Custom Sorting of Items in Aleph

How Triggers and the Z13 Enabled Us to Rule Our World

by

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THE CHURCH OF

JESUS CHRIST

OF LATTER-DAY SAINTS
Agenda

Background

• The Problem
• The Solution
• Gotchas
• Additional Material
Background LDS Church

• 14+ million members globally
• 166 languages supported
• $885 MM of humanitarian assistance given since 1985
• 4 Universities and Colleges
• Family History Library
• Church History Library
• Audio Visual Department / Motion Picture Studio
Background Church History Dept

• Within The Church of Jesus Christ of Latter-day Saints there is a Church History Department.

• Inside this department there is a Church History Library, Museum, and Archives.
  – Aleph handles circulation for all 3 organizations (single shared ADM library).

• Primo is used for discovery.
Background within the Archives

- In the Archives, a BIB record can have multiple associated HOL records.
  - The first HOL record is typically the hard copy original.
    - HOL1: manuscripts, diaries, photographs, maps, etc.
  - Each subsequent HOL record (and its associated items) is typically a duplicate of the first HOL record in a different material type.
    - HOL 2: microfilm positive
    - HOL 3: microfilm negative
    - HOL 4: CD master copy
    - HOL 5: CD patron copy
    - Other miscellaneous reasons
  - Certain HOL records have dozens or even hundreds of item records.
    - REEL 1, REEL 2, REEL n …
    - FILMING 1, FILMING 2, FILMING n …
Typical Archives Record

1. Letters LOC: 1S 526//4
2. Journal LOC: 1S 526//4
3. Photograph LOC: 1S 347//2
4. Map LOC: 1S 291

- Holding 1 (hardcopy)
- Holding 2 (microfilm), 2 reels
- Holding 3 (microfilm negative)
- Holding 4 (compact disc)
- Holding 5 (compact disc)
Hold Requests in the Archives

- Patrons search/discover in Primo and manually request by call number at the reference desk.

- Staff places the hold request for the patron using the Aleph client.
  - Many of the staffers are volunteers and are not professional librarians.

- When placing hold requests for patrons, staff must sift through and choose the preferred item in the Aleph client.
  - There are hundreds of items / many locations / multiple item statuses.
  - Circ policy prefers “Regular” items (don’t require approval).
  - Circ policy prefers a digital or microfilm copy (not the original).
Preferred Item Order for a Typical Archives Record

1. Disk (master) LOC: GMV 67 1 3
2. Disk (user) LOC: 1 S 22 4 16 // 7
3. Reel 1 LOC: GMV Cabinet 29 1
4. Filming 2, Reel 1 LOC: 1 S 2 3 8 // 2
5. Filming 1, Reel 2 LOC: 1 S 2 3 8 // 3
The Problem

• How do we customize the sorting of items?

• In our case: sort items by sublibrary + material type + collection + item status + the sequence number in item description?

  – There isn’t a pre-defined sort routine for this.
  – There is no way to create a new sort routine.
  – Material type doesn’t appear on the item list.
  – There isn’t an item level filter mechanism.
  – There is no way to expand and correctly sort the sequence number (a piece of the item description).
Example of the Problem

- Hundreds of items, many locations, multiple item statuses.
- Vault items show up before Open Stacks.
- "Non-patron" items show up before "Regular".
- Numbers in item description sort incorrectly (1, 10, 11).
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The Solution

• Create custom sort keys and store them in unused item fields (using database triggers)

  and

• Re-purpose a sort routine that will reference this field or fields.

• If needed, modify the z13 and z13u configuration to get additional data from the BIB and/or HOL records.
  (Covered in the additional material section.)
The Solution (Example)

- Open Stacks show up first.
- “Regular” items show up first.
- Numbers in item description sort correctly.
CHOOSING A SORT ROUTINE

Modifying an existing Aleph sort routine
Aleph Sort Routine

• After a great deal of trial and error, we settled on the ITEM-14 sort routine.

```plaintext
14 - by numbering or description

if enumeration not spaces then
    enumeration++. If enumeration-a(volume)+enumeration-b(issue)
    are both empty, enumeration-c is not taken into account
if chronology not spaces then
    chronology+
if supp-index-o not spaces then
    Supp-index-o
if enumeration and chronology is spaces then
    Description
```

xxx50/tab_z30_sort
**tab_z30_sort, option 14**

- In `xxx50/pc_tab_exp_field.eng`, we found ITEM-SORT-TYPE and renamed ITEM-14 sort to “Standard sort (key)”.
  - This is what will show up in the Aleph client.

- In `xxx50/tab_z30_sort`, we added ITEM-14 and specified sort routine 14, ascending.
  - ITEM-14 A 14 A 14
Creating and storing custom sort keys

CUSTOM SORT KEYS
Sort Order and Weighting

• We asked staff to define a sort order.
  - Sort order: sub-library + material type + collection + item status + the sequence number in the item description (REEL 1, REEL 2, REEL n).

• We further asked staff to weight each sort criteria.
  - Staff provided a 3-digit priority number for each: (1) sub-library, (2) material type and (3) collection code. (note: only sub-library is shown)
  - 000 was the highest, and 999 was the lowest.
  - These are kept in Oracle tables.

• Item status codes were ordered from the lowest (least restrictive) to highest (most restrictive).
  - Regular (01), Approval Required (02), Non-Patron (04), and Non-Circulating (08).
Creating the Main Sort Key

- Every time the item record is updated, the trigger creates or updates the custom sort key.
  - Sort key [S006M700C105I004] translates:
    - Sub-library sort order / weighting: 006
    - Material type sort order / weighting: 700
    - Collection code sort order / weighting: 105
    - Item status code sort order: 004

- The main sort key was put in the unused item field: Chron. Level.3 (K).
Item Sequence Sort Key

• Using a database trigger, we expanded the sequence number from the item description.
  – Item sequence sort key (respectively):
    – FILMING 1 → FILMING 0000001
    – REEL 53 → 0000053
    – CD 5 → CD 0000005
    – ITEM 27 → ITEM 0000027

• The item sequence sort key was put in the unused item field: Sub-O / Supp-index-o.
Adding Material Type to the Item

- Staff had already put the item sequence number in the description field.
  - FILMING 1
  - REEL 53
  - ITEM 5
  - ITEM 27

- Using a database trigger, we put the material type code [in square brackets] at the beginning of the item description.
  - [MNEG ] FILMING 1
  - [FILM ] REEL 53
  - [MULTI] ITEM 5
  - [CD ] ITEM 27

- Now staff can see the item material type + the item sequence number when looking at items.
xxx50/Z30 Fields Modified by Trigger

- **Z30_DESCRIPTION**
  - for viewing

- **Z30_CHRONOLOGICAL_K**
- **Z30_SUPP_INDEX_O**
  - for sorting
CREATE OR REPLACE FUNCTION INVENTORY.build_sort_key
(p_sublibrary in varchar2,
p_material in varchar2,
p_collection in varchar2,
p_itemstatus in varchar2,
p_procstatus in varchar2 default null)
RETURN VARCHAR2
IS
  v_return varchar2(100);
  v_sublibrary varchar2(3);
  v_material varchar2(3);
  v_collection varchar2(3);
  v_itemstatus varchar2(3);
  v_procstatus varchar2(1);
BEGIN
  -- Sub Library code
  begin
    select sort_key into v_sublibrary from sort_sublibrary where sub_library = p_sublibrary;
  exception
    when others then
      v_sublibrary := '099';
  end;

  -- Modify sub library based on process status
  if ltrim(rtrim(p_procstatus)) is null then
    null;
  else
    v_sublibrary := '9'||substr(v_sublibrary,2,2);
  end if;

  -- Material code
  begin
    select sort_key into v_material from sort_material where material = p_material;
  exception
    when others then
      v_material := '999';
  end;

  -- Collection code
  begin
    select sort_key into v_collection from sort_collection where collection = p_collection;
  exception
    when others then
      v_collection := '999';
  end;

  -- Item Status us value
  v_itemstatus := lpad(substr(p_itemstatus,1,3),3,'0');
  v_return := substr('S'||v_sublibrary||'M'||v_material||'C'||v_collection||'I'||v_itemstatus,1,20);
  return(v_return);
END build_sort_key;
/

-- Material type
v_material := lpad(substr(p_material,1,3),3,'0');

-- Collection type
v_collection := lpad(substr(p_collection,1,3),3,'0');

-- Item Status value
v_itemstatus := lpad(substr(p_itemstatus,1,3),3,'0');
Set Aleph to use the new sort routine

USING THE RE-PURPOSED SORT ROUTINE
Have Aleph use the Custom Sort

- Modify \AL500\Circ\tab\GuiSys.ini to point to the new sort routine.
  - [ItemList]
  - ItemSortType=ITEM-14
### Example (Circulation)

The image shows a screenshot of a circulation system interface. The screenshot highlights the items listed for different stacks, including:

- **Open Stacks**
  - [FILM] REEL 62
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100001134578
  - Location: CHL-OS MICROFILM

- **Open Stacks**
  - [FILM] REEL 63
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100001134579
  - Location: CHL-OS MICROFILM

- **Open Stacks**
  - [FILM] REEL 64
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100001134571
  - Location: CHL-OS MICROFILM

- **Secure Stacks**
  - [CD] ITEM 1
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100000632091
  - Location: 1 C 59 3 3 // 2 (100000632222)

- **Secure Stacks**
  - [CD] ITEM 2
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100000632090
  - Location: 1 C 59 3 3 // 2 (100000632222)

- **Secure Stacks**
  - [CD] ITEM 3
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100000632096
  - Location: 1 C 59 3 3 // 2 (100000632222)

- **Secure Stacks**
  - [CD] ITEM 4
  - Corporate Records
  - Regular
  - Call Number: CR 100 142
  - Item Barcode: 100000632095
  - Location: 1 C 59 3 3 // 2 (100000632222)
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Gotchas

• General warning: be careful with custom triggers and item records (Z30) since the trigger might interfere with some Aleph (or Primo) functionality.

• Make sure the trigger that creates the custom sort key doesn’t do anything for serials.
  – Configure your trigger to ignore material types that start with “ISS”.

• We created custom labels for certain fields in the Aleph client. In some cases we added the word “[AUTO]” or “[REQ]” to the end of the label as indicators to staff.
  – C:\AL500\Alephcom\tab\eng\window.dat

• In some cases, we prevent staff from changing values to certain fields (non-serials). All of this can be very confusing for the staff.
Gotchas, cont.

• Initially we tried to use certain Z30 item fields to get the sort key working properly but encountered some odd side effects.
  – Do NOT use Enumeration Level.1 (A) (Vol) / Enumeration Level.2 (B), since Primo assumes a multi-volume collection if something is in these fields.
  – We tried to use a note field but that caused confusion for staff, and the sort key got displayed in the OPAC.

• Finally we found that Chronology Level 3 and Sub-O / Supp-index-o fields worked fine to hold the custom sort keys.
  – We also tested using some of the other Enumeration / Chronology fields (like Alt Chronology M), but in the end the two fields we selected seemed to work the best without side effects.

Test Thoroughly!
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MODIFY THE Z13 / Z13U

Using the Z13 to get additional fields from the BIB and/or HOL records.
Modify the Z13/Z13U

• If you need to create sort keys on a field that is in the BIB or HOL record, you will need to use the Z13/Z13U tables.
  – It is not possible to pull individual fields out of the BIB/HOL records because content is stored as a BLOB.

• Use the xxx60/tab22 and xxx01/tab22 tables to configure the Z13/Z13U tables.

• The Z13/Z13U tables can be configured to pull fields from the BIB and/or HOL records. Up to 15 user defined fields can be defined.

• DB triggers can access BIB and HOL data in the Z13/Z13U in addition to the item level data (Z30).
Z13/Z13U Additional Notes

• The HOL will pull from the BIB and vive-versa.

For example we store the call # in the BIB 090$a, or the HOL 852$h or 950$a.

– We modified: xxx60/tab22:
  • CALL-NO 1 852## h 950## a 090## a
  • Aleph will search for a value in this order: HOL 852$h, HOL 950$a, and then BIB 090#a until it finds a value.

• The Z13 is limited. But, it is updated by a background daemon so it is nearly always current.
Questions

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