“And You Thought You Were Nerdy!”

Fun with Alma Analytics

Lisa Hamlett, Application Support Analyst II
Where Did We Start?
A Few Stolen Tricks

• Mike Rogers, ELUNA 2016
  ➢ Concatenation
    • "User Details"."Last Name" | | ', ', | "User Details"."First Name"
  ➢ Wildcards
    • _ = single character, % = multiple characters
  ➢ CAST
    • Dates vs Timestamp & String vs Integer
  ➢ CASE vs. Filter
  ➢ MINUS and UNION reports
    • Go see Mike’s presentation today at 12:15!
CAST

• CAST(“dimension.field” AS X)
  ➢ X can be DATE or TIMESTAMP if a date field.
  ➢ X can be STRING or INTEGER if a number.

• Examples:

<table>
<thead>
<tr>
<th>Modification Date</th>
<th>CAST (Modification Date AS DATE )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/22/2019 12:02:05 AM</td>
<td>2/22/2019</td>
</tr>
<tr>
<td>2/22/2019 12:02:06 AM</td>
<td>2/22/2019</td>
</tr>
<tr>
<td>2/22/2019 12:02:08 AM</td>
<td>2/22/2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Replacement cost</th>
<th>CAST (Replacement cost AS INTEGER )</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.00</td>
<td>100</td>
</tr>
<tr>
<td>1000.00</td>
<td>1,000</td>
</tr>
<tr>
<td>105.00</td>
<td>105</td>
</tr>
</tbody>
</table>
Time Parts

- $X(\text{"dimension.field"})$

  $X$ can equal YEAR, QUARTER, MONTH, DAY, DAYOFYEAR, DAYOFWEEK, HOUR, MINUTE, or SECOND for any date field.

<table>
<thead>
<tr>
<th>Modification Date</th>
<th>YEAR(&quot;Physical Item Details&quot;.&quot;Modification Date&quot;)</th>
<th>QUARTER(&quot;Physical Item Details&quot;.&quot;Modification Date&quot;)</th>
<th>DAYOFWEEK(Modification Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/12/2015</td>
<td>2,015</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>12/19/2015</td>
<td>2,015</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>1/9/2016</td>
<td>2,016</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>1/16/2016</td>
<td>2,016</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>1/30/2016</td>
<td>2,016</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
Other Time-Related Queries

Today: CURRENT_DATE

The first day of last month is created as:
TIMESTAMPADD(SQL_TSI_MONTH, -1, TIMESTAMPADD( SQL_TSI_DAY , DAYOFMONTH( CURRENT_DATE) * -(1) + 1, CURRENT_DATE))

The last day of last month is created as:
TIMESTAMPADD( SQL_TSI_DAY , -(1), TIMESTAMPADD( SQL_TSI_DAY , DAYOFMONTH( CURRENT_DATE) * -(1) + 1, CURRENT_DATE))

The first day of the current year is created as:
TIMESTAMPADD(SQ...
CASE vs. Filter

• CASE functions (or using Bins) are very slow on large reports, but they do not need to match a specific dimension.

• FILTER functions (or simply applying filters) run more quickly, but only capture the dimensions filtered.

• I will show a few examples where I have used both for different things.
CASE / Bins

• CASE is used to group dimensions which match certain criteria.
• Bins are an Analytics shortcut for writing a case statement.
  ➢ Go to Edit Formula and Select Bins at the top of the window
CASE / Bins Example 1

• This bin grouping can be written as the following case statement

```sql
CASE WHEN "Physical Item Details"."Last Loan Date" IS NULL THEN 'Loaned >10 or Null' WHEN "Physical Item Details"."Last Loan Date" < timestamp '2008-01-01 01:00:00' THEN 'Loaned >10 or Null' ELSE 'X' END
```
CASE / Bins Example 2

• This bin grouping can be written as the following case statement

```
CASE  WHEN ("Bibliographic Details"."Publication Date" NOT LIKE '%1983%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1984%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1985%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1986%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1987%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1988%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1989%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1990%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1991%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1992%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1993%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1994%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1995%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1996%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1997%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1998%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%1999%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2000%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2001%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2002%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2003%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2004%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2005%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2006%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2007%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2008%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2009%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2010%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2011%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2012%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2013%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2014%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2015%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2016%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2017%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2018%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2019%' AND "Bibliographic Details"."Publication Date" NOT LIKE '%2020%') THEN 'Published >35' ELSE 'X' END
```
FILTER

• FILTER is used to limit to a certain dimension

Permanent Call Number begins with KB; KH; KK; KN; PK; PT; QA; QB; QE; TK; U; V

OR  Normalized Call Number is between 0pg#3801 and 0pg#9666

OR  Normalized Call Number is between 0pj#6001 and 0pj#9270

OR  Normalized Call Number is between 0pl#3301 and 0pl#4891

OR  Normalized Call Number is between 0pq#4001 and 0pq#6000

OR  Normalized Call Number is between 0pq#6000 and 0pq#8930

OR  Normalized Call Number is between 0pq#9000 and 0pq#9999.99999
Filtering a Report Based on Another Report

- If you open a filter and scroll all the way down, you will see the option “is based on the results of another analysis.” This is how you filter one report based on another.
An Example of Filtering a Report Based on Another Report

• Automating OCLC holdings removal

  • Needed to build a report that would list MMSIDs of items that have been deleted and no longer have other items for the same library on the same record.

  • Report 1: MMSIDs for any record that had a deleted item

    Library Code is equal to / is in BUS; CHEM; MUSME; UNIV
    Location Code is equal to / is in BSTOR; BSTORJ; MSTOR; MSTORJ;
    MSTORNC; SSTOR; SSTORJ; USTOR; USTORGD; USTOR; USTORNC
    Lifecycle is equal to / is in Deleted

  • Report 2: Limit to MMSIDs for records with no remaining items.

    MMS Id is equal to any MMS Id in Recently Deleted Monographs 1 - Collect MMS IDs
    Library Code is equal to / is in BUS; CHEM; MUSME; UNIV
    Location Code is equal to / is in BSTOR; BSTORJ; MSTOR; MSTORJ;
    MSTORNC; SSTOR; SSTORJ; USTOR; USTORGD; USTOR; USTORNC
    Num of items (In Repository) is equal to / is in 0
Using CASE to Extract OCLC Numbers: SQL

CASE WHEN UPPER("Bibliographic Details"."Network Number") LIKE '%OCLC%'
THEN REPLACE(LEFT(SUBSTRING("Bibliographic Details"."Network Number" FROM LOCATE('OCLC',UPPER("Bibliographic Details"."Network Number"))),(LOCATE(' ', SUBSTRING(CONCAT("Bibliographic Details"."Network Number",'; ') FROM LOCATE('OCLC',UPPER("Bibliographic Details"."Network Number")))))),';','')
WHEN UPPER("Bibliographic Details"."Network Number") LIKE '%OCN%'
THEN REPLACE(LEFT(SUBSTRING("Bibliographic Details"."Network Number" FROM LOCATE('OCN',UPPER("Bibliographic Details"."Network Number"))),(LOCATE(' ', SUBSTRING(CONCAT("Bibliographic Details"."Network Number",'; ') FROM LOCATE('OCN',UPPER("Bibliographic Details"."Network Number")))))),';','')
WHEN UPPER("Bibliographic Details"."Network Number") LIKE '%ON%'
THEN REPLACE(LEFT(SUBSTRING("Bibliographic Details"."Network Number" FROM LOCATE('ON',UPPER("Bibliographic Details"."Network Number"))),(LOCATE(' ', SUBSTRING(CONCAT("Bibliographic Details"."Network Number",'; ') FROM LOCATE('ON',UPPER("Bibliographic Details"."Network Number")))))),';','')
ELSE 'No OCLC Number Available' END
Using CASE to Extract OCLC Numbers: Regular Expressions

CASE WHEN EVALUATE('regexp_substr(%1,"OCOLC"'),(UPPER("Bibliographic Details"."Network Number"))) IS NOT NULL THEN EVALUATE('regexp_substr(%1,"OCOLC+[0-9]+"'),(UPPER("Bibliographic Details"."Network Number")))

WHEN EVALUATE('regexp_substr(%1,"OCN"'),(UPPER("Bibliographic Details"."Network Number"))) IS NOT NULL THEN EVALUATE('regexp_substr(%1,"OCN+[0-9]+"'),(UPPER("Bibliographic Details"."Network Number")))

WHEN EVALUATE('regexp_substr(%1,"OCM"'),(UPPER("Bibliographic Details"."Network Number"))) IS NOT NULL THEN EVALUATE('regexp_substr(%1,"OCM+[0-9]+"'),(UPPER("Bibliographic Details"."Network Number")))

WHEN EVALUATE('regexp_substr(%1,"ON"'),(UPPER("Bibliographic Details"."Network Number"))) IS NOT NULL THEN EVALUATE('regexp_substr(%1,"ON+[0-9]+"'),(UPPER("Bibliographic Details"."Network Number")))

ELSE 'No OCLC Number Available' END
Other Uses for Regular Expressions

• Formula to Extract Subject Letter:
  ➢ Evaluate('regexp_substr(%1,''[A-z]+''),'Holding Details'."Permanent Call Number")

• Formula to Extract Subject Number:
  ➢ Evaluate('regexp_substr(%1,''[0-9]+''),Evaluate('regexp_substr(%1,''[A-z]+[0-9]+''),'Holding Details'."Permanent Call Number")

• Formula to Extract Subject Date:
  ➢ Evaluate('regexp_substr(%1,''([A-z])([0-9]+)\ ([0-9]+)''),'Holding Details'."Permanent Call Number")

• Formula to Split Call Numbers Based on a Period Followed by a Letter:
  ➢ Split 1: REPLACE(Evaluate('regexp_substr(%1,''\^[^\.]+\^[^A-z]+'',1,1),'Holding Details'."Permanent Call Number"'),' .','')
  ➢ Split 2: REPLACE(Evaluate('regexp_substr(%1,''\^[^\.]+\^[^A-z]+'',1,2),'Holding Details'."Permanent Call Number"'),' .','")
Regex Practical Application

• Goal: Create a report of incorrect/unfindable barcodes.
  ➢ All our barcodes are 11 or 12 numbers
• Exclude barcodes that have only 11 numbers
  ➢ Evaluate('regexp_substr(%1, '^([0-9]{11})$''), "Physical Item Details"."Barcode") IS NULL
• Exclude barcodes that have only 12 numbers
  ➢ Evaluate('regexp_substr(%1, '^([0-9]{12})$''), "Physical Item Details"."Barcode") IS NULL
• Extract barcodes that have non-number characters
  ➢ Evaluate('REGEXP_INSTR(%1, '^[0-9]+$''), "Physical Item Details"."Barcode")
Other Fun Things
Conditional Formatting for Tables

- From the Results tab, open the Edit View, click “More Options” on the column you would like to customize, then go to Column Properties > Conditional Format:
Conditional Formatting for Tables

• Remember that the conditions are hierarchical.
  ➢ Analytics will look for a match in the first one, then the second one, and so forth.

• The value in the condition is setting that condition for the column you selected. You will need to repeat this condition for each column you wish to customize.
# Conditional Formatting for Tables

**Example:**

<table>
<thead>
<tr>
<th>Active</th>
<th>#</th>
<th>000000000000158</th>
<th>None</th>
<th>7/10/2019</th>
<th>Woodruff Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>#158</td>
<td>010003000158</td>
<td>Lost</td>
<td>2/7/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#160</td>
<td>010003000160</td>
<td>Loan</td>
<td>3/25/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#161</td>
<td>010003000161</td>
<td>Lost</td>
<td>1/7/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#162</td>
<td>010003000162</td>
<td>None</td>
<td>9/9/2018</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Active</td>
<td>#163</td>
<td>010003000163</td>
<td>None</td>
<td>10/10/2018</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Active</td>
<td>#164</td>
<td>010003000164</td>
<td>None</td>
<td>1/2/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#165</td>
<td>010003000165</td>
<td>None</td>
<td>12/14/2018</td>
<td>Woodruff Permanently Lost</td>
</tr>
<tr>
<td>Active</td>
<td>#166</td>
<td>010003000166</td>
<td>None</td>
<td>1/18/2019</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Active</td>
<td>#167</td>
<td>010003000167</td>
<td>None</td>
<td>10/10/2018</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#168</td>
<td>010003000168</td>
<td>None</td>
<td>8/29/2018</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Active</td>
<td>#169</td>
<td>010003000169</td>
<td>Loan</td>
<td>4/2/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#170</td>
<td>010003000170</td>
<td>None</td>
<td>9/7/2018</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Active</td>
<td>#171</td>
<td>010003000171</td>
<td>None</td>
<td>3/26/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#172</td>
<td>010003000172</td>
<td>None</td>
<td>3/25/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#173</td>
<td>010003000173</td>
<td>Loan</td>
<td>3/25/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Active</td>
<td>#175</td>
<td>010003000175</td>
<td>None</td>
<td>3/25/2019</td>
<td>Woodruff Umbrellas</td>
</tr>
<tr>
<td>Deleted</td>
<td>#001</td>
<td>010002756964</td>
<td>None</td>
<td>9/8/2015</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Deleted</td>
<td>#002</td>
<td>010002756951</td>
<td>None</td>
<td>10/26/2015</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Deleted</td>
<td>#003</td>
<td>010002756965</td>
<td>None</td>
<td>3/27/2015</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Deleted</td>
<td>#005</td>
<td>010002756966</td>
<td>None</td>
<td>2/15/2016</td>
<td>Woodruff Withdrawn</td>
</tr>
<tr>
<td>Deleted</td>
<td>#006</td>
<td>010002756972</td>
<td>None</td>
<td>9/29/2015</td>
<td>Woodruff Withdrawn</td>
</tr>
</tbody>
</table>
Conditional Formatting for Graphs

• Each of our libraries has traditionally had a color for circulation processes.
  ➢ Transit slips
  ➢ Order Slips

• I wanted to apply those colors to our online fulfillment dashboard as well.
Conditional Formatting for Graphs

• View Properties > Style > Style and Conditional Formatting

• Apply formatting for each value you wish to customize.

(Mine have CASE statements because I have grouped some of our desks according to name changes)
Useful Resources


• Analytics Presentations and Documents. https://knowledge.exlibrisgroup.com/Alma/Training/Extended_Training/Presentations_and_Documents_-_Analytics

• Analytics Documentation https://knowledge.exlibrisgroup.com/Alma/Product_Documentation/010Alma_Online_Help_(English)/080Analytics
Even More Resources

• Analytics on the Developers Network. https://developers.exlibrisgroup.com/?s=analytics

• Tableau Web Data Connector for Analytics https://developers.exlibrisgroup.com/blog/Tableau-Web-Data-Connector-for-Ex-Libris-Analytics/

Questions?
Contact Info
Lisa Hamlett, Application Support Analyst II
lhamlet@emory.edu

Special Thanks
Alex Cooper, Lead Application Support Analyst
acoope5@emory.edu