Creating survey form for ODK Collect & OpenMapKit

Objectives:

- Explain the concept of XLSForm
- Operate the creation of an XLSForm for *ODK Collect*
- Operate the creation of an XLSForm for *OpenMapKit*

In field survey activities sometimes you need a survey form to collect the data. Imagine if you need a form survey with dozens of questions for each respondent, you will certainly experience difficulties when filling data and also when entering data into a laptop. In this material you will learn how to create a survey form in digital format which will later be entered into your mobile phone.

I. Understanding the concept of *XLSForm*

XLSForm is a standard form created to help speed up the process of creating survey forms in **Excel.** The creation of this survey form is done in an easy-to-read format and uses a familiar tool - **Excel / Google Sheets**. *XLSForm* produces standard standards for sharing and cooperating in making survey forms. *XLSForm* is very easy to use but can also be very complicated if you are familiar with making it.

	A	B	C	D
1	type	name	label	required
2	text	surveyor_name	Q. 1 Nama surveyor	yes
3	select_one yes_no	building	Q. 2 Apakah ini merupakan bangunan?	yes

Q. 2 Apakah ini merupakan bangunan?
- ○ Ya
- ○ Tidak

Example of XLSForm

XLSForm will then be converted to *XForm*, an open standard format, where the format allows you to create a form with very complex functions, such as multilevel questions, into a format that has been recognized by both data collection tools or in the form of sites on the internet, as well as in mobile devices.

```
<xf:input id="input1" ref="input1/value" incremental="true">
    <xf:label>a text</xf:label>
    <xf:hint>Hint for this input</xf:hint>
    <xf:help>help for input1</xf:help>
    <xf:alert>invalid</xf:alert>
</xf:input>
```

a text* [   ] ❯ Hint for this input   ⊙

readonly ☐   required ☑   relevant ☑   valid ☑

Examples of XForms format

The main requirement in making *XLSForm* is the final survey form must in this type of **Microsoft Excel** format (*.xls* or *.xls*).If you create survey forms using other applications such as **Google Sheets** or **Libre Office**, you must ensure that the final file is saved informat *.xls* or *.xlsx*.

II. Making XLSForm for ODK Collect applications

You certainly understand how to use *ODK Collect* described in the **Using the ODK Collect application**module. All questions that appear on *ODK Collect* made in format *XLSForm*. Now we will learn how to create forms survey so they can be displayed in *ODK Collect*.

1. Standard Format

In making survey forms, there are some conditions that you must follow so the survey forms that we make can be changed into format *XForm*. Some rules that must befollowed to create an appropriate survey form are:

a. Three main worksheets /*sheets* . In the *spreadsheet* we create, it must consist of 3 main worksheets, the named worksheet ***survey, choices, settings.*** The naming of this worksheet must match and must not be mistaken because it will fail when *uploading* your survey form.

| **survey** | choices | settings | ⊕ |
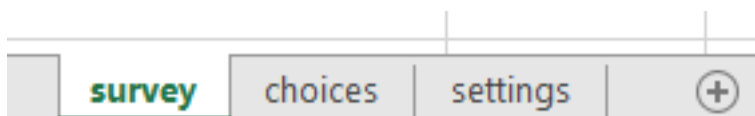
Three main worksheets in each XLSForm

The first worksheet is ***survey***. On this worksheet, all questions we make must be put on this worksheet. All questions that we make do not need to be included with the list of answers. All the list of answers we need will refer to the next worksheet.

The second worksheet is *choices*. On this worksheet we include all of our answer lists for each question that requires answer choices.
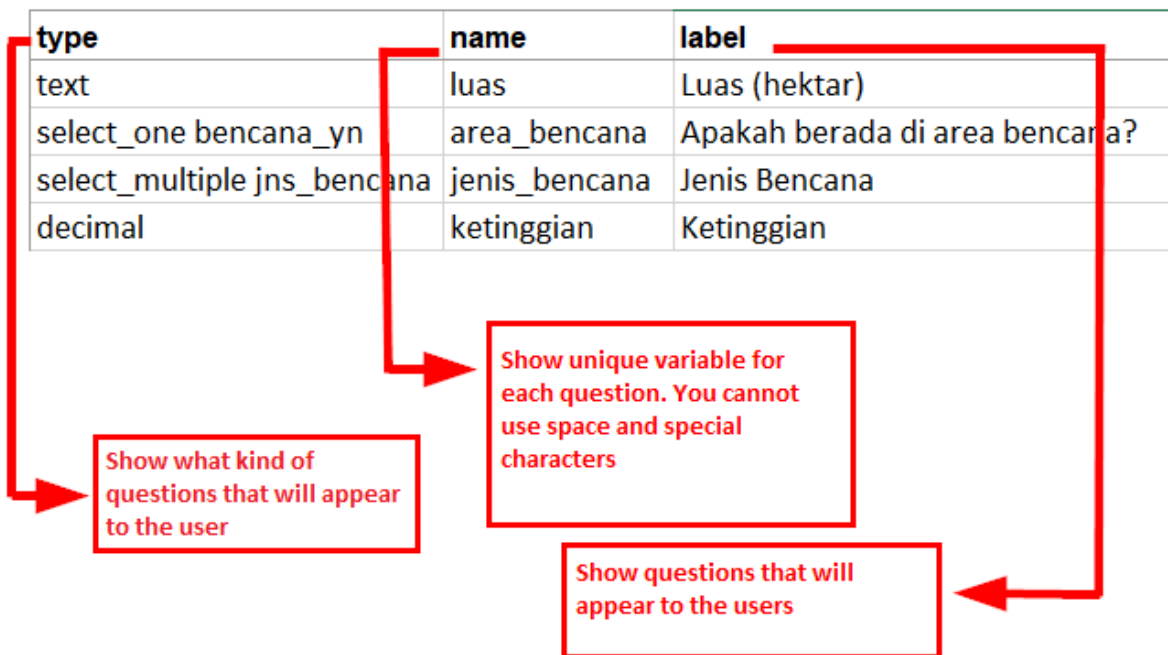
The third worksheet is *settings*. On this worksheet we can only enter the name of our form if the name of our form is different from the name of our file. For example, if our file name is *form_survei_air_bersih*.xls then in this worksheet we can name our form with the name we want, for example the *Water Condition Form*.

b. Three main column names. On each worksheet there must be two or three different column names on each worksheet. The column names for each of these worksheets are also different.

b.1. *Worksheet survey* In **survey** worksheet we have to insert three columns name: **type, name,** and **label.** Column with name **type** indicates the type of question that will appear later, whether the question is in the form of choices, free entries or capture locations.

Column with **name** indicates the unique variable for each question list. These variables cannot be the same, do not use spaces, and are only numbers, letters or underscores.

Column **label** shows the question that will appear on the user's mobile device. There is no standard format for this column, you are free to use letters, numbers, and special characters in this column.

type	name	label
text	luas	Luas (hektar)
select_one bencana_yn	area_bencana	Apakah berada di area bencana?
select_multiple jns_bencana	jenis_bencana	Jenis Bencana
decimal	ketinggian	Ketinggian

Show what kind of questions that will appear to the user

Show unique variable for each question. You cannot use space and special characters

Show questions that will appear to the users

Examples of columns for survey worksheet

b.2. *Worksheet choices* At the **choices** worksheet we have to insert three columns namely **name, list_name,** & **label.** Inc **list_name** you create a group that contains a set of answer choices. For example like a set of answer choices that will appear under multiple choice questions. For naming variable in *list_name* this must follow the naming provided in **survey** worksheet. For example on **survey** worksheet we enter a multiple choice type with the name **select_one jns_bencana**. So on the **choices** worksheet we must fill *list_name* with name **jns_bencana**. This will be explained further in the next discussion.

Column **name** has the same rules as column **name** on the **survey** worksheet. All must be in unique variables that are not the same as the others both on the **survey** worksheet or **choices**; do not use spaces but are replaced by *underscores*; and do not use special characters such as question marks, exclamation marks, etc.

Column *label* has the same rules as column **label** on the **survey** worksheet. This column contains the answer text that will appear on the user's cellphone. You can freely use spaces, special characters or letters in this column.

list_name	name	label
bencana_yn	ya	Ya
bencana_yn	tidak	Tidak
jns_bencana	banjir	Banjir
jns_bencana	kering	Kekeringan
jns_bencana	longsor	Tanah longsor
jns_bencana	banjir_rob	Banjir rob
jns_bencana	kebakaran	Kebakaran hutan
jns_bencana	angin	Angin puting beliung

list_name contain set of choices for each question in survey worksheet. For list_name column must follow the naming format in survey worksheet

Examples naming column on the choice worksheet

b.3. *Worksheet settings* Worksheet *settings* used when you want to make additional settings such as giving the name of your survey form, giving form a specific id, and version of your survey form. In order to use this feature, you must provide these three column names: **form_title, form_id,** & **version**.

Column **form_title,** you can provide free naming for your form. This naming will later appear on the user's cellphone.

Column **form_id**, you can provide your form id. The terms for naming this column are that you can't have the same id as the other forms, don't use spaces, and don't use special characters.

Column **version**, you can provide a version of your form. Adding column **version** is not mandatory. If you frequently add / change your survey forms, by providing column **version**, it will be easier for you to upload the forms on the server.

form_id	form_title	version
ckm_penggunaan_lahan	CKM Form Survey Penggunaan Lahan	ckm_001

Examples of settings on the worksheet settings

c. All entries must be in a standard format and starting from the first box. One of the most important requirements is that when we make a survey form, everything must start in the *field /quadrant A-1.*
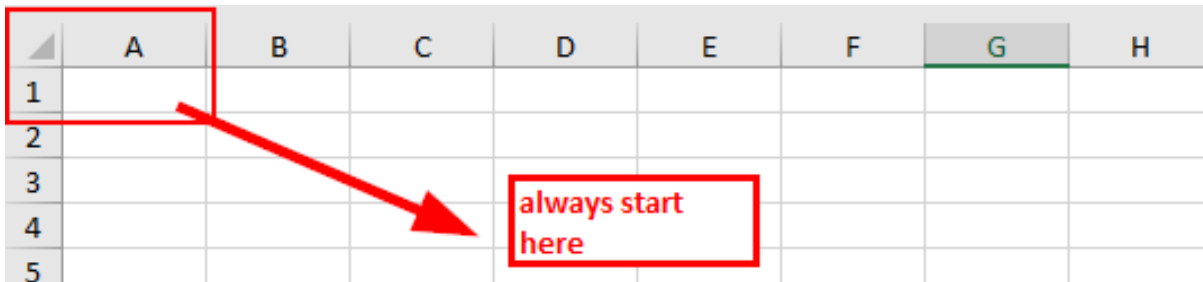
Initial position of making survey forms

All entries form must start in those quadrant/*field* because the system will convert *spreadsheet* file to *XForm*, so if you do not start from that position, and error will occur in the system.

In addition, the other main requirement is that you cannot use table formats such as *merge, center, hide row / coloum, wrap text,etc*. Everything must be in a standard format. Settings that we can use are to add letters in bold, give color to columns or rows, and change the shape and size of letters.

2. Types of Standard Questions

In the paper survey form, we usually find several questions such as short answers, long answers, entering the date of birth, and multiple choices. Some of these questions, have different type questions, such as:

a. Question type *text* This type will generate a type of question with a free response question format. Users can freely enter numbers, letters, and special characters if we use this type of question.

type	name	label
text	surveyor_name	Q. 1 Nama surveyor

*Q. 1 Nama surveyor

Examples ofquestion text

b. Question type *Integer / decimal* This type of question will produce a question format with answers of integer numbers (specifically for **integer** type) or decimal numbers (specifically for **decimal** type). Users can only enter numbers with this type of question, a combination of numbers and letters cannot be entered if we use this type of question.

	A	B	C
1	type	name	label
2	integer	total_rt	Jumlah RT terdampak

*Jumlah RT terdampak

Example question for integer type

c. Question type *select_one* This type of question will give the user a choice of answers where the user may only choose one answer. In creating this type of question, you must use a format such as **select_one [options]**. Where **[option]** is a group variable that will be included in the **list_name** inside worksheet **choices**.

Lembar kerja **survey**

	A	B	C
1	type	name	label
2	select_one yes_no	building	Q. 2 Apakah ini merupakan bangunan?

Lembar kerja **choices**

|	A	B	C
1	list name	name	label
2	yes_no	yes	Ya
3	yes_no	no	Tidak

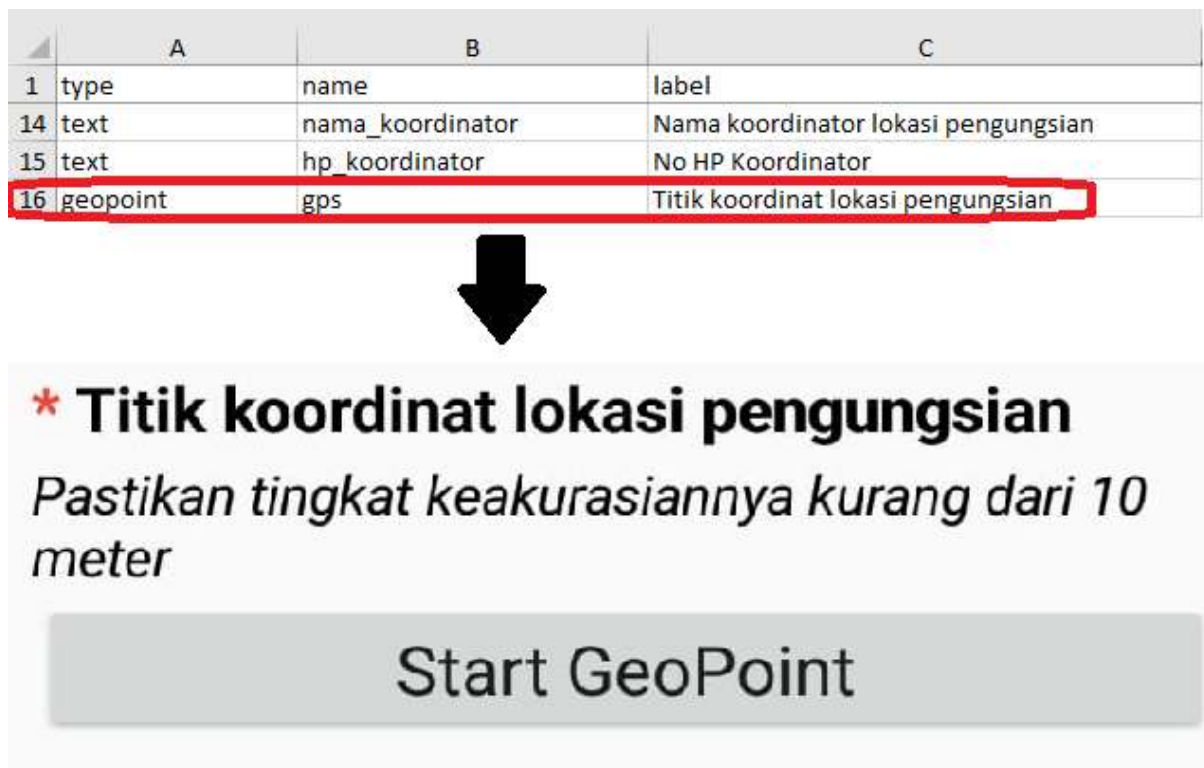|	A
1	type
2	select_one yes_no

*Q. 2 Apakah ini merupakan bangunan?

○ Ya
○ Tidak

Example question type select_one [options]. Note that the list_name matches with [options] in survey worksheet.

d. Question type *select_multiple* This question type is the same as the previous question type. The answers presented to the user are of several choices and the user may choose more than one answer. The rules for creating this type of question are the same as **select_one**. You must use a format such as **select_multiple [option],** where **[option]** is a group variable that will be included in **choices** under **list_name**.

Lembar kerja **survey**

Lembar kerja **choices**
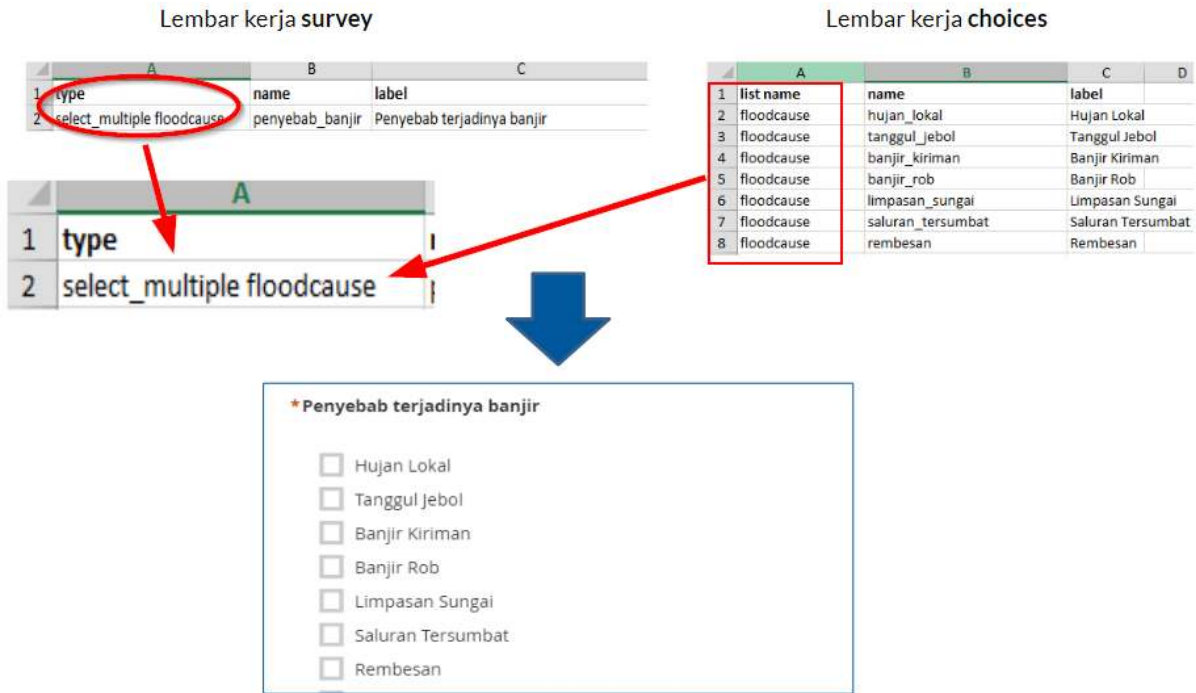
Example question type select_multiple [options]. The option in the picture above is the floodcause which also appears in the worksheet choices.
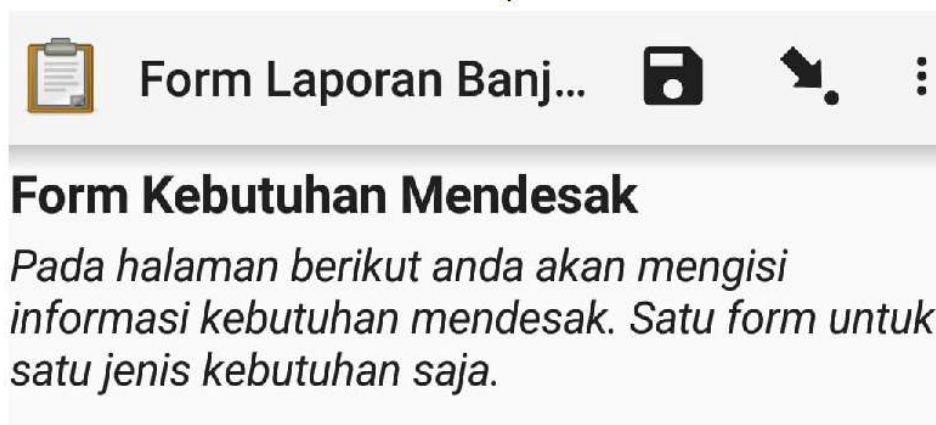
e. Type of *geopoint* This type of question will ask the user to record the coordinates of their position and will produce data in the form of latitude and longitude coordinates.

	A	B	C
1	type	name	label
14	text	nama_koordinator	Nama koordinator lokasi pengungsian
15	text	hp_koordinator	No HP Koordinator
16	geopoint	gps	Titik koordinat lokasi pengungsian

* Titik koordinat lokasi pengungsian

Pastikan tingkat keakurasiannya kurang dari 10 meter

Start GeoPoint

Example of question using geopoint

f. Note   This type is used to add a note or notification page. Users will be presented with a single page containing only the appearance of the text without having to fill in any information. For the writing format, it still follows the writing conventions in **label**, where we are free to give any writing format.
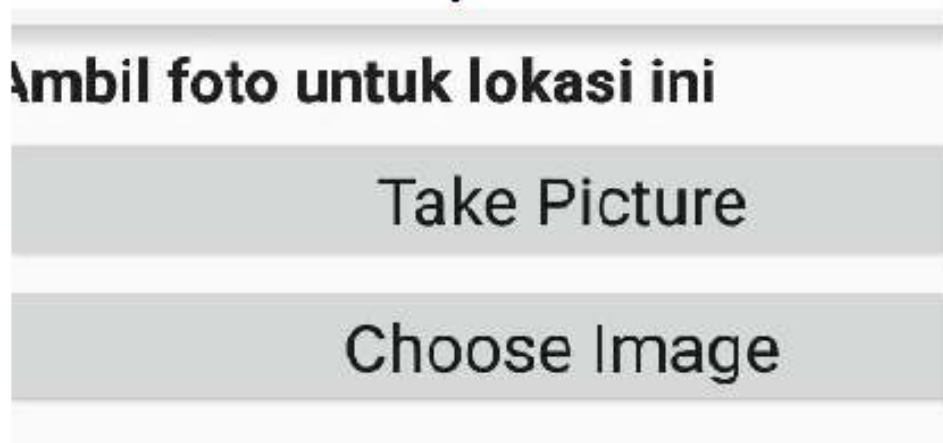
	A	B	C
1	**type**	**name**	**label**
33	note	display_note1	Form Kebutuhan Mendesak. Pada halaman berikut anda akan mengisi informasi kebutuhan mendesak. Satu form untuk satu jenis kebutuhan saja.

Examples of using note

g. *image, video or audio*   This type of question will ask the user to take a picture, sound or video.

	A	B	C
1	**type**	**name**	**label**
24	image	foto	Ambil foto untuk lokasi ini

Example of using image type

3. Additional Format

You can directly use your survey form by simply entering a number of standard question types that have been explained previously. The more you are good at creating *XLSForm*, you might ask if there are other types of questions that can make your survey forms easier to use and retrieve data according to your wishes. To see all types of questions that can be used in making *XLSForm*, you can go to the site http://xlsform.org. In this material, we will only discuss a few types of additional questions that you can use if you want to make your survey form more informative and easier to use.

a. *Hint*   Hint is one additional feature that we can add to our digital survey forms. By using this feature, we can provide additional information or instructions on how to fill in a question that we make. To create this feature, we must add a new column to **survey** worksheet called **hint**. By adding this column, for each type of question we make, we can add it with the information, such as instructions to filling the form, in column **hint**.

	A	B	C	H
1	**type**	**name**	**label**	**hint**
2	start	auto_survey_time		
3	begin group	group_surveyor	Informasi Surveyor	
4	text	organisasi	Nama Organisasi	Pastikan pengisian nama tidak memasukkan karakter spesial. Contoh : / < * & @ #
5	text	surveyor	Nama Surveyor	Pastikan pengisian nama tidak memasukkan karakter spesial. Contoh : / < * & @ #
6	end group			

Examples of using thecolumn hint

b. *Required*   This feature is needed if on your survey form, there are questions that must be answered. By using this feature, users will not be able to fill in further questions if they have not answered the question first. The types of questions that use this feature will also have a red asterisk when viewed on your phone. To use this feature, you only need to create a new column called **required** that is located on **survey** worksheet. In order to set questions becomes mandatory, you must add the value **yes** in this required column.

	A	B	C	D	E	F
1	type	name	label	hint	relevant	required
4	select_one perangkat_gps	no_gps	Nomor PERANGKAT/ALAT GPS	Lihat pada perangkat GPS yang digunakan		yes
5	text	surveyor	Nama surveyor			yes

Example of using required features. Any questions that activate this feature cannot be skipped by the user if they are not already filled in.

c. *Field-list* The function of this feature is that users will be presented with a number of questions on just **one page** on the application screen. By default, each page will only be presented with one question. If we want all questions to appear on one page, then we must use this feature.

To enable this feature, you must make a number of settings:

1. You must insert format **begin_group** at the beginning of the question that you want to display on one page and **end_group** at the end of the question that you want to display on one page. These **begin_group** and **end_group** formats must be in the column **type**. By tucking in this format, the system will read that all questions that are after **begin_group** and before **end_group** format are one question group.

2. After you have created the question group, you must add column **appearance** and fill with **field-list** format. By adding this column, you inform the system that all groups of questions that you have created, will be included in a single page list.

	A	B	C	D	F
1	type	name	label	required	appearance
2	begin_group	info_awal	Informasi awal		field-list
3	text	nama_surveyor	Nama surveyor :	yes	
4	dateTime	waktu_survey	Tanggal dan waktu survey :		
5	end_group				

Example of using the field-list feature in several groups of questions

d. *Relevant* This feature allows us to make a list of questions that follow the answers to the previous questions. Suppose we are asked a question about "What causes floods?" With the answer choices "A. Bad Drainage B. Garbage C. Others". When we answer "C. Other", then the next question will only relate to the previous (other) type of answer, such as "Because in the previous question you answered others, explain further about the causes of other floods". The question will not appear if we answer with other answers such as "A. Bad Drainage". How to enable this **relevant** consists of several stages:

1. Creating the initial question type

Before using **relevant**, you must first create an Initial question that you will enter into format **relevant**. For example, by using the type question **select_one**:

Figure 1: Example questions on survey worksheet

Example questions on survey worksheet

2. Making choices on **choices** worksheet

After you make the initial question, the next step is you have to make the choice of answers on **choices** worksheet.

Figure 2: Example answer choices on theworksheet choices

Example answer choices on theworksheet choices

3. Insert **relevant** features in the next question

After you make the initial question and answer choices, the next step is you will make the question that will appear in accordance with the answer choices selected in the previous question. For example, in the previous question, you chose the **prasasti** for the type of object in question, then the next question will be specific only about the **prasasti**. To enable this feature, you must enter

an additional column named **relevant** on **survey** worksheet. After entering additional columns you can fill in the question rows that require **relevant** functions with the format:

Format	Deskripsi
$field_name =$ 'choice'|For type select_one only||selected({field_name}, 'choice')	For type select_multiple & select_one

For **field_name** refers to the variable that you specified earlier in the **name** column on the **survey** worksheet. Meanwhile, **choice** refers to the variable of choice of answers available on the **choices** worksheet.
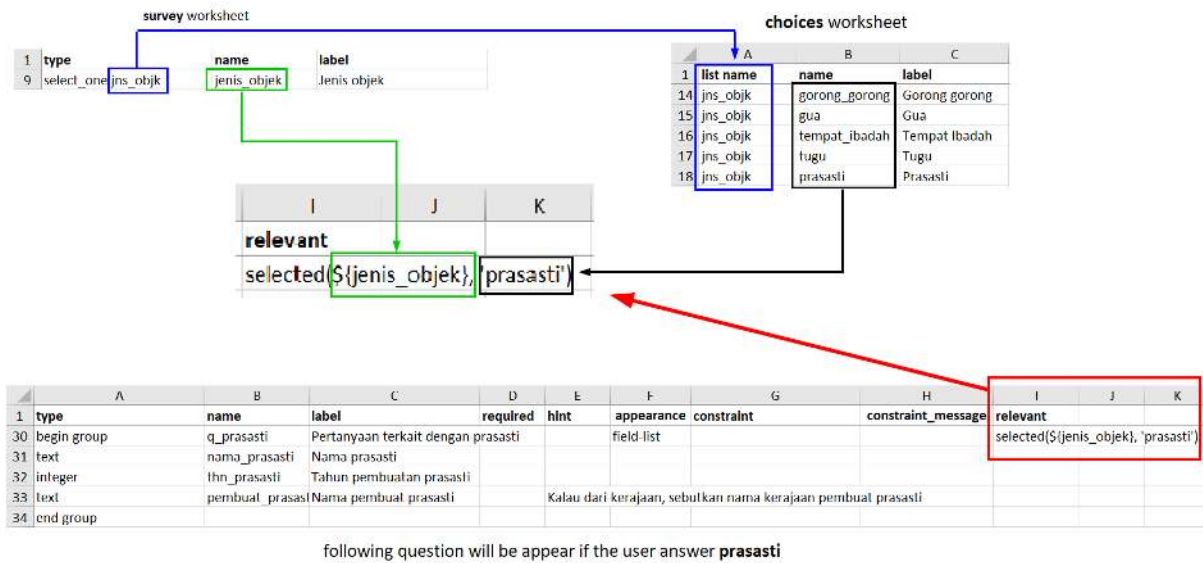

Figure 3: Example of making relevant features

Example of making relevant features

III. Creating survey forms for theapplication *OpenMapKit*

In addition to using *ODK Collect*, for data collection in the field we also use *OpenMapKit*. You certainly understand how to use *OpenMapKit* for data collection in the field. If you don't know it yet, you can read the **Using the OpenMapKit Application** module. Now we will learn how to create survey forms for use in *OpenMapKit*.

Generally, creating survey forms for *OpenMapKit* follows rules such as *ODK Collect* form. Making this survey form can also be done in the same file when making *ODK Collect*. There are a number of standard settings that we must follow so that the survey form we make can be used for *OpenMapKit*.

1. Four main worksheets

In general, to make *OpenMapKit* is not much different from the format ODKCollect. The worksheets needed by *ODK Collect* are **surveys, choices,** & **settings**. But for *OpenMapKit*, we have to **add a new worksheet named osm**.
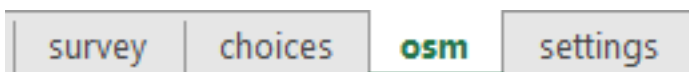
Main worksheet for OpenMapKit

osm worksheet contains questions and answer choices that will appear on *OpenMapKit*. It is on this worksheet that we must enter all the list of questions that will appear in *OpenMapKit*. Meanwhile, three other worksheets followed the rule when making *ODK Collect*.

2. Types of main questions

In order for the questions that we make successfully raised in *OpenMapKit*, we have to enter a special type of question, which is **osm**. By entering this question into **survey** worksheet, the system will bring up all the questions in *OpenMapKit* that we have created on **osm** worksheet.

This type of question must be followed by a variable that need to be linked to the variable in **list name** column on **osm** worksheet.

Types osm question with the same variables on osm worksheet

3. Three main columns

On **osm** worksheet, we must enter three main columns, namely **list name**, **name**, and **label**. The **list name** column contains questions and answer choices. The **name** column contains the unique variables that follow thes tandards *key* and *value* of *OpenStreetMap*. For a list of *keys* and *values,* you can look at the **Data Model** *OpenStreetMap* module or you can go directly to the site https://wiki.openstreetmap.org/wiki/Map_Features and https://wiki.openstreetmap.org/wiki/Id:Indonesian_Tagging_Guidelines.

	A	B	C
1	list name	name	label
2	building_tags	power	Objek apakah ini?
3	building_tags	building	Apakah ini merupakan bangunan? (Isi ke
4	building_tags	rating	Rating: (khusus untuk objek Gardu Listri
5	building_tags	name	Nama
6	building_tags	addr:full	Alamat
7	building_tags	operator	Nama operator
8	building_tags	building:levels	Jumlah lantai
9	building_tags	building:structure	Struktur Bangunan
10	building_tags	building:walls	Tipe dinding bangunan
11	building_tags	building:floor	Tipe lantai bangunan
12	building_tags	building:roof	Tipe atap bangunan
13	building_tags	access:roof	Akses ke atap
14	building_tags	building:condition	Kondisi Bangunan
15	building_tags	backup_generator	Generator Cadangan
16	building_tags	source	Sumber data:
17			
18	power	substation	Gardu Listrik
19	power	tower	Tower Listrik
20	power	plant	Pembangkit Listrik
21			
22	building	power_plant	Ya
23			
24	building:structure	confined_masonry	Rangka beton bertulang
25	building:structure	steel_frame	Rangka baja
26	building:structure	wood_frame	Rangka kayu
27	building:structure	bamboo_frame	Rangka bambu

based on osm key

based on osm value

name column follows the key and value rules on OSM

4. Questions and answer choices in one worksheet

Unlike creating survey forms for *ODK Collect*, where each question and answer choices are separate on different worksheets, for creating survey form in *OpenMapKit* we must enter all questions and choices answers on one worksheet.

IV. Exercises to Create Survey Forms *ODK Collect* and *OpenMapKit*

Until now we have understood how to create survey forms for *ODK Collect* and *OpenMapKit*. Now we will try to make a survey form that can be used for both of these applications.

Imagine that you currently want to conduct data collection activities at a facility by using *ODK Collect* and *OpenMapKit*. Some data that you want to collect are:

- name *Surveyor*. (Required)

- To be at a disaster-prone location or not
- If at the disaster location, specify the type of disaster (can be more than one answer)
- Coordinates of the location of survey objects
- Name of place of amenity
- Type of amenities Amenity
- complete address of the

From the data above, you have successfully identified which types questions that go into survey forms *ODK Collect* and any kind of questions that go into survey *OpenMapKit* form. Questions that enter into *ODK Collect* are the **name of the surveyor, disaster-prone, type of disaster** & **coordinates of the location of the survey object**. Meanwhile the questions that go into *OpenMapKit* are the **name of the place** & **type of amenities, and full address**.

First of all, we have to make a survey form for *ODK Collect*. As the requirements you have learned before, in *spreadsheet* we have to make four worksheets, which are **survey, choices, settings** & **osm.**

After that, on the **survey** worksheet we must provide our main column, which is **type, name** & **label**. The types of questions we have to make for this survey form are **text, select_one, select_multiple,** & **geopoint**. Because surveyor questions are mandatory questions, we must use **required** on **survey** worksheet. Apart from that we also have to use **relevant** for disaster type questions. This **relevant** feature will make it easier for us to make a conditioned question.

	A	B	C	D	E	F	G
1	type	name	label	required	relevant		
2	text	surveyor_name	Nama Surveyor	yes			
3	select_one yes_no	bencana	Apakah objek ini berada di area bencana?				
4	select_multiple jns_bencana	jenis_bencana	Jika berada di area rawan bencana, sebutkan jenis bencananya.		selected(${bencana}, 'yes')		
5	geopoint	lokasi_obj	Rekam koordinat untuk objek survei ini.				

Type questions on the worksheet survey

On **choices** worksheet we put the answer choices for the type of questions **select_one** and **select_multiple** that we have created on the **survey** worksheet. Here we have to make three main columns namely **list_name, name,** & **label**.

	A	B	C
1	list name	name	label
2	yes_no	yes	Ya
3	yes_no	no	Tidak
4	jns_bencana	angin	Putting Beliung
5	jns_bencana	gempa	Gempa Bumi
6	jns_bencana	gunung_meletus	Gunung Meletus
7	jns_bencana	banjir	Banjir
8	jns_bencana	longsor	Longsor
9	jns_bencana	tsunami	Tsunami

The answer choices entered in worksheet choices

Because we want to use *OpenMapKit* for our field data collection, we have to add the type of questions

that will lead us to *OpenMapKit*, the type of questions we have to enter is **osm**. On **osm** worksheet, we include all questions related to *OpenMapKit*. In the variable **name** we must refer to the *key* and *value* on the *OpenStreetMap* wikipedia .

survey worksheet

	A	B	C
1	type	name	label
2	text	surveyor_name	Nama surveyor
3	select_one yes_no	bencana	Apakah obyek ini berada di area bencana?
4	geopoint	lokasi_obj	Rekam koordinat untuk obyek survey ini
5	osm survey_tags	obj_osm	Anda akan diarahkan ke aplikasi OpenMapKit

osm worksheet

	A	B	C	D	E	F	G
1	list name	name	label				
2	survey_tags	amenity	Apakah tempat ini merupakan tempat ibadah?				
3	survey_tags	name	Nama tempat ibadah				
4	survey_tags	religion	Jenis pemeluk agama untuk tempat ibadah ini				
5							
6	amenity	place_of_worship	Ya				
7							
8	religion	buddhist	Buddha				
9	religion	christian	Kristen				
10	religion	hindu	Hindu				
11	religion	muslim	Islam				

Fill in the survey and osm

Finally, in **settings** worksheet we enter our form id and the title of our form. On this worksheet, only two main columns are needed, namely **form_id** and **title.**

	A	B
1	form_id	title
2	01_Survey_Amenity	01. Survey Amenitas

Examples of settings on the worksheet settings

SUMMARY

Congratulations! Currently you have successfully created a survey form for *ODK Collect* and *OpenMap-Kit applications*. To find out more about the types of questions that can be made on *ODK Collect*, you

can directly access the page http://xlsform.org. Making the right form will make it easier for surveyors to collect data in the field.