Cairo University Data Analytics

Faculty of Computers and Artificial Intelligence Fall 2023

Operations Research and Decision Support Department Lab #6

# Lab Objectives

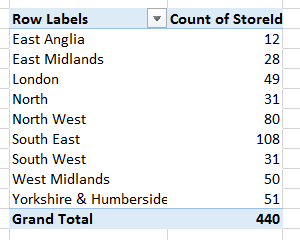
# BI Tools in Excel

* + Import data from different sources
  + Create pivot tables on aggregated data

# Power Pivot

* + An Excel add-in used to perform powerful data analysis and create a Data Model, which is a collection of tables with relationships.
  + It allows excel to act as a self-service BI platform.
  + Excel 2010 and above, COM Add-Ins.

# Exercise 1

* This should be a simple exercise: just create a pivot table showing the number of stores in each region! What could possibly be difficult about that?
* Well, unfortunately our tables are scattered into four different types of data source: a linked Excel table, an imported Excel workbook, an Access database, and a Word document.
  1. Stores
  2. Regions
  3. Geography
  4. Towns
* Create the following pivot table:

(The number of stores for each region)

# DAX

* + **D**ata **A**nalysis E**x**pressions
  + A collection of functions, operators, and constants that can be used in a formula, or expression, to calculate and return one or more values.
  + Important concepts:
    - To refer to a field/column from a table, use the table name followed by the field name in square brackets.
      * Example: Sales[Profit]
    - Calculated Fields vs Measures
      * Calculated field is a row-by-row calculation that delivers a single value to each row in a table column.
        + Example: =revenue-cost
      * Measures deliver a single value to a cell
        + Example: SUM(Sales[Profit])
    - The assignment operator is Colon & Equal Sign.
      * Example: Total Profit:=SUM(Sales[Profit])
    - RELATED Function
      * RELATED is the function that we use in DAX to look up an item from the many side of a relationship to retrieve an item from the one side of the relationship.

# Exercise 2

* Open the Excel file named “DAX-Problem1”. You should see that it contains a list of the 61 tallest buildings in the world.
* Create a calculated column in the “Buildings” table to show the average height of each floor for each building (divide the “Meters” column by the “Floors” column)
* Make sure that your formula accounts for data input errors so that it shows a blank for the average floor height for buildings with no floors.
* If you sort the buildings in ascending order by **average floor height**, Giant Owl Towers should appear at the top of the list.

A screenshot of a computer

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# Exercise 3

* Open the Excel file named “DAX-Problem2”. You should see that it contains two sheets: “Product” and “Purchase”.
* Use the SUMX and Calculate functions to add the following measure and calculated columns to the table “Product”:
  1. **Total Sales**: The total sales across the entire database.
  2. **Product Sales**: The total sales for this product.
  3. **Product Contribution**: The second column divided by the first measure.
* Hint: Make sure to add a correct relationship between these two tables.

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