#### CGS 2545: Database Concepts Fall 2010

#### LAB #5

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#### Lab #5

- The objective of this lab is to give you some experience creating a database and its associated tables before you begin to implement your project.
- As with the earlier labs, this lab is more of a tutorial on creating tables, however, once you've examined the examples in the notes, you will be able to implement your own tables following a similar format.

NOTE: In the slides that follow, if the call-out symbol is outlined in red, it means that there is something for you to try, if the call-out is outlined in blue, I am simply giving you some information about what is displayed on that page.



## Lab #5 – Creating a New Database

• Step #1 – Before creating any tables, we need to create a new database in which to put the tables. As normal, start Access from the main Program menu from the Start menu in Windows.





#### Lab #5 – Creating a New Database



## Lab #5 – Creating a New Database



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# **Creating Tables**

- Once your database has been created, the next step is to create the tables that comprise your database.
- There are several different ways to accomplish this task in Access as shown on in the **Tables** group on the **Create** tab in the next slide.
- The most important option listed is to create the table in design view, which gives the developer maximum flexibility in the design of a table and we'll examine this option in more detail after we examine the easiest option to use which is to use the table templates.



## **Creating Tables**



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On the Create tab, in the Tables group, click Table
 Templates and then select one of the available templates from the list.



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• In this example, I have chosen Contacts.

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• You can delete any fields that you don't want by right-clicking on that field (or column, in Datasheet view) and choose Delete Column.

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• You can add a field right in this Datasheet view. On the **Datasheet** tab, in the **Fields & Columns** group, click **New Field**.





#### The Table Design Wizard





#### Assessment Point #1

- At this point, examine some of the other pre-defined tables and attributes (fields) available through the table templates.
- Notice that a table design might be appropriate for your database tables but not have proper names...these are all able to be changed either through the wizard itself or through the design view we'll see next.
- Try creating a few different tables just to get the feel of the table templates.
- Once you're comfortable with the template approach to table design, proceed on to look at the design view approach to table creation.



• The table design view can be used to either create a new table within a database from scratch, or modify the schema of an existing table. On the **Create** tab, in the **Tables** group, click **Table Design**.







Type in the name for the field and then tab to the Data Type column. The default data type text will appear in the column with a drop down list. Look at the drop down list to give you an idea of the range of data types available.

For comparative purposes, the design view of the MyContacts table we created using the wizard is shown on the next

The data type determines the kind of values that users can store in the field. Press F1 for

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#### Assessment Point #2

- At this point practice creating several tables using the design view. Try several different data types and tables.
- You might also try some of the various options for table modification.
- In the datasheet view of a table, for example, place the cursor on the name of the column and right click the mouse. You will see a list of options that can be performed at this point.
  - For example, if you want to add a new field (column) to a table, then from the design view, just put the cursor on the column which you want to the new field to appear before and then right click.
- Similarly, in the design view of a table, placing the cursor on a particular field definition (row in the design view) and then right clicking will give you a set of options which includes the option of inserting a new field.

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## Advanced Table Design Features

- Now that you can create tables in Access using either the template or the design view, let's look at some of the more advanced features associated with table design in Access.
- We'll just look at a couple of these that might be something that you will want to include in the design for your database.
- First we'll look at designing an input mask and then we'll see how to change the properties of a field, and finally we'll see how to add a validation rule.

## Creating An Input Mask

- An input mask is a rudimentary form of data validation that requires data to be entered in a specific manner.
- For example, if you want the user to enter a phone number in the format areacode-prefix-suffix, then you can specify this exact format, however, if you would prefer this data be entered as (areacode) prefix-suffix, then you can specify this form instead.
- As with many other things, Access has a few built-in masks for predefined types, but you can also create your own input masks as we'll see.







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- When creating a table using the wizard, many default values are set for fields that are not optimal for the field in terms of storage requirements. For example, text fields can range from 0 to 255 characters in length and have a default size of 50 characters. If you know that no value in a certain text field would ever exceed 20 characters in length, then the default setting will waste 30 characters or more for every value in the table.
- Wasted space is not only inefficient in terms of space, it also slows down overall execution speed within the database system.
- In general, the field size property should be set to the smallest possible setting that allows you to fully capture expected data values.
- The next couple of screens show some possibilities for resetting field properties.

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## Adding Validation Rules To A Table

- No system, no matter how sophisticated, can produce valid output from invalid input in other words, "garbage in = garbage out".
- It is absolutely critical that you take every means possible to validate the data as it is entered to ensure that quality of the output that will ultimately be produced.
- Some validation is built-in to Access. You cannot, for example, enter duplicate values for a primary key, nor can you enter text into a numeric field.
- Other validation is built-in at the initiative of the developer (you) by setting various field properties in the design view of a table.
- As the final part of this lab we'll look at how to add validation rules to a table.





## Adding Validation Rules To A Table

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## Lab Assignment #5

Lab Assignment #5 – Due October 19<sup>th</sup> by 11:55 pm (WebCourses time) – 25 points

Create an Access database (see below for naming convention) for the set of relational schemas shown on the next page. For each table that you create, insert 4 or 5 rows of sample data.

Define two different input masks and two different validation rules somewhere within this database. Your choice of which tables and attributes to select for this part.

Upload your database (the file with extension .mdb for access 2000-2003 or .accdb for access 2007) using the following naming convention.

NOTE: Please use the following naming convention for your uploaded files:

HW05\_LastNameFirstName.mdb or HW05\_LastNameFirstName.accdb

Next week will look at refining the definition of the relationships in this example and see how to enforce referential integrity.





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