Access Basics: When and How

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Learning outcome disclaimer

Access is a complex tool that requires significant hands on time to become familiar. It is too complex to become proficient in an hour. The intention of this program is to introduce the concepts of Access/databases and provide just enough knowledge to know when Access is a better tool than Excel.

To become proficient, you must take a hands on course or series of courses and invest hours, perhaps days, learning, experimenting, reading, and experiencing bad data, bad structures, hung queries, and ugly reports.
Learning Outcomes

- Orient to data
- What is Access?
- Terms
- Working with Data/Pick the Right Tool
- Viewing Data/Reporting
- More advanced tools

Orient to data

We deal in a collection of data every day. The question is what is the best tool for the job.
Orient to data

**Excel**
- Good for calculations
- Good when data doesn’t repeat
- Good when all data exists in only a few sheets
- Good when data doesn’t change
- Good for simple reporting (e.g. mailmerge)

**Access**
- Good when segments of data repeat
- Good when multiple sources of data
- Good when data change and changes need to be reflected elsewhere
- Good for complex reporting

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Orient to data
What is Access?

Microsoft Access is a database management program that combines a database engine with a graphic interface for interacting with that data.

It is particularly useful when a user doesn’t have extensive programming experience or resources to program a full fledged desktop or web application.

Terms

<table>
<thead>
<tr>
<th>Access</th>
<th>Excel “Equivalent”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field.</strong> The most basic unit of data</td>
<td>Column</td>
</tr>
<tr>
<td><strong>Record.</strong> A collection of related fields</td>
<td>Row</td>
</tr>
<tr>
<td><strong>Table.</strong> A collection of related records</td>
<td>Worksheet</td>
</tr>
<tr>
<td><strong>Database.</strong> A collection of related tables, records, and fields of data</td>
<td>Workbook</td>
</tr>
</tbody>
</table>
Working with data/pick the right tool

Take a dataset and separate out the data fields to the point where each record is 100% unique.

Hal’s rule of thumb. Access is the wrong tool unless:

● More than ~1,000 unique records -OR-
● More than 3 tables -OR-
● Mailmerge won’t work for reporting -OR-
● Data isn’t static/data integrity is critical to project
More than ~1,000 unique records

Why? Manipulation becomes cumbersome after a certain point—what if you don’t copy a formula or sort ALL of the data?

More than 3 tables

Why? Multiple lookups and nested IF formulas are ugly (and hard to manage):

- =IF(ISNA(VLOOKUP(A130, Exceptions!$A$2:$B$1048576, 2, FALSE)) = TRUE, "N", "Y")
- =IF(L130 = "Y", VLOOKUP(A130, Exceptions!$A$2:$B$1048576, 2, FALSE), "")
- =IF(L169 = "Y", VLOOKUP(A169, Exceptions!$A$2:$C$1048576, 3, FALSE), "")
- =IF(G242 = "N", IF(AND(E242 = "G", F242 = "Y"), MIN(400, 40*IF(L242 = "Y", N242, C242)), IF(AND(E242 = "U", F242 = "Y"), MIN(400, 34*IF(L242 = "Y", N242, C242)), IF(AND(E242 = "G", F242 = "N"), MIN(450, 45*IF(L242 = "Y", N242, C242)), MIN(450, 38*IF(L242 = "Y", N242, C242))))), SUM(I242:J242))
Mailmerge won’t work for reporting

Why? Mailmerge is great when there is one record per recipient. When there is more than one, each recipient will get two (or more!) items. There is a way to combine these items in Word, but it’s hard, and you need to know SQL anyway, so why not do it in Access?

Data isn’t static/data integrity is critical to project

Why? Finding all the right fields to update in a massive spreadsheet is time consuming and prone to error/omission. Example—a key vendor changed addresses.
### Which tool?

<table>
<thead>
<tr>
<th>Name</th>
<th>Street Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Phone</th>
<th>Birthday</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>123 Street Road</td>
<td>City</td>
<td>ST</td>
<td>12345</td>
<td>123-456-7890</td>
<td>1/2/68</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>987 Avenue Court</td>
<td>Town</td>
<td>ST</td>
<td>23456</td>
<td>123-987-6543</td>
<td>6/5/47</td>
</tr>
<tr>
<td>John Smith</td>
<td>456 Road Blvd</td>
<td>Village</td>
<td>ST</td>
<td>34567</td>
<td>123-321-0987</td>
<td>6/5/58</td>
</tr>
<tr>
<td>Jane Doe</td>
<td>6 High Rise Dr, #1</td>
<td>City</td>
<td>ST</td>
<td>12346</td>
<td>123-654-7890</td>
<td>9/8/81</td>
</tr>
</tbody>
</table>

### Which tool?

<table>
<thead>
<tr>
<th>Name</th>
<th>Order Number</th>
<th>Order Date</th>
<th>Product</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane Smith</td>
<td>1234</td>
<td>4/9/2014</td>
<td>Erasers</td>
<td>3</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>1234</td>
<td>4/9/2014</td>
<td>Pencils</td>
<td>2</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>1235</td>
<td>4/10/2014</td>
<td>Erasers</td>
<td>2</td>
</tr>
<tr>
<td>Bob Jones</td>
<td>1233</td>
<td>4/9/2014</td>
<td>Pencils</td>
<td>10</td>
</tr>
<tr>
<td>John Doe</td>
<td>1232</td>
<td>4/9/2014</td>
<td>Pencils</td>
<td>15</td>
</tr>
<tr>
<td>John Doe</td>
<td>1236</td>
<td>4/10/2014</td>
<td>Trash Can</td>
<td>3</td>
</tr>
<tr>
<td>John Doe</td>
<td>1237</td>
<td>4/11/2014</td>
<td>Trash Bag</td>
<td>200</td>
</tr>
</tbody>
</table>
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</table>

Which tool?

- Customer Table
  - Customer ID
  - Customer Name
  - Other unique info, e.g. address (maybe) telephone (maybe), customer anniversary, etc…
- Product Table
  - Product ID
  - Product Supplier
  - Product Name
  - Product Price (maybe)
  - Other unique info, e.g. dimensions, description, etc…
- Order Detail Table
  - Order ID
  - Product ID
  - Quantity
- Order Summary Table
  - Order ID
  - Order Date
  - Customer ID
SELECT session_info.event_id, session_info.session_id, session_participant_names.email_address, session_participant_names.first_name, session_participant_names.last_name, session_info.title, content_area_info.content_area_name, session_info.rec_credit, instruct_method_info.instruct_method_name, session_info.session_date, event_info.event_name, event_info.location FROM instruct_method_info INNER JOIN (event_info INNER JOIN (content_area_info INNER JOIN (session_info INNER JOIN session_participant_names ON (session_info.session_id = session_participant_names.session_id) AND (session_info.event_id = session_participant_names.event_id)) ON content_area_info.content_area_id = session_info.content_area_id) ON event_info.event_id = session_info.event_id) ON instruct_method_info.instruct_method_id = session_info.instruct_method_id WHERE (((session_info.event_id)=[Enter Event ID]));
Viewing data/reporting

- **Define relationships**
  - One-to-one (should be all one table…)
  - One-to-many (one customer has many orders; one order has many products)

- **Define how data is joined**
  - Inner join
  - Outer join

- Sometimes a diagram helps
More advanced tools

- Forms
- Reports
- Write queries
- Crosstab queries
- Union queries
- ODBC
- Custom functions

Additional resources

- http://allenbrowne.com/tips.html
- Google (seriously)

I use all of these, nearly all the time. There are a lot of smart people who have posted good information to the web--unless you are doing something REALLY complex, you can usually find the answer online.
Questions

Thank you!

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