

APP BUILDING FOR NON-TECHIES

Step by step how app builders make a [CHT](#) app

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[this preso on GH](#)



REFERENCES

- CHT Docs
 - App forms tutorial
 - Forms Reference
- Docs Cheat Sheet PR
- Capacity Building:
 - Modules List
 - App Forms Module (-> App forms tutorial)
- xls form reference site

OVERVIEW

Use cht - conf and the browser to:

gsheets -> xlsx -> xml -> upload -> data entry &
recalculating -> submit -> sync -> JSON

cht-conf

Command line utility:

- configure, upgrade and update CHT
- data and server software

cht-conf

Example: Update "test_form" form:

```
cht \
--url=http://admin:pass@localhost:5988 \
fetch-forms-from-google-drive \
convert-app-forms \
upload-app-forms \
-- test_form
```

cht-conf

Example: Result from "test_form" form:

```
INFO Processing config in covid-19.  
INFO Actions:  
  - fetch-forms-from-google-drive  
  - convert-app-forms  
  - upload-app-forms  
INFO Starting action: fetch-forms-from-google-drive...  
INFO Exporting 1eXQ-j_tf0Rxukgw5yMjnAadto0u_Lt_mlveWxDW6K00 fr  
INFO Successfully wrote /home/mrjones/Documents/MedicMobile/ch  
INFO Exporting 1pDNI-CVLKJCdVjYY8UxHkDCbjTKeVBwCgg9hKRWQoqY fr  
INFO Successfully wrote /home/mrjones/Documents/MedicMobile/ch  
INFO fetch-forms-from-google-drive complete.  
INFO Starting action: convert-app-forms...  
WARN No matches found for files matching form filter: test_for  
INFO convert-app-forms complete.  
INFO Starting action: upload-app-forms
```

GSHEETS

Easy Sharing and Revisions vs GitHub

| type | name | label::en | required | relevant | appearance |
|-------------|----------------------|-----------------------------|----------|-------------------|------------|
| begin group | inputs | NO_LABEL | | ./source = 'user' | field-list |
| hidden | source | Source | | | |
| hidden | source_id | Source ID | | | |
| begin group | user | User | | | |
| db:person | contact_id | Contact ID | | | db-object |
| begin group | parent | NO_LABEL | | | |
| hidden | _id | Parent ID | | | |
| end group | | | | | |
| end group | | | | | |
| begin group | contact | NO_LABEL | | | |
| db:person | _id | What is the patient's name? | | | db-object |
| hidden | name | Name | | | |
| hidden | short_name | Short Name | | | |
| hidden | patient_id | Patient ID | | | |
| hidden | date_of_birth | Date of Birth | | | |
| hidden | sex | Sex | | | |
| begin group | parent | NO_LABEL | | | |
| hidden | _id | Parent ID | | | |
| begin group | parent | NO_LABEL | | | |
| begin group | contact | NO_LABEL | | | |
| hidden | chw_name | CHW name | | | |
| hidden | phone | CHW phone | | | |
| end group | contact | | | | |
| end group | parent | | | | |
| end group | parent | | | | |
| end group | contact | | | | |
| end group | inputs | | | | |
| | | | | | |
| calculate | patient_age_in_years | NO_LABEL | | | |
| calculate | patient_uuid | NO_LABEL | | | |
| calculate | patient_id | NO_LABEL | | | |
| calculate | patient_name | NO_LABEL | | | |

GSHEETS

fetch-forms-from-google-drive

Copy from GDrive -> local .xlsx

App builders start by copying a gsheets - this talk will
use `test_form`

EDIT SYNCED FORMS

forms-on-google-drive.json JSON config file:

```
{  
  "app/test_form.xlsx": "10X87YC6kA0vBgttjUhBL6fMdFSk",  
}
```

cht-conf FIRST RUN

test export to local file:

```
cht --url=http://admin:pass@localhost:5988 \  
fetch-forms-from-google-drive
```

note that cht-conf allows you to string together
multiple commands

ERRORS ON CLI

Bad ", " in config file:

```
$ cht fetch-forms-from-google-drive

INFO Processing config in default.
INFO Actions:
  - fetch-forms-from-google-drive
INFO Starting action: fetch-forms-from-google-drive...
WARN Error parsing JSON in: /home/mrjones/Documents/MedicMobile
ERROR SyntaxError: Unexpected token } in JSON at position 74
  at JSON.parse ()
  at Object.readJson (/usr/lib/node_modules/cht-conf/src/lib/
  at /usr/lib/node_modules/cht-conf/src/lib/fetch-files-from-
  at processTicksAndRejections (internal/process/task_queues.
```

EXPORT -> CONVERT -> UPLOAD

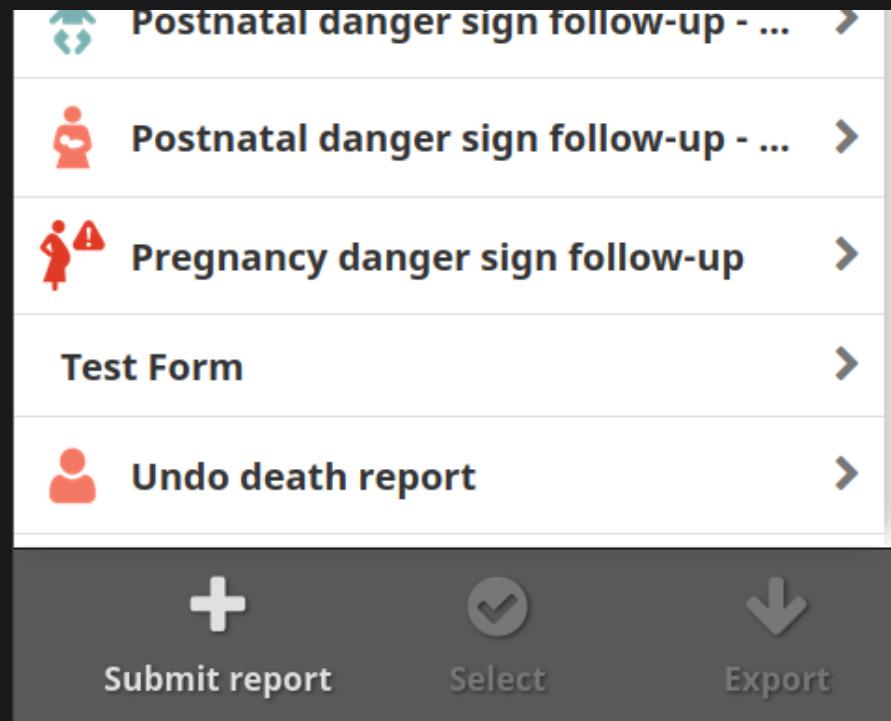
Let's import our new `test_form` by adding convert-app-forms (xlsx -> xml) and upload-app-forms (xml -> CHT):

```
cht --url=http://admin:pass@localhost:5988 \
  fetch-forms-from-google-drive \
  convert-app-forms upload-app-forms \
  -- test_form
```

EXPORT -> CONVERT -> UPLOAD

see if it's there!

1. <http://localhost:5988/#/reports/>
2. Submit report
3. Test Form



FORM PROPERTIES JSON

Before we start form building, let's set some properties
via the forms/app
`/test_form.properties.json:`

```
{ "title": "Test Form",  
  "icon": "icon-person",  
  "context": {  
    "person": true,  
    "place": false,  
    "expression": "contact.type === 'person' && summary.alive  
  }}  
}
```

GO FASTER cht-conf

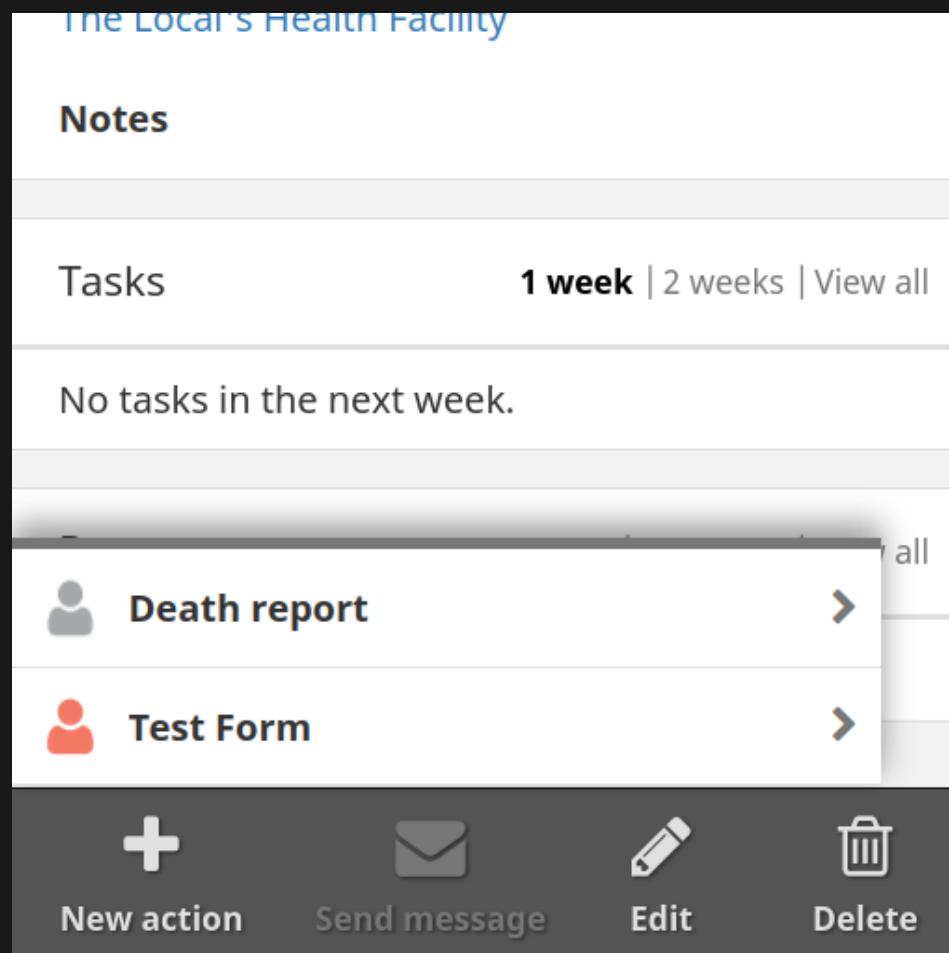
Add upload-resources to the cht to send the json as well:

```
cht --url=http://admin:pass@localhost:5988 \
  fetch-forms-from-google-drive \
  upload-resources \
  convert-app-forms \
  upload-app-forms \
  -- test_form
```

UPDATED PROPERTIES

Back on your server, form is no longer available anywhere but on patients who are ≤ 5

<http://localhost:5988/#/reports/>



XFORMS STRUCTURE

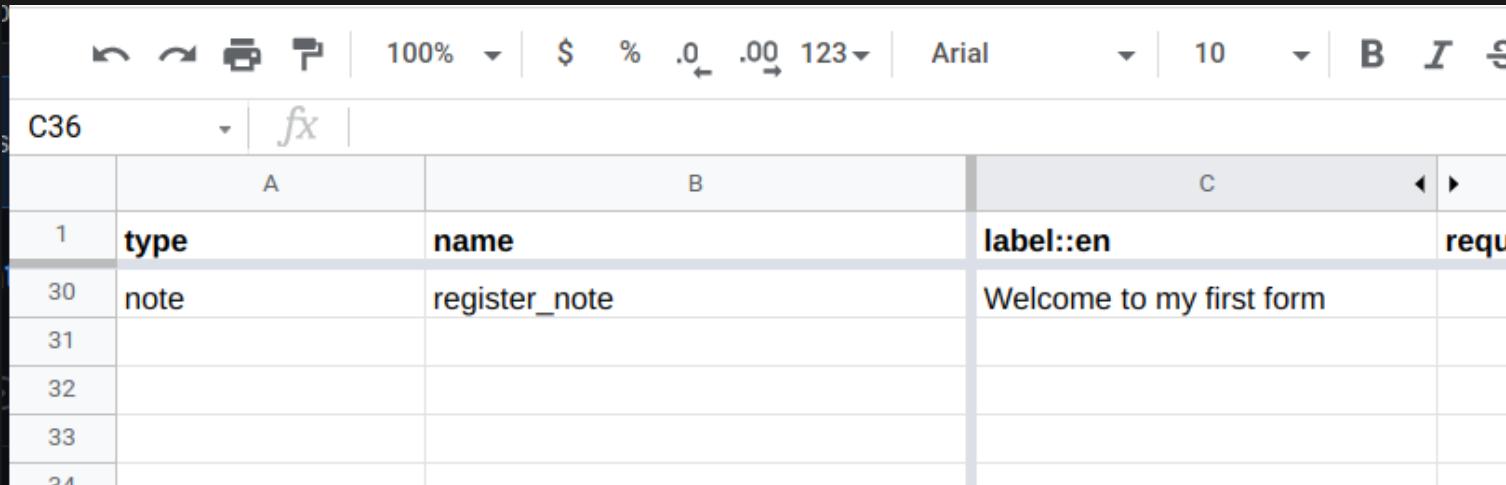
Inputs - Calculated - Questions - Summary - Outputs

| line | type | name | calculation | choice_filter | hint::en | default | media::image | instance::tag | repeat_count |
|------|-------------|--------------------------------------|---|--|-------------|---------|--------------|---------------|--------------|
| 2 | begin group | inputs | | | | | | | |
| 3 | hidden | source | | | | | | | |
| 4 | hidden | source_id | | | | | | | |
| 5 | begin group | user | | | | | | | |
| 6 | db-person | contact_id | | | | | | | |
| 7 | hidden | phone | | | | | | | |
| 8 | end group | contact | | | | | | | |
| 9 | end group | parent | | | | | | | |
| 10 | end group | parent | | | | | | | |
| 11 | end group | contact | | | | | | | |
| 12 | end group | inputs | | | | | | | |
| 13 | | | | | | | | hidden | |
| 14 | calculate | patient_age_in_years | floor(difference-in-months(../inputs/contact/date_of_birth, today()) div 12) | | | | | hidden | |
| 15 | calculate | patient_uid | ../inputs/contact/_id | | | | | hidden | |
| 16 | calculate | patient_id | ../inputs/contact/patient_id | | | | | hidden | |
| 17 | calculate | t_pregnancy_follow_up_date | ../anc_visits_hf/anc_visits_hf_next/anc_next_visit_date/appointment_date | | | | | hidden | |
| 18 | calculate | t_pregnancy_follow_up | ../anc_visits_hf/anc_visits_hf_next/anc_next_visit_date/appointment_date/known | | | | | hidden | |
| 19 | calculate | t_danger_signs_referral_follow_up_da | date-time(floor(decimal-date-time(today())) + 3) | | | | | hidden | |
| 20 | calculate | t_danger_signs_referral_follow_up | ../danger_signs/r_danger_sign_present | | | | | hidden | |
| 21 | | | | | | | | | |
| 22 | begin group | gestational_age | | | | | | | |
| 23 | begin group | register_method | | | | | | | |
| 24 | note | register_note | | | | | | | |
| 25 | select_one | imp_meth | imp_method | | Select one. | | | hidden | |
| 26 | begin group | tetanus | | | | | | | |
| 27 | select_one | yes_no | tt_imm_received | | | | | hidden | |
| 28 | note | tt_note_1 | | | | | | hidden | |
| 29 | note | tt_note_2 | | | | | | hidden | |
| 30 | end group | tetanus | | | | | | | |
| 31 | | | | | | | | | |
| 32 | calculate | request_services | if((selected(..tetanus/tt_imm_received,'no') or selected(..hiv_status/hiv_tested,'no') or selected(..deworming/deworming_med,'no') or selected(..iron_folate/iron_folate_daily,'no')), 'yes', 'no') | | | | | hidden | |
| 33 | end group | safe_pregnancy_practices | | | | | | | |
| 34 | begin group | summary | | | | | | hidden | |
| 35 | note | r_submit_note | | | | | | | |
| 36 | note | r_summary_details | | | | | | | |
| 37 | note | r_patient_details | | | | | | | |
| 38 | note | r_summary | | | | | | | |
| 39 | note | r_pregnancy_details | | | | | | | |
| 40 | note | r_pregnancy_details_unknown | | | | | | | |
| 41 | note | r_risk_factors | | | | | | | |
| 42 | begin group | custom_translations | | | | | | | |
| 43 | select_one | translate | custom_woman_label_translator | "woman" | | | | | |
| 44 | calculate | custom_woman_label | | jr:choice-name(\${custom_woman_label_translator}, \${custom_woman_label_translator}) | | | | | |
| 45 | select_one | translate | custom_woman_start_label_translator | "woman-start" | | | | | |
| 46 | calculate | custom_woman_start_label | | jr:choice-name(\${custom_woman_start_label_translator}, \${custom_woman_start_label_translator}) | | | | | |
| 47 | end group | | | | | | | | |
| 48 | end group | | | | | | | | |
| 49 | | | | | | | | | |
| 50 | begin group | data | | | | | | hidden | |
| 51 | calculate | _imp_method | \$[imp_method] | | | | | | |
| 52 | calculate | _no_imp_registration_reason | \$[no_info_pregnancy_reason] | | | | | | |
| 53 | calculate | _imp_date | \$[imp_date_8601] | | | | | | |
| 54 | calculate | _imp_approx_weeks | \$[imp_approx_weeks] | | | | | | |
| 55 | calculate | _true_imposture_reason | \$[true_imposture_reason] | | | | | | |

YOUR 1ST LINE OF XFORM CODE

Let's add some questions!

Below "Top level calculation fields", add a bunch of blank lines and copy the first note



| | A | B | C | |
|----|------|---------------|--------------------------|----------|
| 1 | type | name | label::en | required |
| 30 | note | register_note | Welcome to my first form | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |

RINSE AND REPEAT

re-run our fave cht command (you could trim off
"upload-resources")

```
cht --url=http://admin:pass@localhost:5988 \
    fetch-forms-from-google-drive \
    upload-resources \
    convert-app-forms \
    upload-app-forms \
    -- test_form
```

RELOAD RELOAD RELOAD

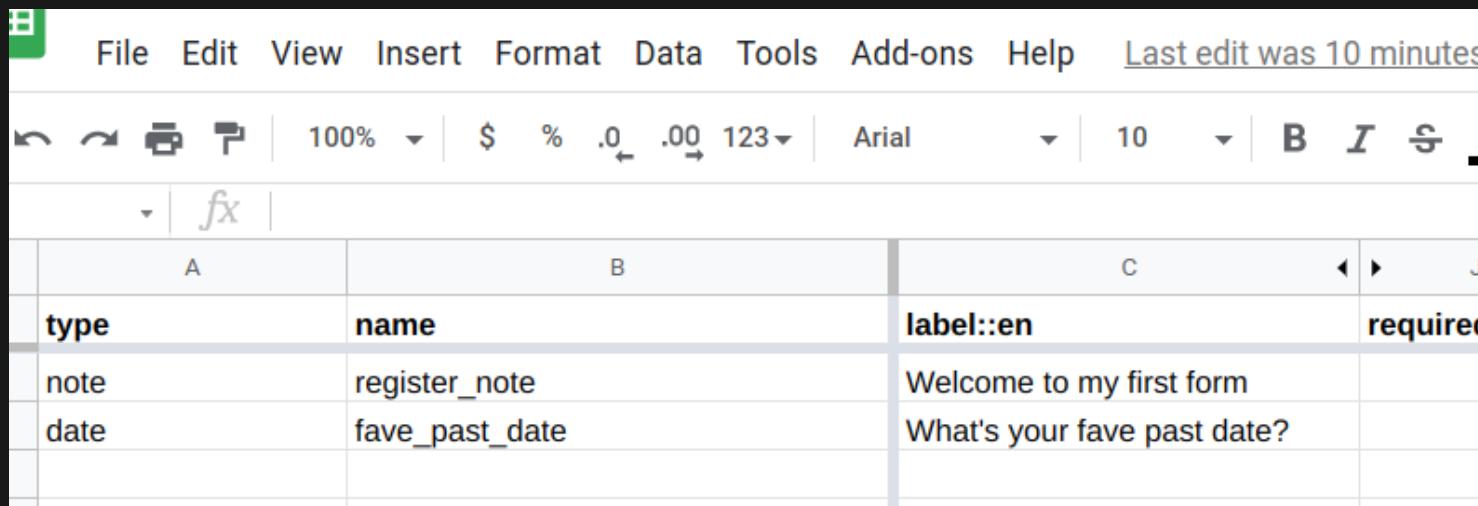
reload the form in the browser and you should see
your note

Welcome to my first form

Next >

NOW WITH 100% MORE DATES

let's add a date input after the note



The screenshot shows a spreadsheet application interface with a dark theme. The menu bar includes File, Edit, View, Insert, Format, Data, Tools, Add-ons, Help, and a status message "Last edit was 10 minutes ago". The toolbar below the menu contains icons for file operations, zoom (100%), currency (\$), percentage (%), decimal (.0), date (.00), number (123), font (Arial), font size (10), bold (B), italic (I), and underline (U). A formula bar with a fx icon is visible above the table.

| A | B | C | D | E |
|------|----------------|-----------------------------|----------|---|
| type | name | label::en | required | |
| note | register_note | Welcome to my first form | | |
| date | fave_past_date | What's your fave past date? | | |

RINSE AND REPEAT

re-run our fave cht command

```
cht --url=http://admin:pass@localhost:5988 \
  fetch-forms-from-google-drive \
  upload-resources \
  convert-app-forms \
  upload-app-forms \
  -- test_form
```

RELOAD RELOAD RELOAD

Reload the browser & note it's on two separate pages:

The image displays two side-by-side screenshots of a mobile application interface, both titled "Test Form".

Screenshot 1 (Left): The title is "Test Form". The content is "Welcome to my first form". A blue button labeled "Next >" is visible.

Screenshot 2 (Right): The title is "Test Form". The content is "What's your fave past date?". Below this is a text input field containing "yyyy-mm-dd". To the right of the input field is a circular refresh/circular arrow icon. At the bottom are navigation buttons: "< Prev" on the left and "Next >" on the right.

FIELD-LIST

Let's put the two on one page & and ensure only past dates via a constraints:

| | A | B | C | J | K | L | M | N |
|----|-------------|----------------|-----------------------------|----------|------------|------------|--|--------------|
| 1 | type | name | label::en | required | relevan | appearance | constraint | constraint_n |
| 30 | begin group | hello_world | Hello World App! | | field-list | | | |
| 31 | note | welcome_note | Welcome to my first form | | | | | |
| 32 | date | fave_past_date | What's your fave past date? | | | | decimal-date-time(.) < floor(decimal-date-time(today())) | |
| 33 | end group | | | | | | | |
| 34 | | | | | | | | |

```
decimal-date-time(.) < floor(decimal-date-time(today()))
```

RINSE AND REPEAT

re-run our fave cht command

```
cht --url=http://admin:pass@localhost:5988 \
  fetch-forms-from-google-drive \
  upload-resources \
  convert-app-forms \
  upload-app-forms \
  -- test_form
```

RINSE AND REPEAT & RELOAD RELOAD RELOAD

Note it's on one page and there's a constraint:

 Test Form

Hello World App!

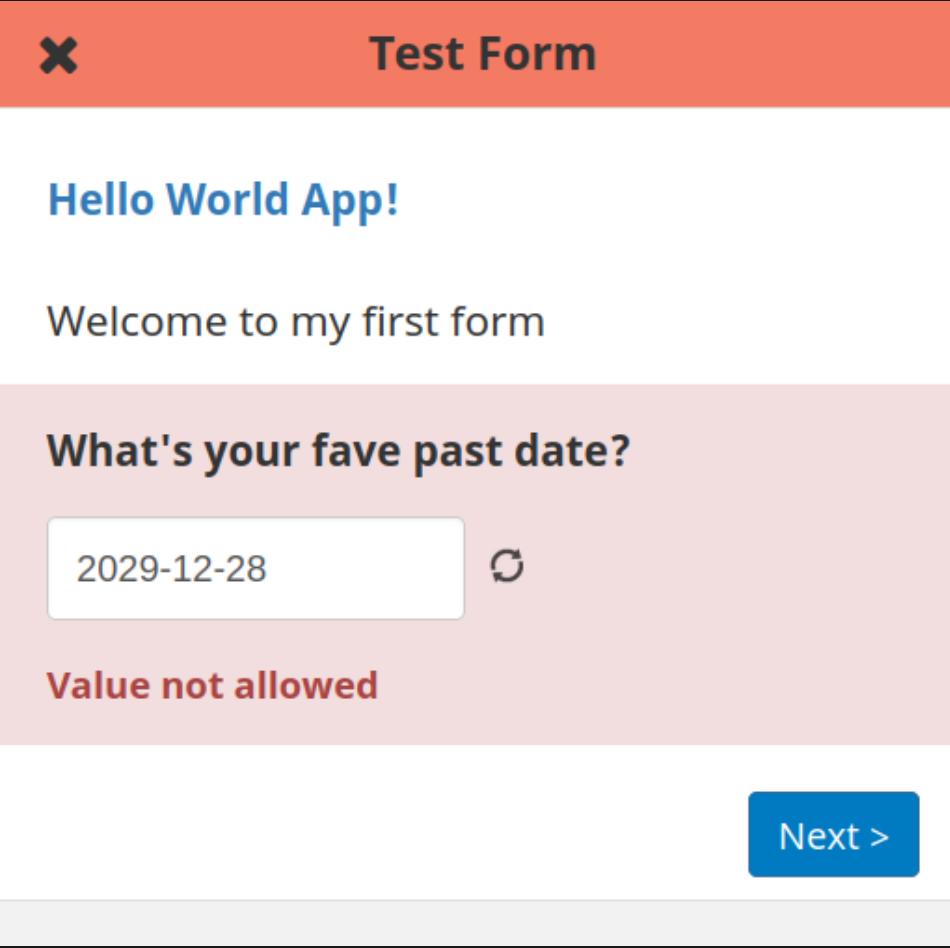
Welcome to my first form

What's your fave past date?

2029-12-28 

Value not allowed

 Next >



CALCULATE

Finally, let's ask if they like old dates and calculate 100 years later:

| | A | B | C | J | K | L | M | N | P |
|----|-------------------|----------------|---------------------------------|-----------------|---|-------------------|--|-------------------------------|--|
| 1 | type | name | label::en | required | relevant | appearance | constraint | constraint_message | calculation |
| 30 | calculate | hundred_years | NO_LABEL | | | | | | format-date-time(date-time(floor(decimal-date-time(.) + 36525), "%Y-%m-%d")) |
| 31 | | | | | | | | | |
| 32 | begin group | hello_world | Hello World App! | | | | field-list | | |
| 33 | note | welcome_note | Welcome to my first form | | | | | | |
| 34 | select_one yes_no | old_dates | Do you like old dates? | | | | | | |
| 35 | date | fave_past_date | What's your fave past date? | | selected(\${old_dates}, 'yes') | | decimal-date-time(.) < floor(decimal-date-time(today())) | The date must be in the past. | |
| 36 | note | hundred_note | This is the date in 100 years f | | decimal-date-time(\${fave_past_date}) < floor(decimal-date-time(today())) | | | | |
| 37 | end group | | | | | | | | |
| 38 | | | | | | | | | |
| 39 | | | | | | | | | |

```
format-date-time(
    date-time(
        floor(
            decimal-date-time(
                ${fave_past_date}))) + 36525), "%Y-%m-%d")
```

RINSE AND REPEAT

re-run our fave cht command

```
cht --url=http://admin:pass@localhost:5988 \
  fetch-forms-from-google-drive \
  upload-resources \
  convert-app-forms \
  upload-app-forms \
  -- test_form
```

a fitting end - you do this SO. MANY. TIMES. ;)

OUR FIRST APP COMPLETED

X Test Form

Hello World App!

Welcome to my first form

Do you like old dates?

Yes
 No

What's your fave past date?

2001-01-01 

This is the date in 100 years from your date:
2101-01-02

Next >

THANKS!

- By: [mrjones](#)
- Source: [app-building-non-techies repo](#)
- Made: [reveal-md](#)

