

Week3: Second Tutorial

- TA goes over Access assignment requirements

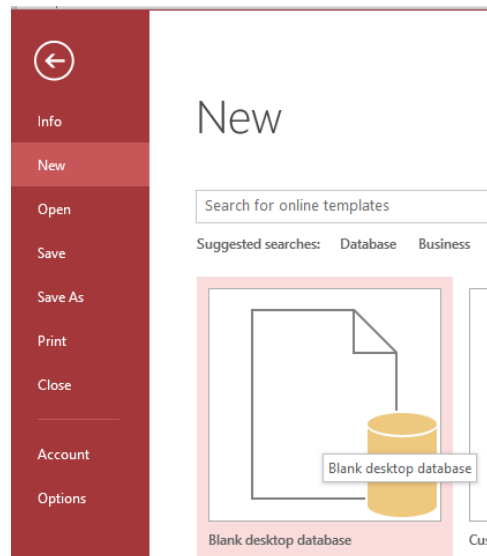
First Tutorial

- Monday, Tuesday: Oct 9 & 10 tutorials were not held due to the Thanksgiving holiday

TA Covering Requirements For The First Graded Assignment 'A1'

- Web address of assignment description:
 - <http://pages.cpsc.ucalgary.ca/~tamj/2017/203F/assignments/assignment2/>
- TA will go through Features in the assignment that you are to implement and:
 - TA **will explain** the end result produced when you complete the feature
 - TA **will not** specify the details of how to produce that result (because that is 'the answer')
- TAs will go through the style requirements of assignment and point out how missing a style requirement will affect grading
 - The specifics of each style requirement comes later in lecture and in some cases in tutorial as well e.g. absolute vs. relative cell references
 - Sometimes screenshots will show you how it's done.
 - **The TA will explain the details later.**
 - The early preview is provided so you 'recognize' it later in lecture and tutorial when you see it.

Review: Create A Blank Database

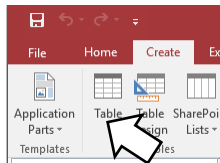


Part I, A2: Creating The Database And Error Prevention

- Creating the two tables
- Creating attributes (appropriate name and type), defining the appropriate error prevention mechanism
 - Modifying the Employees table
 - Modifying the Locations table

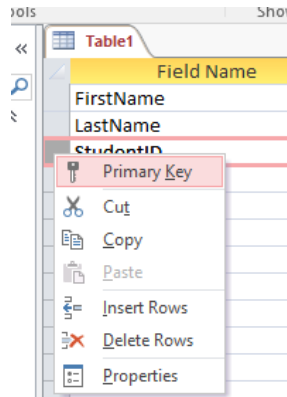
Creating The Tables

- Employees and locations (one table is automatically created and opened in 'Datasheet View' when a new Access database is created).



Set Primary Key

- Define the primary keys for the two tables



- Make sure you choose an appropriate attribute (recall the characteristics of primary keys)

Modifying the Employees Table

- EmployeeNumber
- LocationID
- BaseSalary
- YearsOfService
- Email

Modifying The Tables

- For each attribute you get 0.05 for creating the (appropriately named attribute).
 - This is regardless of whether the type of information (“Data type”) is appropriate and can be earned if error prevention has been defined
 - That is: these should largely be easy to earn marks!

Field Name	Data Type
LocationID	OLE Object
PostalCode	Yes/No
City	Date/Time

JT: Data Types are all completely wrong so don't follow this example!

Q:What “Data Types” should be used?

A: Some attributes should be obvious. For others look for clues in the assignment description. Also the error prevention required should give you clues.

Recall: The TA is here to explain what you should do not tell you how you do it (that's up to you to figure out).

EmployeeNumber

- 9 digits with every digits separate by a space
- JT's Question: Digits are used but are these digits ever used in a calculation?
- OK
 - 999 999 999
- Not OK
 - 99 9999 999
 - A99 999 999
 - 123456789

LocationID

- A foreign key that refers to the LocationID field in the Locations table.
 - We never want an employee to come from a location that does not exist in the locations table
 - Example (invalid)

EmployeeNumber	Location	
111 111 111	99	

LocationID	PostalCode	City
1	NONON0	Yellow Knife
2	NONON1	Yellow Knife
3	NONON2	Yellow Knife

BaseSalary

- A positive numeric value that indicates the base dollar compensation earned by the employee.
- OK
 - \$1
 - \$666,777
- Not OK
 - \$0
 - \$-123
- Starting (default) value must be non-negative

	BaseSalary
*	\$1.00

YearsOfService

- Non-negative number
- OK
 - 0 years (i.e. a new employee)
 - 1 year
- Not OK
 - -13 years

Email

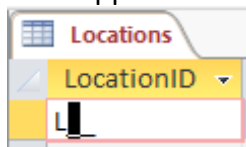
- 6 field/format requirements (0.6 GPA for error prevention)
 1. *<One alphabetic character>*
 2. *<Any number of any type of character>*
 3. @
 4. *<One alphabetic character>*
 5. *<Any number of any type of character>*
 6. *<.com>*
- OK
 - [a@a12.com](#)
- Not OK
 - [1@a.com](#)
 - [1.com](#)
 - [a@a.ca](#)

Modifying the Locations Table

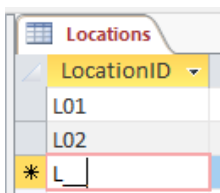
- LocationID
- PostalCode
- City

LocationID

- Primary key
- What appears when the location ID is entered: "L" appears



- What is stored in the location ID: "L" is not stored



Access: Datasheet View

	A
1	LocationID
2	01
3	02
4	

Actual data exported to Excel

PostalCode

- Six characters in the following format:
`<char><digit><char>-<digit><char><digit>`
- OK
 - N0N-0N0
- Not OK
 - N0N0N0
 - N0N 0N0
 - 0N0-N0N

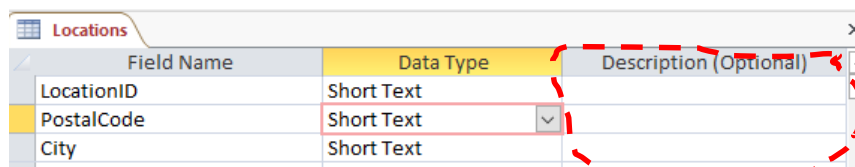
City

- As described in the assignment, just create the attribute with an appropriate name and appropriate “Data Type”

Creating Tables: Style Requirements

- Filling in the description field
- Clear and helpful error messages
- Choosing logical data for an attribute, good naming conventions

The Description Field



Field Name	Data Type	Description (Optional)
LocationID	Short Text	
PostalCode	Short Text	
City	Short Text	

Clear And Helpful Error Messages

- (From the assignment, these error messages): “...helps the user keep from making the same error again”
- Example age must be a number from 1 – 114.
 - Helpful error message (it should be hard to go wrong with something so specific)
 - “Age must be a number from 1 – 114”
 - Poor/unhelpful error messages:
 - Invalid age (Not specific, the use of ‘invalid’ is somewhat intimidating)
 - Age is wrong (Not specific, if it’s ‘wrong’ then what is ‘right’)
 - Bonehead! (Wrong for an error message, just wrong....)

Logical Data Type

- As mentioned it should be obvious how to pick a valid “Data Type” based on the description for each attribute and/or the error prevention required
- But here’s a completely incorrect example again if you need it:

Locations	
Field Name	Data Type
LocationID	OLE Object
PostalCode	Yes/No
City	Date/Time

Naming Tables And Attributes

Tables

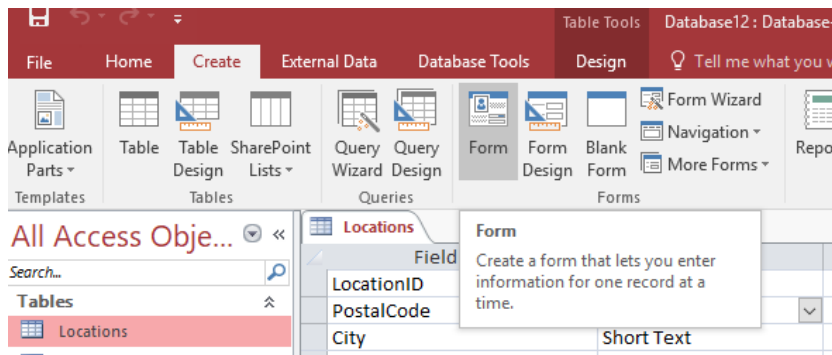
- Unique and descriptive name.
 - Bad: 'X', 'Money', 'ACT' (abbreviation)
 - Better: 'Students', 'Courses' (could depend upon context however)
 - Avoid using spaces e.g. 'FirstName', "Cell_phone"
 - Generally avoid singular names ("Student" vs. "Students")

Attributes

- Same rules for tables applies
- However attributes should be singular rather than plural e.g. 'HomeAddress' vs. 'HomeAddresses'

Creating Graphical Form For Data Entry Into A Table

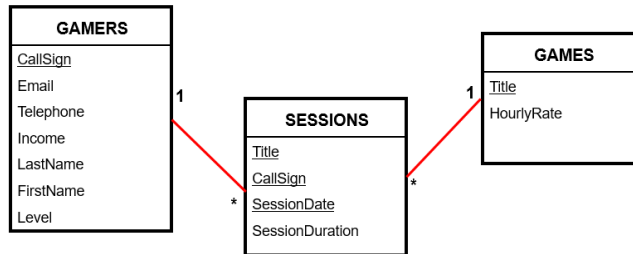
- "Creating a graphical interface for entering new data:"
- Create->Form



- Note: you only have to this for the table that is likely to undergo many changes "Employees"

ERD: Standard Diagrammatic Notation

- (From the lecture example)



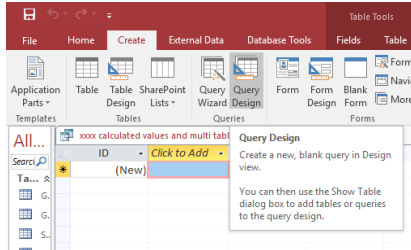
- Just make sure that your notation is correct (follow the lecture notes) and accurately as well as completely reflecting the database.
- Also make sure the ERD is legible and in the correct file format:
 - “...gif, jpg, pdf, png or as a PowerPoint slideshow”

Queries

- Questions that are asked of the database.
- For each record the question is ‘asked’ and if the question or question answers true then the row will appear.
 - E.g. for an “JobApplicants” table, show all applicants (each applicant is a record) who have an overall GPA of 3.5 or higher from a post-secondary institute as well as having 10 or more years of relevant work experience.

Forming Queries

- All queries need for formed in Access using the “Query Design’ option



- Query 4 & 5: An SQL version of each query is required
 - Include the two queries in a Word document or a PDF file and make sure you submit it along with the rest of your submission: database, ERD diagram

Query 1: Employee Years Of Service

- Restriction: 10 to 20 years of service
- Attributes to show: Employee number and years of service
- Example (years of service) years of service that show:
 - 10, 12, 15, 20 (don't miss boundary cases)
- Won't show:
 - 9, 21 (among many others)

Query 2: City Names

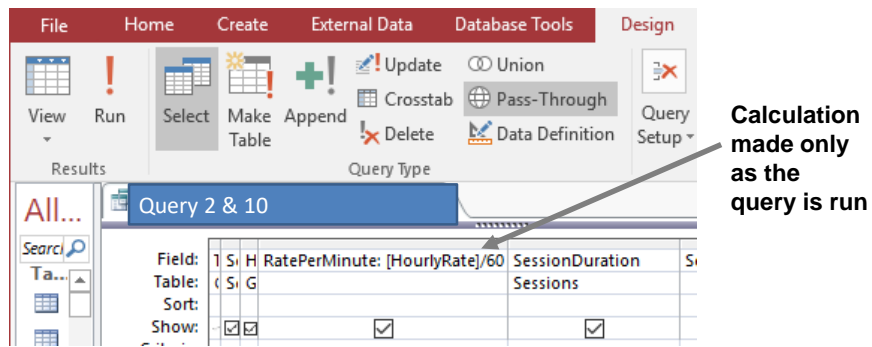
- City names that begin with 'C'
- City names that meet the condition:
 - Calgary, Claresholm
- City names that don't meet the condition:
 - Kansas city (should be obvious)

Query 3: Email Address

- Email that contains 'canada' somewhere in the user name but not in the domain information.
- OK (appears in query results)
 - canada@a.com
 - calgarycanada@Canada.com
 - canada2@ucalgary.com
- Not OK (doesn't appear in query results)
 - a@a.com
 - a@canada.com
 - canadian@canada.com

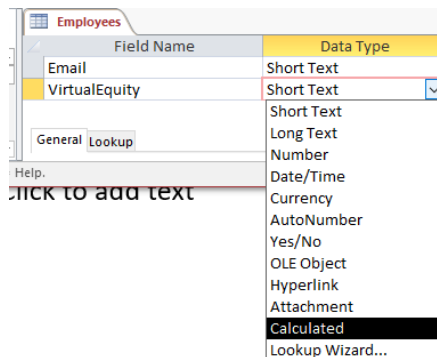
Query 4: Calculated Value For Virtual Equity

- Important: read the assignment requirements. The calculated value is derived ONLY when the query is formed and not stored as an attribute of the table.
- Correct: Calculated value is derived only during the query (example from lecture notes)



Query 4: Calculated Value For Virtual Equity (2)

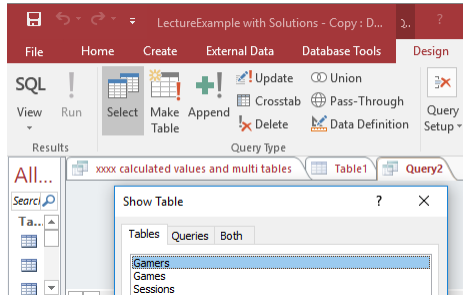
- Incorrect: Calculated value that is stored as an attribute of a table



- The specifics of defining calculated values will be taught later in lecture and tutorial.
 - This is provided early on so you can recognize it when you see it

Query 5: Multi-Table Queries

- Retrieves data from more than one table
- In Access “Create->Query Design”



Query 5: Multi-Table Queries (5)

- Formed using SQL: make sure you follow the proper format and structure for forming a multi-table SQL query.
- Generic format of multi-table queries (from lecture notes)
 - SELECT: *<Table name>.<Attribute name>, <Table name>.<Attribute name>...*
 - FROM: *<Table name> INNER JOIN <Table name>...INNER JOIN <Table name> ON <Table name>.<Primary key> = <Table name>.<Foreign key>... <Table name>.<Primary key> = <Table name>.<Foreign key>*
- (Again: Details provided about what this structure means will be provided in lecture and tutorial)