



Announcements

- TA Review Session, Midterm 2
 - Sunday, Nov 16th, 2pm to 5:30 pm, 66 Main Library
- Project Proposals due in lab this week

MP7 Review

- Add extra columns instead of using nested formulas to extract the data that is relevant
- The data in sheet `OlympicAthletes` was sorted by Gold medals, so a simple `INDEX()`, `MATCH()` solution worked since the first person from that particular country was the one with most gold medals
- For Silver and Bronze medal data, this is not the case
- The best answer is not to copy data and sort since if the data is changed, it won't be updated in the sheet you copied it to
- So extracting the relevant data so that you can apply `MAX()` on it, is the key.
- `=IF(C2=Overview!D28, OlympicAthletes!H2, 0)`
- This for the entire range will give a column in `OlympicAthletes` sheet with silver medals earned by athletes belonging to country `Overview!D28` that will let you use `MAX()` and then `MATCH()` and `INDEX()` (returning name of the athlete from `OlympicAthletes!A`) to find the athlete who won the most silver medals for country `Overview!D28`
- This formula will take care of new data added, you just have to extend your formula to new rows
- Array Formulas were used by some of you
 - `IF(A1:A10=B1, 1, 0)`
 - This is actually an illegal operation, an array cannot be equal to a single element
 - Pressing `Ctrl+Shift+Enter` when using the formula lets you use these in excel
 - They are rarely used even at workplaces by data analysts

What you learnt so far

- Functions
 - `SUM()`, `SUMIF()`, `SUMIFS()` – Summing values that meet specified condition/s
 - `COUNT()`, `COUNTIF()`, `COUNTIFS()` – Counting number of cells that meet specified condition/s
 - `AVERAGE()`, `AVERAGEIF()`, `AVERAGEIFS()` – Average data meeting specified condition/s
 - `MAX()` – Maximum of the given numbers
 - `MIN()` – Minimum of given numbers
 - `VLOOKUP()` – Lookup a value in 1st column in the range that you select as `table_array` and return corresponding value in a different column to the **right of it**

- INDEX () / MATCH () – Similar to VLOOKUP () but allows you to return values to the left of your lookup_array as well
 - DAY () / MONTH () / YEAR () – Date manipulation functions
 - WEEKDAY () – The day of the week of the input
 - RAND () – Creating random numbers
 - The most important functions and their caveats have been introduced to you
- **Additional Excel Stuff**
 - Locking Cells (\$) – Useful for copying formulas over columns (by using before letters in cell addresses in your formulas) and rows (by using before digits in cell addresses in your formulas)
 - Multi-sheet Formulas (Sheetname!) – For better readability of data, permits use of separate sheets
 - Pattern Matching (* and ?) – Use * for multiple characters (including 0 characters) and ? for exactly 1
 - Pivot Tables – Summarize the given data

Studying for exams

- Do your past MPs and labs by yourself
- Try to understand why and how something works and practice using it rather than memorizing it, try to make use of all the functions taught

Applications of EXCEL (Data)

- CMBS – Commercial Mortgage Backed Securities
 - Taking properties (buildings etc.) and bundling them in a package
 - Mortgage payments on the package are paid to the investors
 - Effectively distributes risk among investors and among different properties
 - Even if one property goes under, you are not in a bad shape as an investor since the other buildings in your package might end up doing well
- Every Investment Bank has Excel sheets modeling the information on various properties to make predictions about which properties may default
- You can make money by predicting which property may be losing its value
- Relevant data in this case could be: People's opinion about the property, the locality, data about the locality, city, market in general from past years etc.
- Data and analysis can help you make predictions and decisions.
- Excel is very useful for data manipulation and representing data in meaningful ways
- We will look at csv (comma separated values) file format on Monday.
- This will let you use data between EXCEL and Javascript.