

## Tutorial 5 Working with Excel Tables, Pivot Tables, and Pivot Charts

### Objectives:

- Understand the difference between a structured range of data and a table
- Freeze rows and columns
- Understand the concept of fields and records
- Manipulate records in a table by updating, deleting, filtering, subtotaling
- Create Pivot Tables and Pivot Charts

Case: involve maintaining data of an art collection for an art museum. Open Museum from Tutorial 5.

	A	B	C	D	E	F	G	H
1	ArtID	Artist	Title	Date Acquired	Category	Condition	Location	Appraised Value
2	1	Mogan	Red Rock Mountain	3/19/2005	Painting	Excellent	East Pavilion	\$ 18,000
3	2	Novarre	Offerings	5/16/2005	Painting	Excellent	East Pavilion	\$ 10,000
4	3	Chico	Spring Flowers	3/20/2004	Sculpture	Excellent	East Pavilion	\$ 2,400
5	4	Roman	Seeking Shelter	10/8/2005	Sculpture	Excellent	Courtyard	\$ 52,000
6	5	DiGrigoro	The Hang	7/16/2004	Painting	Excellent	East Pavilion	\$ 8,000
7	6	Ibe	House Remembered	8/16/2004	Sculpture	Good	East Pavilion	\$ 700
8	7	Zischke	Homage to the Ancestors	7/17/2004	Textile	Excellent	East Pavilion	\$ 1,200
9	8	Gilhooly	End of the Path	8/16/2004	Sculpture	Excellent	East Pavilion	\$ 1,900

Each row represents a record of data and each column represents a field.

Any collection of related data which is organized as rows and columns where the row represents a record and a column a field is called a structured range of data or a data list.

Before you begin to organize data into a structured range...**PLAN**

#### Data Definition Table

what each field name will be and what it will contain (Description)

For above: see figure 5.2 (p. 219)

ArtID unique number

Artist artist's name

With a structured range of data you can

- add, edit and delete data in range
- Sort
- Filter
- Insert formulas to create subtotals
- Create summary tables (pivot tables)
- Apply data validation and conditional formatting

#### Creating an effective Structured range of data

**Keep same structure throughout** using field names in the top row of range (also called a column header). This row is referred to as the **header row**. Keep the names short, format them differently from data, and separate the structured range from other data in worksheet by at least one blank row and one blank column.

See our case example.

#### Freezing Panes

Look at Art Collection worksheet...problem when panning down (sometimes similarly when across)

Freeze top row...Windows ...freeze panes and option

Same for 1<sup>st</sup> column

When you want both...position important.

#### Creating an Excel Table

You can convert a structured range of data to an Excel table and then perform all of the operations previously defined for a structured range of data and additionally

- format using table formats
- add rows and columns easily
- Add a total row to calculate the summary functions that you want such as sum, average, count, max or min
- enter a formula in one table cell that is automatically copied to all other cells in that table
- create formulas that reference cells by column and range names instead of cell addresses

To create a table, place cursor in first cell below the header row, Insert and then click Table ...enter range or verify range.

Each table is auto labeled Table 1 then Table 2 and so on...rename by Properties group on Table Tools Design tab...Again note the TableTools major tab just like Chart Tools (it appears when table is active or selected and disappears when table is not selected)

**Format the table as we did in Tutorial 2 applying Table styles**

### Maintaining an Excel Table

When we talk about maintaining a table, want to add additional records or delete records.

#### To add p. 225

Generally add at end although can add by inserting a row in a specific location ---concept of stack

To get to last record END + ↓

and now go down to A117 and as soon as you enter ArtId 116 you can see that the table expands to include this row. Notice autocorrect button...have choices if you did not intend to extend the table. **Enter additional fields for this new record (tab between each field) and then tab after the last field is entered to begin a new record**

#### Finding and Editing Records p. 226

Use the Find option in Editing group to Find a specific instance of a record such as painting Moonlight which needs to have it's condition updated to Poor.

Find the Trappers painting ArtID 90 to delete it...do so by searching for 90. Once it is found you will delete it using Delete Table Row from Cells group Delete drop down list. (Be sure that you do not select entire row or delete table option will not appear)

#### Sorting

Discuss what sorting is...ascending vs. descending (button on Data tab) and the ability to perform sort on multiple columns using the Sort Dialog box. Show how to delete levels and how to add a custom list. p. 228 -233

**Single field** – Ascending by Artist Name

**Multiple fields** – location, artist and by date acquired

**Custom List** – Condition Excellent, Good, Fair and Poor....discuss this

### Session 5.2

#### Filtering p. 233-p.239

When you filter, you are temporarily extracting records based on a condition. Determine which field, you wish to filter on and use drop down arrow to select from provided choices.

Can further refine by selecting another column. Remove by selecting the individual filter symbol next to field name. Doing this is an **AND** meaning records had to satisfy both criteria or

conditions to be in extracted list(which can be copied to a separate worksheet) . To consider an **OR** condition, select multiple options under field filter.

### **Customized filters**

To create custom filters it will depend on what is contained in the field...whether text or value or date. Show examples and see Figure 5-17 of text.

To sort a filtered list, use filter menu on filter arrow.

To remove all filters, Clear on Sort and Filter group. To remove filter arrows, use filter toggle switch.

Total Row creates summary statistics...Table Tools Design tab and then check Total row...see the arrows for available functions. When you extract, these values auto change

### **Inserting Subtotals - (Subtotals cannot be used with a table)**

**Discuss why subtotal row is not sufficient.** If you are working with an Excel table, convert it back to a structured range of values by going to the Tools group on the Table Tools Design tab and select **Convert to Range**.

To use the subtotal feature, first sort your data by the desired category (field) or categories (fields)... **Then go to data and select SubTotals option. Look at outlines available.**

**Suppose you wanted to obtain summary information for the average appraised value for each location by category by condition in a nice concise table. How could you accomplish this by what we know?**

**Information is available in subtotals but not presented in a nice summary. Can use a Pivot Table.**

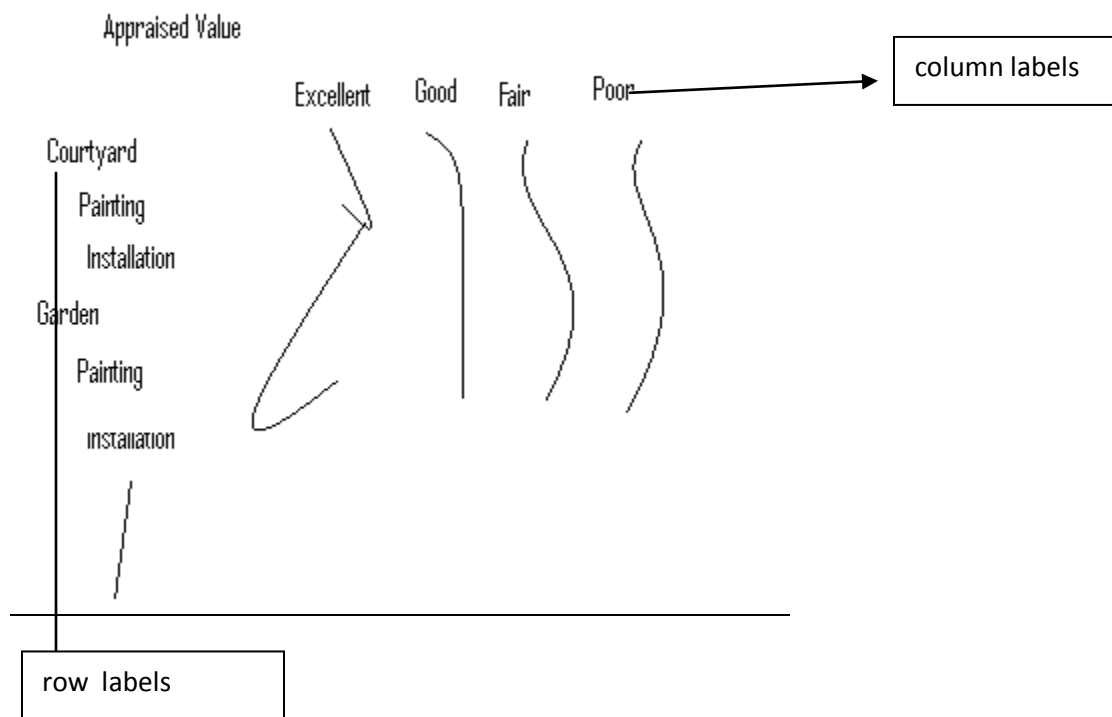
## Pivot Tables

A PivotTable is an interactive table that enables you to group and summarize **either a range of data or an Excel table** into a concise, tabular format. You can summarize using a variety of functions such as sum, average, count....

It is necessary to plan a pivot table before you begin. Define the fields to be included as category fields (to group data by) and value fields to define summary statistics.

## Museum workbook

Pivot Table Sketch: Want to summarize data by location, category and condition



Row labels are fields you wish to display as rows – one row for each unique item ---can be nested

Column labels are fields you wish to display as columns – one column for each unique item --- can be nested

Report Filter – fields used to filter report by selecting one or more items

Value Fields – fields you wish to use summary statistics on.

1. To create a pivot table, use a related data range or a table (can use table name)

Select pivot table then in field layout, select Location...goes to rows ...select Appraised Value ...goes to Values. now select Category again to Rows now Condition again in rows...drag to column

Format cells by selecting a cell in pivot table and select Field Settings in Active Field group under Pivot Table Tool Options

Drag fields to the different desired locations

<b>Sum of Appraised Value</b>	<b>Column Labels</b>				<b>Grand Total</b>
<b>Row Labels</b>	<b>Excellent</b>	<b>Fair</b>	<b>Good</b>	<b>Poor</b>	<b>Total</b>
Courtyard	203500		2500		206000
East Pavilion	488795	51100	75769	12000	627664
Garden	141800		300		142100
South Pavilion	141500				141500
West Pavilion	22617	592		650	23859
<b>Grand Total</b>	<b>998212</b>	<b>51692</b>	<b>78569</b>	<b>12650</b>	<b>1141123</b>

Now let's add a report filter to see what that involves. Select a cell to make it active and then in field list select category and drag to the report filter. **Discuss.**

Now let's do some formatting. You can apply a Pivot Table Style. You can format the individual numbers by selecting any cell in the table and under Pivot Table options, select Field Setting so that dialog box comes up. Discuss changing description, number format and function. Also discuss additional possibilities on second tab Show Value as.

Could have also done by clicking under Values and selecting Number Field settings.

Let's drag category from Report Filter and put as a row label. Now let's look at some different layout options: Outline and Tabular. Go to **Design tab, select Report Layout and then Show in Outline form, then in Tabular form....Original layout was considered Compact form. Note also the ability to specify what type of subtotals are desired.**

**What happens when data is changed in data source. Need to refresh Pivot table. Go to p. 264 of text ...find Art ID 73 Cridler, Dancing in the Light and change appraised value to 4000.**

**This is a sculpture. Before change total East Pav was about 627,000...make change and note that it remains the same until you select Refresh ALL under Pivot Tables options.**

**Now let's create a new pivot table based on date acquired. Return to Art Collection and select any field in table, insert Pivot table, new worksheet**

**Check date acquired and it goes to row label..select artid and it goes to values...want count not sum...change value field setting then select any date in row and go up and choose group selection... Show months, then change to years.**

Read together p. EX268

Pivot Chart

Pivot chart is created by selecting a field in Pivot Table and then selecting PTChart. Pivot table and Pivot Chart are linked...If one is changed then both are changed.

Select any cell in pivot table in tools group of pivot table options select pivot chart. Show how you can change filter and hence change chart...all chart tools are available.

**Do Review....**