XLS Forms

with DataWinners

1 What is an XLSForm?

XLSForm is a form standard created to help simplify the authoring of forms in Excel. Authoring is done in a human readable format using a familiar tool that almost everyone knows - Excel. XLSForms provide a practical standard for sharing and collaborating on authoring forms. They are simple to get started with but allow for the authoring of complex forms by someone familiar with the syntax described below.

The XLSForm is then converted to an XForm, a popular open form standard, that allows you to author a form with complex functionality like skip logic in a consistent way across a number of web and mobile data collection platforms.

2 XLSForm support in DataWinners (Beta version)

This is the first release of Upload XLSForm feature in DataWinners. For details on what is currently supported, please see the listed features below.

Sample forms can be found at the end of this document.

The DataWinners team is continuously working on improving the XLSForm upload. We'd love to hear your feedback in order to build a service to fit your needs: support@datawinners.com

DataWinners on Android Devices

For advanced Questionnaire features to work on Android Devices you need to download the latest version of the DataWinners app (Google Play).

3 Basic format

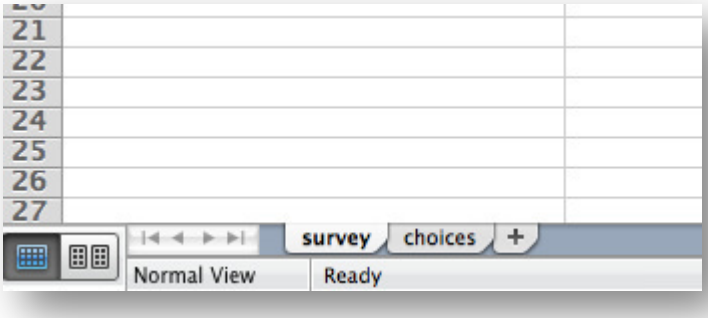
Each Excel workbook usually has two worksheets: **survey** and **choices**.

The survey worksheet

This worksheet gives your form its overall structure and contains most of the content of the form. It contains the full list of questions and information about how they should appear in the form. Each row usually represents one question; however, there are certain other features described below that you can add to the form to improve the user experience.

The choices worksheet

This worksheet is used to specify the answer choices for multiple choice questions. Each row represents an answer choice. Answer choices with the same **list name** are considered part of a related set of choices and will appear together for a question. This also allows a set of choices to be reused for multiple questions (for example, yes/no questions).



Both of these worksheets have a set of mandatory columns that must be present for the form to work. Additionally, each worksheet has a set of optional columns that allow further control over the behavior of each entry in the form, but are not essential to have. Every entry must have values for each of the mandatory columns, but the optional columns may be left blank.

- The **survey** worksheet has 3 mandatory columns: **type**, **name**, and **label**.
- The **type** column specifies the type of entry you are adding.
- The **name** column specifies the unique variable name for that entry. No two entries can have the same name.
- The **label** column contains the actual text you see in the form.

	A	B	C
1	**type**	**name**	**label**
2	today	today	
3	select_one male_female	gender	Respondent's gender?
4	integer	age	Respondent's age?
5			
6			

- The **choices** worksheet has 3 mandatory columns as well: **list name**, **name**, and **label**.
- The **list name** column lets you group together a set of related answer choices, i.e., answer choices that should appear together under a question.
- The **name** column specifies the unique variable name for that answer choice.
- The **label** column shows the answer choice exactly as you want it to appear on the form.

	A	B	C
1	**list name**	**name**	**label**
2			
3	male_female	male	Male
4	male_female	female	Female
5			
6			
7			

The columns you add to your Excel workbook, whether they are mandatory or optional, may appear in any order. Optional columns may be left out completely. Any number of rows may be left blank. All .xls file formatting is ignored, so you can use dividing lines, shading, and other font formatting to make the form more readable.

One thing to keep in mind when authoring forms in Excel is that the syntax you use must be precise. For example, if you write **Choices** or **choice** instead of **choices**, the form won't work.

4 Question types

XLSForm supports a number of simple question types. These are just some of the options you can enter in the **type** column in the first worksheet:

Question Type	Answer Input
integer	Integer (i.e., whole number) input.
decimal	Decimal input.
text	Free text response.
select_one [options]	Multiple choice question; only one answer can be selected.
select_multiple [options]	Multiple choice question; multiple answers can be selected.
note	Display a note on the screen, takes no input.
geopoint	Collect GPS coordinates.
date	Date input.
calculate	Perform a calculation; see the **Calculation** section below.
barcode	Scan a barcode, requires the barcode scanner app to be installed.

For example, to collect the name and GPS coordinates of a store, you would write the following:

Survey			
	type	name	label
	text	store_name	What is the name of this store?
	geopoint	store_gps	Collect the GPS coordinates of this store.

Multiple choice questions

XLSForm supports both **select_one** (select only one answer) and **select_multiple** (select multiple answers) questions. Writing a multiple choice question requires adding a **choices** worksheet to your Excel workbook. Here is an example of a **select_one** question:

survey			
	type	name	label
	select_one yes_no	likes_pizza	Do you like pizza?
choices			
	list name	name	label
	yes_no	yes	Yes
	yes_no	no	No

Note that the **yes_no** in the **survey** worksheet must match the **yes_no** in the **list name** column in the **choices** worksheet. This ensures that the form displays the correct list of answer choices for a particular question.

We can also add multiple choice questions that allow multiple answers to be selected, like so:

survey			
	type	name	label
	select_multiple pizza_toppings	favorite_toppings	What are your favorite pizza toppings?
choices			
	list name	name	label
	pizza_toppings	cheese	Cheese
	pizza_toppings	pepperoni	Pepperoni
	pizza_toppings	sausage	Sausage

Specify other

For multiple choice questions, surveys often include an option of marking **other** when their answer choice is not listed. Then they are usually asked to specify the other option. This is possible through XLSForm by including **or_other** or by using **Relevant.**

Beta Version: *Currently DataWinners does not support or_other. Please use Relevant.*

5 Hints

Sometimes you want to add a small hint to a question on your form, instructing the user how to answer the question, but you don't want the hint to be part of the question itself. It's easy to add hints to questions in XLSForms. Simply add a **hint** column and add your hint message. See below for an example.

survey				
	type	name	label	hint
	text	name	What is the name of this store?	Look on the signboard if the store has a signboard.
	geopoint	geopoint	Collect the GPS coordinates of this store.	

6 Constraints

One way to ensure data quality is to add constraints to the data fields in your form. For example, when asking for a person's age, you want to avoid impossible answers, like -22 or 200. Adding data constraints in your form is easy to do. You simply add a new column, called **constraint**, and type in the formula specifying the limits on the answer. In the example below, the answer for the person's age must be less than or equal to 150. Note how the . in the formula refers back to the question variable.

survey				
	type	name	label	constraint
	integer	age	How old are you?	. <= 150

In this example, the formula `. <= 150` is saying that the value entered . for the question must be less than or equal to 150. If the user puts 151 or above as the answer, s/he will not be allowed to move on to the next question or submit the form.

Constraint message

If you want to include a message with your constraint, telling the user why the answer is not accepted, you can add a constraint_message column to your form. See the example below.

survey					
	type	name	label	constraint	constraint_message
	integer	respondent_age	Respondent's age	. >=18	Respondent must be 18 or older to complete the survey.

In this example, if the user enters an age less than 18, then the error message in the **constraint_message** column appears.

7 Relevant

One great feature of XLSForm is the ability to skip a question or make an additional question appear based on the response to a previous question. Below is an example of how to do this by adding a **relevant** column for a **select_one** question, using our pizza topping example from before:

survey				
	type	name	label	relevant
	select_one yes_no	likes_pizza	Do you like pizza?	
	select_multiple pizza_toppings or_other	favorite_topping	Favorite toppings	${likes_pizza} = 'yes'

In this example, the respondent is asked, "Do you like pizza?" If the answer is **yes**, then the pizza topping question appears below. Note the `${ }` around the variable **likes_pizza**. These are required in order for the form to reference the variable from the previous question.

In the next example, below, we use relevant syntax for a **select_multiple** question, which is slightly different from the **select_one** question example above.

survey				
	type	name	label	relevant

survey				
	select_one yes_no	likes_pizza	Do you like pizza?	
	select_multiple pizza_toppings or_other	favorite_topping	Favorite toppings	${likes_pizza} = ‘yes’
	text	favorite_cheese	What is your favorite type of cheese?	selected(${favorite_topping}, ‘cheese’)
choices				
	list name	name	label	
	pizza_toppings	cheese	Cheese	
	pizza_toppings	pepperoni	Pepperoni	
	pizza_toppings	sausage	Sausage	

Since the pizza topping question allows multiple responses, we have to use the `selected(${favorite_topping}, 'cheese')` expression, because we want the cheese question to appear every time the user selects **cheese** as one of the answers (regardless of whether additional answers are selected).

Earlier we mentioned there was an alternative method for specifying other for multiple choice questions which is more appropriate for large scale surveys. This can be done using the same relevant syntax from the example above:

survey				
	type	name	label	relevant
	select_multiple pizza_toppings	favorite_toppings	What are your favorite pizza toppings?	
	text	favorite_toppings_othe	Specify other:	selected(${favorite_toppi

survey				
		r		ngs}, ‘other’)
choices				
	list name	name	label	
	pizza_toppings	cheese	Cheese	
	pizza_toppings	pepperoni	Pepperoni	
	pizza_toppings	sausage	Sausage	
	pizza_toppings	other	Other	

Note that you must include **other** as an answer choice in the **choices** worksheet.

8 Formulas

Formulas are used in the constraint, relevant and calculation columns. You’ve already seen some examples in **Constraint** and **Relevant** sections above. Formulas allow you to add additional functionality and data quality measures to your forms. Formulas are composed of functions and operators (+,*,div,etc.). The full list of these can be found here.

9 Calculation

Your survey can perform calculations using the values of preceding questions. In most cases this will require inserting a **calculate** question. For example, in the survey below, we have calculated the tip for a meal and displayed it to the user:

survey				
	type	name	label	calculation
	decimal	amount	What was the price of the meal?	
	calculate	tip		${amount} * 0.18

survey				
	note	display	18% tip for your meal is: ${tip}	

Note that the **${tip}** in the last line will be replaced with the actual tip amount when viewing and filling out the form.

10 Required

It's simple to mark certain questions as required in your form. Marking them as required means the user will not be able to move on to the next question or submit the form without entering an answer for that question.

To make questions required, add a **required** column to your survey worksheet. Under that column, mark questions as required by writing **yes**. See the example below:

survey					
	type	name	label	constraint	required
	integer	age	How old are you?	. <= 150	yes

11 Grouping questions

***Beta version**: Currently DataWinners does not export the Group Label (when exporting to Excel) or present it in Submissions log. However the Group Label will appear in the Questionnaire form.*

To create a group of questions in your form try the following:

survey			
	type	name	label
	begin group	respondent	Respondent
	text	name	Enter the respondent's name
	text	position	Enter the respondent's position within the school.
	end group		

This is a good way to group related questions for data export and analysis. Notice how **end group** doesn't require a name or label, because it is hidden in the form.

Nesting groups within groups.

Groups of questions can be nested within one another:

survey			
	type	name	label
	begin group	hospital	Hospital
	text	name	What is the name of this hospital?
	begin group	hiv_medication	HIV Medication
	select_one yes_no	have_hiv_medication	Does this hospital have HIV medication?
	end group		
	end group		

You always have to end the most recent group that was created first. For instance, the first **end group** you see closes the HIV medication group, and the second one closes the beginning hospital group. When working with groups and you keep getting error messages when trying to upload your form, double-check that for each **begin group** you have one **end group**.

Skipping

One neat feature of XLSForm is the ability to skip a group of questions by combining the group feature with relevant syntax. If you want to skip a group of questions all at once, put the relevant attribute at the beginning of a group like follows:

type	name	label	relevant
integer	age	How old are you?	
begin group	child	Child	${age} <= 5
integer	muac	Record this child's mid-upper arm circumference.	
select_one	mrdt	Is the child's rapid diagnostic test positive?	

yes_no			
end group			

In this example, the two child group questions (**muac** and **mrdt**) will only appear if the child's **age**from the first question is less than or equal to five.

12 Repeats

Beta version: *Note that currently DataWinners does not support more than one level of repeated set of questions.*

Sometimes repeating a group of questions can come in handy, like when you have to record multiple instances of an event. A good example is when you are registering a new birth, and you have to record the birth of twins or triplets. You can simply repeat a set of questions for each child born instead of having to submit multiple forms. To create a repeating group of questions use the **begin repeat** and **end repeat** construct:

survey			
	type	name	label
	begin repeat	child_repeat	
	text	name	Child's name
	decimal	birthweight	Child's birthweight
	select_one male_female	sex	Child's sex
	end repeat		
choices	list name	name	label
	male_female	male	Male
	male_female	female	Female

13 Cascading selects

A lot of forms start out by asking the location of the respondent, with each location selection specifying what the subsequent location choices will be (e.g., state » district » village). Instead of adding a **select_one** field for each location option, you can use cascade select. In order to use cascade selects, you will need to create a **choice_filter** column in your survey worksheet and add the location attribute columns in your choices worksheet.

14 Default

Beta version: *Currently DataWinners does not support Today as default for date question.*

Adding a default field means that a question will be pre-populated with an answer when the user first sees the question. This can help save time if the answer is one that is commonly selected or it can serve to show the user what type of answer choice is expected. See the two examples below.

survey				
	type	name	label	default
	today	today		
	date	survey_date	Survey date?	2010-06-15

In the next example, the weight is automatically set to 51.3 kg. You can simply change the answer by tapping in the answer field and inputting another answer.

survey				
	type	name	label	default
	decimal	weight	Respondent’s weight? (in kgs)	51.3

15 Appearance

The **appearance** column allows you to change the appearance of questions in your form. The following table lists the possible appearance attributes and how the question appears in the form.

Appearance attribute	Question type	Description

Appearance attribute	Question type	Description
multiline	text	Best if used with web clients, makes the text box multiple lines long.
minimal	select_one, select_multiple	Answer choices appear in a pull-down menu.
quick	select_one	Relevant for mobile clients only, this attribute auto-advances the form to the next question after an answer is selected.
month-year	date	Select a month and year only for the date.
year	date	Select only a year for the date.
horizontal-compact	select_one, select_multiple	For web clients only, this displays the answer choices horizontally.
horizontal	select_one, select_multiple	For web clients only, this displays the answer choices horizontally, but in columns.
field-list	groups	Entire group of questions appear on one screen (for mobile clients only).
label	select_one, select_multiple	Displays answer choice labels (and not inputs).
list-nolabel	select_one, select_multiple	Used in conjunction with **label** attribute above, displays the answer inputs without the labels (make sure to put**label** and **list-nolabel** fields inside a group with **field-list**attribute if using mobile client).
table-list	groups	An easier way to achieve the same appearance as above, apply this attribute to the entire group of questions (might slow down the form a bit).

16 Sample forms

Download, update and edit to fit your needs and upload on to your DataWinners account:

1. Simple form: health_survey.xls
   Question types, Skip Logic, Multi Choice, Hints, Required and Default

2. Advanced form: household_survey.xls
   Repeats, Skip logic, Cascading select, Grouping, Answer constraint, Calculations

For a more comprehensive description of XLSForm visit xlsform.org or opendatakit.org