (e.g., via tabbing) on a data entry form or survey page. This eliminates certain workflow issues, such as when a user's cursor mistakenly skips over previously hidden fields that become suddenly visible due to branching logic being triggered by leaving the initial field. So overall, it improves the behavior of tabbing through a survey or form when branching logic is used.
- Improvement: Branching logic and calculations now get executed more efficiently when triggered by adding/modifying field values on a survey page or data entry form, in which they now get executed only for the fields for which they are a trigger. This is much better than executing branching logic and calculations for all fields on the page, which was the case in previous versions.
- Improvement: The App Data Dumps tab on a project's REDCap Mobile App page now displays the records and the uploaded file list in a more manageable fashion for any emergency data dumps that are listed on that page.
- Change: When opening the "Upload document" popup for a File Upload field, it now no longer displays the field's variable name in the popup. It now only displays the field label. Displaying the variable name was deemed unnecessary and unuseful, especially for survey participants.
- Change: On the Project Modification Module, the Commit, Reject, and Reset/Delete buttons at the bottom of the page for administrators now have a short description next to them to explain what they do (in case administrators get skittish about clicking the buttons without fully understanding them first).
- Change: Removed the use of expression(this.width > ...) in CSS inline style of embedded images (e.g., survey logo, descriptive field attachment) since it is no longer necessary in the web browsers that REDCap supports.

Version 7.5.1 - (released 7/12/2017) CHANGES:

- Change: A note was added for clarification at the bottom of the Data Quality module to denote that for Rule E the term 'outlier' refers to a value that is more than two standard deviations from the mean.
- Change: The PHP constant USERID and global variable \$userid set by REDCap will now always be lower case regardless of whether a user has logged in using a different case for their username. (Ticket #23062)

- Change/improvement: When using Twilio telephony services in a project and having respondents complete surveys via SMS messages, if a respondent has SMS auto-reply enabled for their phone number, it can cause an infinite loop of bounce-backs that will quickly deplete the REDCap user's Twilio account of funds. The SMS survey will now max out at 10 invalid responses per minute before automatically ending the survey. (Ticket #23050)

Version 7.5.0 - (released 6/29/2017)

NEW FEATURES, BUG FIXES & OTHER CHANGES:

- **New feature: PDF download for survey respondents** - On an instrument's survey settings page, a user may enable the option "Allow participants to download a PDF of their responses at end of survey?". This option will display a button for the survey participant to download a PDF file of their responses for the survey they just completed. Users may also download this same copy of the PDF since it has been added as a new PDF download option at the top of data entry forms.
- **New feature: Allow users to generate API tokens on their own** - A new optional setting on the User Settings page in the Control Center will grant all users or selected users the ability to generate API tokens on their own without a REDCap administrator having to generate them on their behalf. If set to "Yes, allow selected users", then an administrator will have to enable the setting on a given user's account via the Browse Users page to allow them to generate their own tokens. If set to "Yes, allow all users", then any user will be able to generate their own API token for a project any time they wish. Note: This system-wide setting on the User Settings page defaults to "No, an administrator must approve each token request", which is the behavior in previous versions of REDCap.
- Improvement: When copying a project that has the Dynamic Data Pull (DDP) module enabled, it will now copy the DDP field mappings in the project. Note: The DDP module will still be initially disabled in the new project, but after an administrator enables it for the user, the mappings that were copied will then appear.