*Hong Kong Baptist University*
**Department of Computer Science**

*COMP 7810/4096 Business Intelligence (2019-20)*

# Introduction to Excel Pivot Table

## Getting Started

*Course Partition/Password*: To be announced in class

*Windows Account/Password*: To be announced in class

*Windows 7 (VM) Account/Password*: **demo**/**demo**

1. Pick a seat and boot up the **Course Partition**.

2. Login your **Windows Account**. Password of a *Windows Account* will be distributed to you in a small piece of paper and each PC station has different password for the *Windows Account*. **You need to use the same machine for the whole course**. Hence, please remember **seat/machine number**.

3. For the first time login, you will be asked to change the password of the *Windows Account*. Please remember the **password** of your **Windows Account**.

4. Open the **Oracle VM VirtualBox** and start the **Windows 7 (VM)**. The password is **demo**.

## Introduction

PivotTable report is an interactive table that automatically extracts, organizes, and summarizes data. You can then use the report to analyze the data - for example, make comparisons, detect patterns and relationships, and analyze trends.

If BI is new to you, you can start with the end user's perspective of a BI solution. To do this, you will use the simplest possible client tool for data analysis — an Excel pivot table.

## Learning Outcomes

By finishing this lab session, you should be able to

- Summarize and analyze your data
- Quickly rearrange the layout of pivot table report
- View a subset of the data
- Show the details of the data that you specify
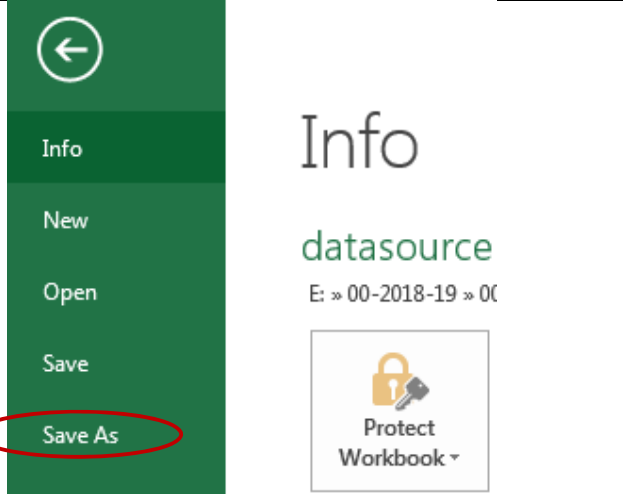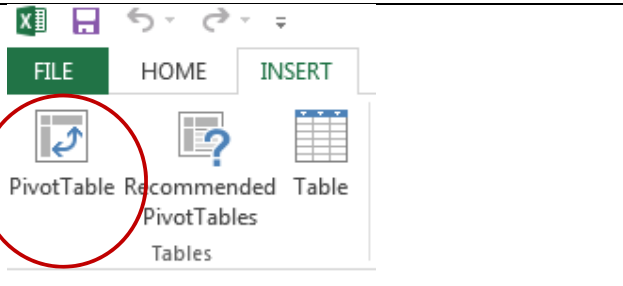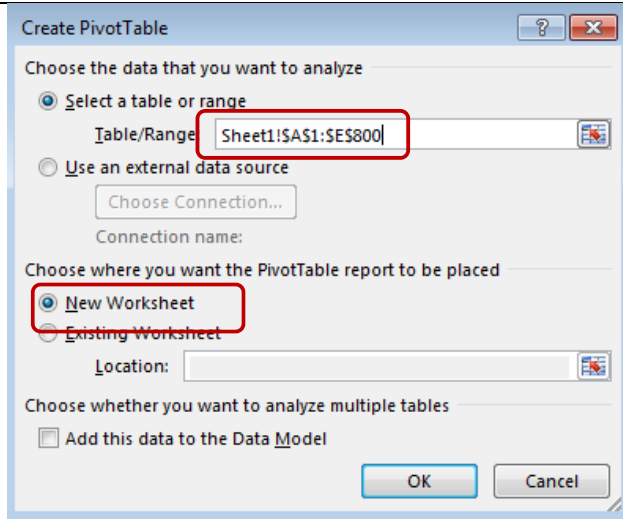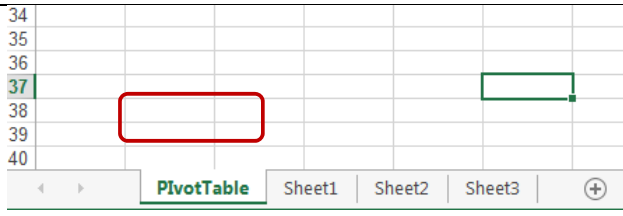
## Tools

- Microsoft Excel 2013

## Source file required
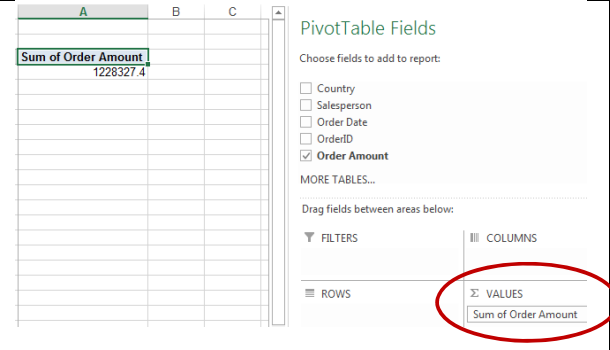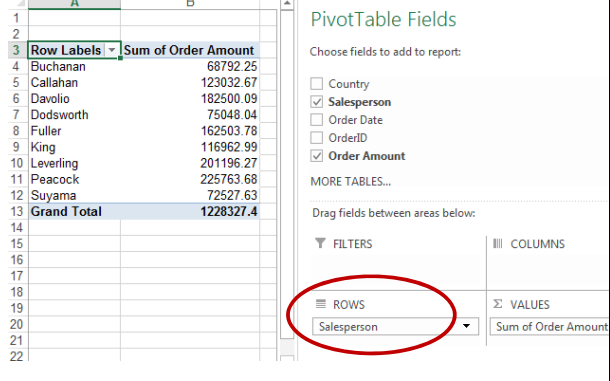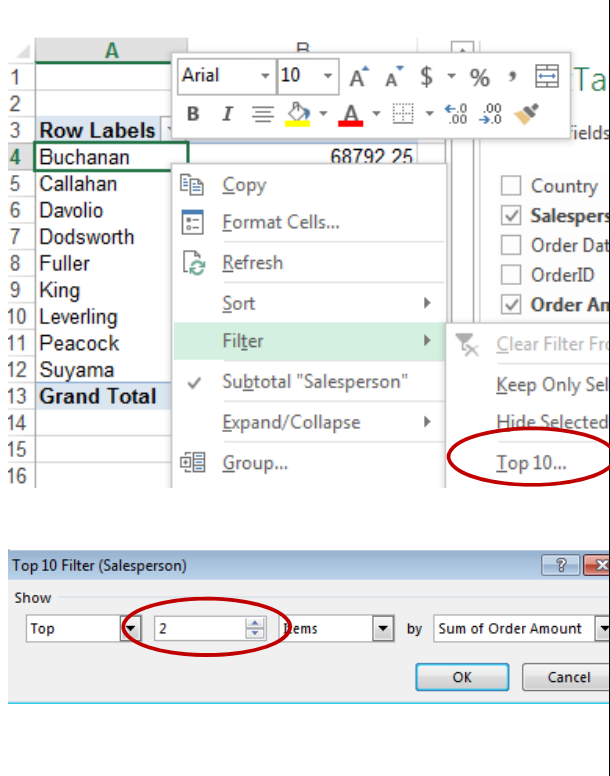
- datasource.xlsx (save it in C:\) from **http://buelearning.hkbu.edu.hk/**

| Field | Type |
|---|---|
| Country | Char(7) |
| Salesperson | Char(12) |
| OrderDate | dd/mm/yyyy |
| OrderID | Char(5) |
| Order Amount | Decimal(8,2) |

## Part A: Create a pivot table report

### I.    Create a Pivot Table Report

| | |
|---|---|
| 1.  Open the file **datasource.xlsx** using Excel 2013 and save it as **lab1A-ans.xlsx** using **FILE → Save As.** | |
| 2.  Select **INSERT** menu, click **PivotTable** icon. | |
| 3.  Select the data that you want to analyze, i.e.**Sheet1!$A$1:$E$800**<br><br>4.  Place the PivotTable report in **New Worksheet** and press **OK**. | |
| 5.  A new worksheet Sheet4 is created. **Rename** the worksheet to **PivotTable**. | |

## II.   Change the layout of the pivot table report

| | |
|---|---|
| 1.  To view the total order amount for all salespersons, drag the **Order Amount** field to the **VALUES section**. (To remove a field, drag it outside the PivotTable report.) |  |
| 2.  To view the total order amount for each salesperson, drag the **Salesperson** field to the **ROWS section**. |  |
| 3.  Right click the first salesperson-Buchanan, select **Filter → Top 10**. Type **2** (in the second box) to show top 2 salesperson by pressing **OK**. |  |

| | |
|---|---|
| | **Row Labels** ▼ **Sum of Order Amount**<br>Leverling                201196.27<br>Peacock             225763.68<br>**Grand Total**      **426959.95** |
| 4.  Click the **Filter** button → **Clear Filter From "Salesperson"** to clear the filter. | 3 **Row Labels** ▼<br>A↓ Sort A to Z<br>Z↓ Sort Z to A<br>More Sort Options...<br>▼ Clear Filter From "Salesperson"<br>Label Filters        ▶<br>✓ Value Filters      ▶<br>Search           🔍<br>  ☑ (Select All)<br>  ☑ Buchanan |
| 5.  Drag the **Order Amount** field to the **VALUES section**, place it below **Sum of Order Amount**.<br><br>6.  Click on the arrow for **Sum of Order Amount2** and choose **Value Field Settings** | ☰ ROWS         Σ VALUES<br>Salesperson ▼    Sum of Order Amount ▼<br>                  Sum of Order Amount2 ▼<br><br>Σ VALUES<br>Sum of Order Amount ▼<br>Sum of Order Amount2 ▼<br>    Move Up<br>    Move Down<br>    Move to Beginning<br>    Move to End<br>▼  Move to Report Filter<br>☰  Move to Row Labels<br>‖‖  Move to Column Labels<br>Σ  Move to Values<br>✕  Remove Field<br>🖼  Value Field Settings... |

| | |
|---|---|
| 7. Select **Average** as the function in the **Summarize value field by** list box.<br><br>8. Type **Average Order Amount** as the **Custom Name**.<br><br>9. Click **Number Format** button to change the format to **Number** with **2 decimal places**.<br><br>10. Click **OK**. Then **OK** to confirm. | Value Field Settings<br>Source Name: Order Amount<br>Custom Name: Average Order Amount<br>Summarize Values By / Show Values As<br>Summarize value field by<br>Choose the type of calculation that you want to use to summarize data from the selected field<br>Sum<br>Count<br>Average<br>Max<br>Min<br>Product<br>Number Format / OK / Cancel<br><br>Number<br>Category:<br>General<br>Number<br>Currency<br>Accounting<br>Date<br>Time<br>Percentage<br>Fraction<br>Scientific<br>Text<br>Special<br>Custom<br>Sample<br>1637.91<br>Decimal places: 2<br>☐ Use 1000 Separator (,)<br>Negative numbers:<br>-1234.10<br>1234.10<br>(1234.10)<br>(1234.10) |
| 11. The result is similar to this one: | **Row Labels | Sum of Order Amount | Average Order Amount**<br>Buchanan | 68792.25 | 1637.91<br>Callahan | 123032.67 | 1242.75<br>Davolio | 182500.09 | 1559.83<br>Dodsworth | 75048.04 | 1830.44<br>Fuller | 162503.78 | 1766.35<br>King | 116962.99 | 1745.72<br>Leverling | 201196.27 | 1609.57<br>Peacock | 225763.68 | 1495.12<br>Suyama | 72527.63 | 1115.81<br>**Grand Total | 1228327.4 | 1537.33** |
| 12. In a pivot table, you can group *dates, number* and *text* fields, for example, to group the first four salespersons, select **Buchanan** to **Dodsworth, right click,** and choose **Group.** Repeat the step to group the next 5 salespersons. | A / B<br>Row Labels<br>Buchanan<br>Callahan<br>Davolio<br>Dodsworth<br>Fuller<br>King<br>Leverling<br>Peacock<br>Suyama<br>Grand Total<br>Arial · 10 · A A $ ·<br>B I ≡ ⬧ · A · ⊞ · ‰<br>📋 Copy<br>📋 Format Cells...<br>🔄 Refresh<br>Sort ►<br>Filter ►<br>✓ Subtotal "Salesperson"<br>Expand/Collapse ►<br>⊞ Group... |

| 13. This is the result after grouping: |  |
|---|---|
| 14. To remove groupings, **right click Group1** and choose **Ungroup**. Repeat the step to ungroup Group2. | |
| 15. To create Pivot Chart, click anywhere on the pivot table, select **ANALYZE** tab and choose **PivotChart** button. Then **OK**.<br><br>16. **Delete** the Pivot Chart. |  |
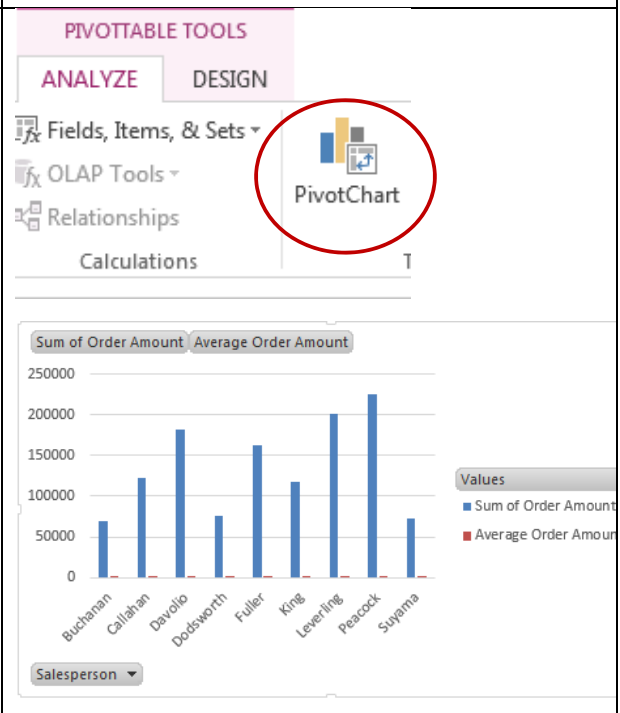
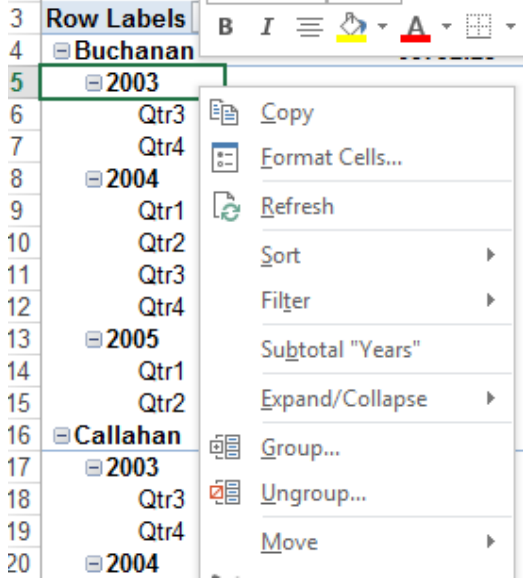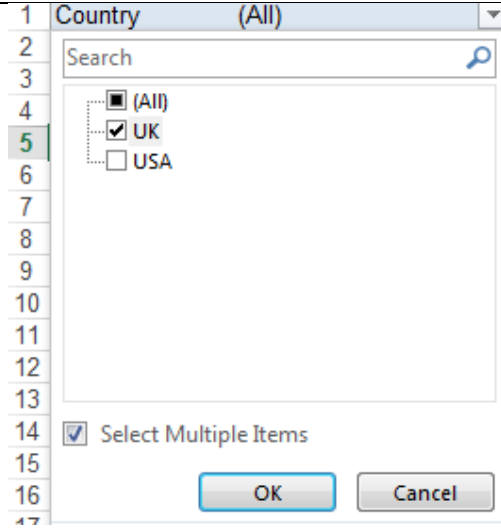17. Drag the **Order Date** field to the **ROWS** section (under Salesperson).

18. Right click any order date, choose **Group**.

19. Select Group by **Quarters** and **Years** only. **Deselect Months**.

20. Press **OK**.

| | |
|---|---|
| 21. Press **Ctrl Z** to undo the grouping. (or right click certain year, choose Ungroup)<br><br>22. **Remove** the **Order Date** field in **ROWS section**. | 3 **Row Labels**   B  I  ≡  🎨 ▾  **A** ▾  ▦ ▾<br>4  ⊟**Buchanan**<br>5     ⊟**2003**<br>6        Qtr3  📋  Copy<br>7        Qtr4  📇  Format Cells...<br>8     ⊟**2004**<br>9        Qtr1  🔁  Refresh<br>10       Qtr2     Sort          ▸<br>11       Qtr3<br>12       Qtr4     Filter        ▸<br>13    ⊟**2005**<br>14       Qtr1     Subtotal "Years"<br>15       Qtr2     Expand/Collapse  ▸<br>16 ⊟**Callahan**<br>17    ⊟**2003**    Group...<br>18       Qtr3     Ungroup...<br>19       Qtr4     Move          ▸<br>20    ⊟**2004** |
| 23. Drag the **Country** field to the **FILTERS** section.<br><br><br>24. Filter the results by choosing **UK** only.<br><br><br>25. Select **All** countries again and remove the field **Country** from the **FILTERS section**.<br><br><br><br>26. Remove **Average Order Amount** field in **VALUES section** too.<br><br><br><br>27. Save the file **lab1A-ans.xlsx** | 1 Country        (All)          ▾<br>2 Search                        🔍<br>3<br>4    ▣ (All)<br>5    ☑ UK<br>6    ☐ USA<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14  ☑ Select Multiple Items<br>15<br>16        OK        Cancel |
| 28. Copy the existing worksheet and paste it to another worksheet, start your exercise. | |

In the PivotTable Fields, you can rearrange existing fields or reposition those fields by using one of the four areas at the bottom of the layout section:

**Columns**

| A | B | C |
|---|---|---|
| 1 Years | 2003 | |
| 2 | | |
| 3 Row Labels | Sum of Order Amount | Average Order Amount |
| 4 ⊞Qtr3 | 63985.16 | 1048.94 |
| 5 ⊟Qtr4 | 129331.38 | 1577.21 |
| 6 Buchanan | 14608.38 | 2434.73 |
| 7 Callahan | 8120.7 | 1160.10 |
| 8 Davolio | 21969.28 | 1569.23 |
| 9 Dodsworth | 5530.21 | 1843.40 |
| 10 Fuller | 13667.86 | 1708.48 |
| 11 King | 13546.16 | 1693.27 |
| 12 Leverling | 11808.66 | 984.06 |
| 13 Peacock | 34355.19 | 1908.62 |
| 14 Suyama | 5724.94 | 954.16 |
| 15 Grand Total | 193316.54 | 1351.86 |

Filters — Rows — Values

| PIVOTTABLE REPORT | DESCRIPTION |
|---|---|
| Values | Use to display summary numeric data. |
| Row Labels | Use to display fields as rows on the side of the report. A row lower in position is nested within another row immediately above it. |
| Column Labels | Use to display fields as columns at the top of the report. A column lower in position is nested within another column immediately above it. |
| Filters | Use to filter the entire report based on the selected item in the report filter. |

## III.  Exercise 1

1. Create a pivot table for each of the following question (you may copy the existing worksheet containing the pivot table and rename the worksheet to the question number e.g. A, B etc):

   A.  Comparing the sum of order amount for different countries

   B.  Calculating the sum of order amount for each salesperson, and sorting the results from largest to smallest sales

   C.  Finding the five salespersons with the top five sales order amount

   D.  Finding the three salespersons with the bottom three sales order amount

   E.  Showing the sum of order amount for each salesperson, and calculating summarized order amounts as a percentage of the grand total

   F.  Comparing the sum of order amount in different quarters for the top five salespersons (no need to show year)

   G.  Finding the sum of order amount for the top five salespersons in 2004 (using **Report Filter** to filter the Year).

2. **Save** the Excel file **lab1A-ans.xlsx**

## IV.  Answer Submission

1.  Submit the Excel file **lab1A-ans.xlsx** to the site  **http://buelearning.hkbu.edu.hk/**