Calculations and Functions
Learning Objectives

At the end of this workshop you should be able to do the following:

- Create basic calculations
- Redefine data
- Combine data
- Create substrings
- Return the maximum value for records captured by sequence number or activity date
- Apply basic IF..THEN..ELSE logic

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System Requirements

Personal Computer

Pentium III, 500 MHz or higher
Microsoft Windows 98 or higher
128 MB RAM
Explorer 5.1 or Netscape 7.02 or higher
Overview

Oracle 9i Discoverer is a tool which allows users to query an Oracle database. It is an ad-hoc query, reporting, analysis, and Web publishing tool. It can be used for a variety of tasks including data exporting, sorting and grouping data, creating charts and graphs, and printing reports.

Discoverer workbooks can be saved and shared with others.

Key Terms

Business Area
Set of folders containing information with a common business purpose.

Folder
Group of related information within a business area (typically a table or view).

Item
Specific type of information within a folder. Axis Item—corresponds to a column in a table. Measure Item—axis item that represents numeric data.

Query
To search for information. A saved search which extracts information from multiple tables. Each query is stored in a separate worksheet.

View
Data the user has access to which is set up by the Discoverer administrator. The Banner schema, describing views, is available at http://banner.rowan.edu/banner-schema/

Workbook
A related group of worksheets that are related to each other. Holds one or more queries.

Worksheet
A document that stores the results of a query.
Calculations and Functions

Add Calculations

1. Identify the data field names you wish to calculate.

   If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select Calculations from Tools menu.

3. Select New to create new calculation or choose calculation name and select Edit (Figure A).

4. Select the column headings to calculate and choose Paste. Add the functions needed such as addition (+), subtraction (-), and multiplication (x) (Figure B).

   Standard precedence rules apply (multiplication and division first, then subtraction and addition). Use parentheses to indicate precedence as needed.

5. Enter calculation name and select OK.

   If data in the calculated column reads “#DIV/0!” the calculation could not be computed. Check your calculation formula for errors.
Redefine Data

1. Identify the data you wish to redefine.

   If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select Calculations from Tools menu.

3. Select New to create new calculation or choose calculation name and select Edit.

4. Select the Functions radio button to right of Show:, click on f(x) DECODE under Others folder and choose Paste. (Figure C)

5. Enter the appropriate field as expr and define data substitutions following the calculation formula. (Figure D)

   **FORMULA**
   
   \[
   \text{DECODE(expr, search1, result1[, searchN[, resultN[, default]]]})
   \]

   **EXAMPLE**
   
   \[
   \text{DECODE(uoms code,'EA','each', 'BOX','package','other')}
   \]

   Calculations are case sensitive!
   You must type field names and data elements exactly as they appear for the substitution to be accurate.

6. Enter calculation name and select OK.
## Calculations and Functions

**Figure E** Select function template.

**Figure F** Define formula.

---

**EXAMPLE**

<table>
<thead>
<tr>
<th>Phone Area</th>
<th>Phone Number</th>
<th>Full Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>215</td>
<td>4831982</td>
<td>2154831982</td>
</tr>
<tr>
<td>610</td>
<td>5553663</td>
<td>6105553663</td>
</tr>
<tr>
<td>610</td>
<td>2229182</td>
<td>6102229182</td>
</tr>
<tr>
<td>610</td>
<td>2938475</td>
<td>6102938475</td>
</tr>
<tr>
<td>610</td>
<td>3928374</td>
<td>6103928374</td>
</tr>
<tr>
<td>610</td>
<td>2938371</td>
<td>6102938371</td>
</tr>
</tbody>
</table>

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### Combine Data

1. Identify the data you wish to combine or concatenate.

   If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select **Calculations** from Tools menu.

3. Select **New** to create new calculation or choose calculation name and select **Edit**.

4. Select the Functions radio button to right of Show:, click on f(x) CONCAT under String folder and choose **Paste**. (Figure E)

5. Enter the appropriate fields as char1 and char2 following the calculation formula. (Figure F)

   **FORMULA**
   
   CONCAT(char1, char2)

   **EXAMPLE**
   
   CONCAT(phone area, phone number)
   
   - or -
   
   phone area || phone number

   **Calculations are case sensitive!**
   
   You must type field names and data elements exactly as they appear for the substitution to be accurate.

6. Enter calculation name and select **OK**.
Calculations and Functions

Substring

1. Identify the data you wish to redefine.
   
   If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select Calculations from Tools menu.

3. Select New to create new calculation or choose calculation name and select Edit.

4. Select the Functions radio button to right of Show:, click on f(x) SUBSTR under String folder and choose Paste. (Figure G)

5. Enter the appropriate field as char and define beginning and ending character length following the calculation formula. (Figure H)

   **FORMULA**
   
   SUBSTR(char, m[, n])

   **EXAMPLE**
   
   SUBSTR(ssn,1,3) || '-' || SUBSTR(ssn,4,2) || '-' || SUBSTR(ssn,6,4)

   Calculations are case sensitive!
   You must type field names and data elements exactly as they appear for the substitution to be accurate.

6. Enter calculation name and select OK.

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Oracle 9i Discoverer Desktop
Calculations and Functions

Return Maximum Record

1. Identify the data you wish return only the maximum value (i.e. by sequence number or activity date).

If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select Conditions from Tools menu.

3. Select New to create new condition or choose condition name and select Edit.

4. Select the item you wish to retrieve a maximum value from drop-down selection. (Figure I)

5. Select the condition = from drop-down selection.

6. Choose Create Calculation under Value(s) drop-down selection. (Figure J)

7. Select the Functions radio button to right of Show:, click on f(x) MAX under Analytic folder and choose Paste. (Figure K)

continued on next page
8. Enter the appropriate fields as expr, expr2, expr3, and expr4. (Figure L)

**FORMULA**
MAX(expr) OVER (PARTITION BY expr1 ORDER BY expr2 RANGE BETWEEN expr3 AND expr4)

**EXAMPLE**
MAX(DECISION_NUMBER) OVER (PARTITION BY PERSON_UID ORDER BY ACADEMIC_YEAR)

💡 Calculations are case sensitive! You must type field names and data elements *exactly* as they appear for the substitution to be accurate.

9. Select **OK** to complete calculation, enter condition name, and select **OK**.

### Before Maximum Record Formula

<table>
<thead>
<tr>
<th>PERSON_UID</th>
<th>DECISION_NUMBER</th>
<th>DECISION_DESC</th>
</tr>
</thead>
<tbody>
<tr>
<td>27678</td>
<td>1</td>
<td>Deposit Waived</td>
</tr>
<tr>
<td>27678</td>
<td>2</td>
<td>Applicant Withdrawal</td>
</tr>
<tr>
<td>28153</td>
<td>1</td>
<td>$100 Deposit</td>
</tr>
<tr>
<td>28872</td>
<td>1</td>
<td>$100 Deposit</td>
</tr>
<tr>
<td>28872</td>
<td>2</td>
<td>Applicant Withdrawal</td>
</tr>
<tr>
<td>35616</td>
<td>1</td>
<td>$100 Deposit</td>
</tr>
</tbody>
</table>

### After Maximum Record Formula

<table>
<thead>
<tr>
<th>PERSON_UID</th>
<th>DECISION_NUMBER</th>
<th>DECISION_DESC</th>
</tr>
</thead>
<tbody>
<tr>
<td>27678</td>
<td>2</td>
<td>Applicant Withdrawal</td>
</tr>
<tr>
<td>28153</td>
<td>1</td>
<td>$100 Deposit</td>
</tr>
<tr>
<td>28872</td>
<td>2</td>
<td>Applicant Withdrawal</td>
</tr>
<tr>
<td>35616</td>
<td>1</td>
<td>$100 Deposit</td>
</tr>
</tbody>
</table>
IF. . THEN . . ELSE Logic

1. Identify the data you wish to use.

   If you renamed a column heading, you must know the original data field name to create a calculation. Double-click on the column heading and check Name: for the original data field name.

2. Select Calculations from Tools menu.

3. Select New to create new calculation or choose calculation name and select Edit.

4. Select the Functions radio button to right of Show:, click on f(x) CASE under Other folder and choose Paste. (Figure M)

5. Enter the appropriate condition, expr1, and expr2 following calculation formula. (Figure N)

   Formula
   CASE WHEN condition1 THEN expr1 ELSE expr2 END

   **EXAMPLE**
   CASE WHEN GENDER = 'F' THEN AGE SUM-10 WHEN GENDER = 'M' THEN AGE SUM+2 ELSE AGE SUM END

   **EXAMPLE**
   CASE WHEN GENDER = 'F' THEN AGE SUM-10 WHEN GENDER = 'M' THEN AGE SUM+2 ELSE AGE SUM END

   Calculations are case sensitive!
   You must type field names and data elements *exactly* as they appear for the substitution to be accurate.

6. Enter calculation name and select OK.