Ministry of Education and Science of Ukraine
National Technical University of Ukraine
« Igor Sikorsky Kyiv Polytechnic Institute»

№2

Excel Pivot Tables

(https://docs.google.com/document/d/1KIs2uJeYymurCjjtAampOR0xA3JJ__G3/
edit?usp=sharing&ouid=112191358510653223236&rtpof=true&sd=true)

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Kyiv 2022

Execution of work:

If you are completing these tasks as part of a training course the files can be found in the following folder: **excel-pivot-tables.** Files can also be downloaded from **www.ucl.ac.uk/isd/common/resources** where you will also find copies of these tasks and the accompanying manual for download.

Exercise 1

The OLC dataset shows details of support sessions in the OLC including the type of support provided, length of session (in hours) and the method of booking (route).
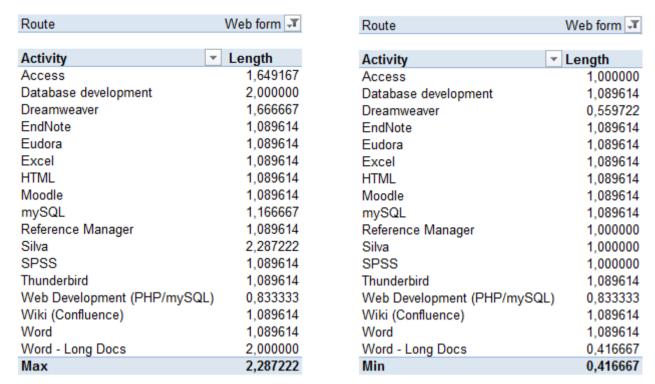
1. Create a PivotTable using **olc-data.xls**. Place the pivot table on the existing worksheet.

2. Add the fields to find the total **length** of sessions for each **activity** according to the **route**.

Route	Web form
Activity	**Length**
Access	13,539027
Database development	3,089614
Dreamweaver	6,976389
EndNote	1,089614
Eudora	1,089614
Excel	3,268842
HTML	1,089614
Moodle	1,089614
mySQL	2,256281
Reference Manager	3,179228
Silva	6,287222
SPSS	3,179228
Thunderbird	1,089614
Web Development (PHP/mySQL)	0,833333
Wiki (Confluence)	1,089614
Word	2,179228
Word - Long Docs	5,345895
Sum	**56,671972**

3. Change the data to show the **average** length of sessions.

Route	Web form
Activity	**Length**
Access	1,128252
Database development	1,544807
Dreamweaver	1,162731
EndNote	1,089614
Eudora	1,089614
Excel	1,089614
HTML	1,089614
Moodle	1,089614
mySQL	1,128140
Reference Manager	1,059743
Silva	1,571806
SPSS	1,059743
Thunderbird	1,089614
Web Development (PHP/mySQL)	0,833333
Wiki (Confluence)	1,089614
Word	1,089614
Word - Long Docs	1,069179
Average	**1,156571**

If you have time, try changing the data to **count** sessions and find the **minimum** and **maximum** length of sessions.

Route		Web form ▼
Activity	▼	**Length**
Access		1,649167
Database development		2,000000
Dreamweaver		1,666667
EndNote		1,089614
Eudora		1,089614
Excel		1,089614
HTML		1,089614
Moodle		1,089614
mySQL		1,166667
Reference Manager		1,089614
Silva		2,287222
SPSS		1,089614
Thunderbird		1,089614
Web Development (PHP/mySQL)		0,833333
Wiki (Confluence)		1,089614
Word		1,089614
Word - Long Docs		2,000000
Max		**2,287222**

Route		Web form ▼
Activity	▼	**Length**
Access		1,000000
Database development		1,089614
Dreamweaver		0,559722
EndNote		1,089614
Eudora		1,089614
Excel		1,089614
HTML		1,089614
Moodle		1,089614
mySQL		1,089614
Reference Manager		1,000000
Silva		1,000000
SPSS		1,000000
Thunderbird		1,089614
Web Development (PHP/mySQL)		0,833333
Wiki (Confluence)		1,089614
Word		1,089614
Word - Long Docs		0,416667
Min		**0,416667**

If we want one table (see exercise1.xlsx):

Route		Web form ▼			
Activity	▼	**Length Sum**	**Length Average**	**Length Max**	**Length Min**
Access		13,539027	1,128252	1,649167	1,000000
Database development		3,089614	1,544807	2,000000	1,089614
Dreamweaver		6,976389	1,162731	1,666667	0,559722
EndNote		1,089614	1,089614	1,089614	1,089614
Eudora		1,089614	1,089614	1,089614	1,089614
Excel		3,268842	1,089614	1,089614	1,089614
HTML		1,089614	1,089614	1,089614	1,089614
Moodle		1,089614	1,089614	1,089614	1,089614
mySQL		2,256281	1,128140	1,166667	1,089614
Reference Manager		3,179228	1,059743	1,089614	1,000000
Silva		6,287222	1,571806	2,287222	1,000000
SPSS		3,179228	1,059743	1,089614	1,000000
Thunderbird		1,089614	1,089614	1,089614	1,089614
Web Development (PHP/mySQL)		0,833333	0,833333	0,833333	0,833333
Wiki (Confluence)		1,089614	1,089614	1,089614	1,089614
Word		2,179228	1,089614	1,089614	1,089614
Word - Long Docs		5,345895	1,069179	2,000000	0,416667
Results		**56,671972**	**1,156571**	**2,287222**	**0,416667**

Exercise 2
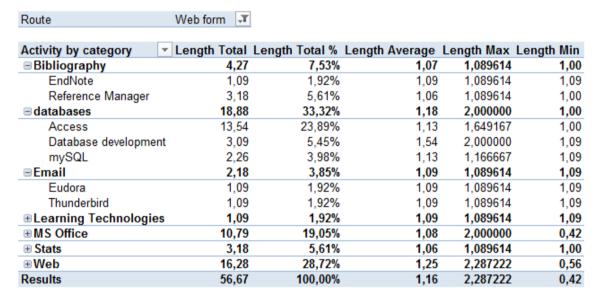
Continue working with your PivotTable in **olc-data.xls**.

1. Add the **category** field to the table so that activities are grouped by category.
2. Format the length of session data to display numbers to two decimal places.

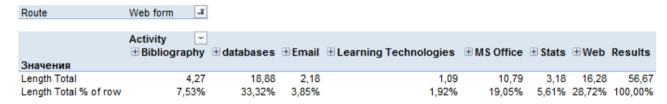3. Change the table to show the **total** length of sessions.

Route	Web form

Activity by category	Length Total	Length Average	Length Max	Length Min
⊟Bibliography	4,27	1,07	1,09	1,00
EndNote	1,09	1,09	1,09	1,09
Reference Manager	3,18	1,06	1,09	1,00
⊟databases	18,88	1,18	2,00	1,00
Access	13,54	1,13	1,65	1,00
Database development	3,09	1,54	2,00	1,09
mySQL	2,26	1,13	1,17	1,09
⊟Email	2,18	1,09	1,09	1,09
Eudora	1,09	1,09	1,09	1,09
Thunderbird	1,09	1,09	1,09	1,09
⊞Learning Technologies	1,09	1,09	1,09	1,09
⊞MS Office	10,79	1,08	2,00	0,42
⊞Stats	3,18	1,06	1,09	1,00
⊞Web	16,28	1,25	2,29	0,56
Results	56,67	1,16	2,29	0,42

4. Show the length of session data as percentage of row and then percentage of column. Use the **PivotTable Options** to experiment with removing **Grand Totals** for rows and columns.

The length of session data as percentage of column:

Route	Web form

Activity by category	Length Total	Length Total %	Length Average	Length Max	Length Min
⊟Bibliography	4,27	7,53%	1,07	1,089614	1,00
EndNote	1,09	1,92%	1,09	1,089614	1,09
Reference Manager	3,18	5,61%	1,06	1,089614	1,00
⊟databases	18,88	33,32%	1,18	2,000000	1,00
Access	13,54	23,89%	1,13	1,649167	1,00
Database development	3,09	5,45%	1,54	2,000000	1,09
mySQL	2,26	3,98%	1,13	1,166667	1,09
⊟Email	2,18	3,85%	1,09	1,089614	1,09
Eudora	1,09	1,92%	1,09	1,089614	1,09
Thunderbird	1,09	1,92%	1,09	1,089614	1,09
⊞Learning Technologies	1,09	1,92%	1,09	1,089614	1,09
⊞MS Office	10,79	19,05%	1,08	2,000000	0,42
⊞Stats	3,18	5,61%	1,06	1,089614	1,00
⊞Web	16,28	28,72%	1,25	2,287222	0,56
Results	56,67	100,00%	1,16	2,287222	0,42

The length of session data as percentage of row:

Route	Web form

	Activity							
	⊞Bibliography	⊞databases	⊞Email	⊞Learning Technologies	⊞MS Office	⊞Stats	⊞Web	Results
Значения								
Length Total	4,27	18,88	2,18	1,09	10,79	3,18	16,28	56,67
Length Total % of row	7,53%	33,32%	3,85%	1,92%	19,05%	5,61%	28,72%	100,00%

5. In the dataset, change some of the data and **refresh** the PivotTable to see how this is reflected.

My change:

	A	B	C	D	E	F
1	Category	Activity	Date	Length	Route	Category2
2	Bibliography	EndNote	24 04 09	0,5	Drop-in	
3	Bibliography	EndNote	11 05 09	1,089614083	Web form	
4	Bibliography	Project Manager	20 02 09	0,25	Email	
5	Bibliography	Reference Manager	27 02 09	1,089614083	Email	
6	Bibliography	Reference Manager	03 07 09	1	Email	Postgraduate

Then hit Refresh and we get:

Route	Email ⌐				

Activity by category ⌐	Length Total	Length Total % of column	Length Average	Length Max	Length Min
⊟ Bibliography	5,52	2,44%	0,92	1,09	0,25
Reference Manager	5,27	2,33%	1,05	1,09	1,00
Project Manager	0,25	0,11%	0,25	0,25	0,25
⊟ Core skills	2,68	1,18%	0,89	1,09	0,50
Oracle Calendar	2,18	0,96%	1,09	1,09	1,09
WTS	0,50	0,22%	0,50	0,50	0,50
⊟ databases	12,29	5,43%	1,12	2,00	0,67
Access	11,29	4,99%	1,13	2,00	0,67
mySQL	1,00	0,44%	1,00	1,00	1,00
⊞ ECDL	119,68	52,87%	1,11	2,25	0,25
⊟ Email	11,45	5,06%	1,43	3,00	1,00
Eudora	2,18	0,96%	1,09	1,09	1,09
Outlook	2,18	0,96%	1,09	1,09	1,09
Thunderbird	7,09	3,13%	1,77	3,00	1,00
⊞ Learning Technologies	6,62	2,92%	0,95	1,09	0,58
⊞ MS Office	15,79	6,97%	1,05	2,39	0,50
⊞ Non-Windows OS	1,09	0,48%	1,09	1,09	1,09
⊞ Programming	1,09	0,48%	1,09	1,09	1,09
⊞ Stats	3,51	1,55%	1,17	1,33	1,09
⊞ Web	46,64	20,61%	1,01	2,00	0,08
Results	226,36	100,00%	1,08	3,00	0,08

Exercise 3

1. Create a Pivot Table using **PivotTables_exam_data.xls**. Place it on a new worksheet.

2. Add fields to display the total marks for each module code according to the date the exam was taken (display **MODCODE** in the row area). Group the dates into intervals of 3 days.

3. Add the **CANDNO** field so that candidates are grouped by module.

Total Mark = Average Mark

Average MARK	Date ▾							
Module ▾	01 06 04	02 06 04	03 06 04	04 06 04	05 06 04	08 06 04	09 06 04	Grand mark
⊞ COMPB401	67,35							67,35
⊞ ECONB009	55,18							55,18
⊞ LANG0I01		42,00						42,00
⊞ MASTB011		56,71						56,71
⊞ MASTB012			52,86					52,86
⊞ MATHB51A				70,79				70,79
⊞ MATHB51B					58,67			58,67
⊞ STATB091						54,21		54,21
⊞ STATB092							60,00	60,00
Grand mark	62,18	54,88	52,86	70,79	58,67	54,21	60,00	60,56

Change the order so that modules are grouped by candidate.

Average MARK	Date							
Candidate	01 06 04	02 06 04	03 06 04	04 06 04	05 06 04	08 06 04	09 06 04	Grand mark
⊞FTO6	30,00			67,00	68,00	40,00	82,00	52,83
⊞PVR7	47,00	42,00		67,00	64,00	65,00	63,00	58,00
⊞RFQ5	89,00	60,00	66,00	64,00	82,00	73,00	64,00	71,14
⊞RGR3	65,00			76,00	66,00	55,00	64,00	65,17
⊞RIE6	65,00	59,00	43,00	60,00	53,00	52,00	65,00	56,71
⊞RLW3	74,00	71,00	68,00	69,00	92,00	58,00	66,00	71,14
⊞RTC6	97,00	70,00	74,00	99,00	91,00	78,00	88,00	85,29
⊞RTO9	40,00	43,00	37,00	60,00	26,00	41,00	56,00	43,29
⊞VBT7	83,00			91,00	78,00	67,00	74,00	79,33
⊞VCH5	49,50			35,00	2,00	32,00	41,00	34,83
⊞VTG1	54,00	49,00	47,00	73,00	59,00	59,00	52,00	56,14
⊞WBZ5	51,00			82,00	63,00	33,00	52,00	55,33
⊞WNG9	59,00			76,00	82,00	58,00	60,00	65,67
⊞WNY4	53,50			59,00	43,00	29,00	0,00	39,67
⊞WOL5	60,50			54,00	39,00	57,00	60,00	55,17
⊞WOQ9	76,00	45,00	35,00	54,00	45,00	50,00	40,00	49,29
⊞WOV4	58,50			61,00	50,00	28,00	67,00	53,83
⊞WPH1	58,50			97,00	66,00	67,00	54,00	66,83
⊞WQD5	72,50			91,00	80,00	55,00	60,00	71,83
⊞WQF8	52,00			50,00	15,00	33,00	45,00	41,17
⊞WQW6	58,00			69,00	57,00	71,00	78,00	65,17
⊞WUR5	61,50			90,00	92,00	87,00	85,00	79,50
⊞WUU6	81,50			65,00	22,00	49,00	61,00	60,00
⊞WVL5	78,50			90,00	73,00	64,00	63,00	74,50
Grand mark	62,18	54,88	52,86	70,79	58,67	54,21	60,00	60,56

4. Change the Pivot Table so that it **counts** the marks according to to the **UCL grade** received rather than the date.
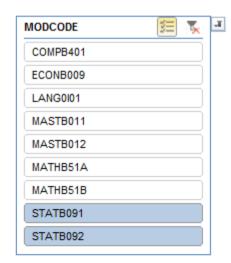
Average MARK	UCL Grade							
Candidate	A	B	C	D	E	FAIL	NOCWK	Grand mark
⊟FTO6	82,00	65,00		40,00			0,00	52,83
COMPB401							0,00	0,00
ECONB009		60,00						60,00
MATHB51A		67,00						67,00
MATHB51B		68,00						68,00
STATB091				40,00				40,00
STATB092	82,00							82,00
⊞PVR7		64,75		44,50				58,00
⊞RFQ5	81,33	63,50						71,14
⊞RGR3	75,50	65,00	55,00					65,17
⊞RIE6		63,33	54,67	43,00				56,71
⊞RLW3	79,00	67,67	58,00					71,14
⊞RTC6	85,29							85,29
⊞RTO9		60,00	56,00	41,33	37,00	26,00		43,29
⊞VBT7	81,80	67,00						79,33
⊞VCH5	71,00			41,00	35,00	20,67		34,83
⊞VTG1	73,00		56,00	48,00				56,14
⊞WBZ5	82,00	61,50	52,00	42,00		33,00		55,33
⊞WNG9	79,00	64,00	54,00					65,67
⊞WNY4			55,33	43,00		14,50		39,67
⊞WOL5		61,50	56,33		39,00			55,17
⊞WOQ9	76,00		52,00	43,33	35,00			49,29
⊞WOV4		65,00	50,00			28,00		53,83
⊞WPH1	87,00	66,50	54,00	40,00				66,83
⊞WQD5	82,67	64,00	55,00					71,83
⊞WQF8		61,00	50,00	44,00		24,00		41,17
⊞WQW6	74,50	64,50	56,50					65,17
⊞WUR5	88,50	66,00	57,00					79,50
⊞WUU6	95,00	64,67		49,00		22,00		60,00
⊞WVL5	80,00	63,50						74,50
Grand mark	81,86	64,30	54,67	43,42	36,50	22,55	0,00	60,56

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5. Add the result field to the **Report** area so that only marks that achieved a 'Pass' result can be displayed. Use the filter to display other results and finally to show all results again.

RESULT	P	🔽

Average MARK	UCL Grade 🔽					
Candidate 🔽	A	B	C	D	E	Grand mark
⊞ FTO6	82,00	65,00		40,00		63,40
⊞ PVR7			64,75	44,50		58,00
⊞ RFQ5	81,33	63,50				71,14
⊞ RGR3	75,50	65,00	55,00			65,17
⊞ RIE6		63,33	54,67	43,00		56,71
⊞ RLW3	79,00	67,67	58,00			71,14
⊞ RTC6	85,29					85,29
⊞ RTO9		60,00	56,00	41,33	37,00	46,17
⊞ VBT7	81,80	67,00				79,33
⊞ VCH5	71,00			41,00	35,00	49,00
⊞ VTG1	73,00		56,00	48,00		56,14
⊞ WBZ5	82,00	61,50	52,00	42,00		59,80
⊞ WNG9	79,00	64,00	54,00			65,67
⊞ WNY4			55,33	43,00		52,25
⊞ WOL5		61,50	56,33		39,00	55,17
⊞ WOQ9	76,00		52,00	43,33	35,00	49,29
⊞ WOV4		65,00	50,00			59,00
⊞ WPH1	87,00	66,50	54,00	40,00		66,83
⊞ WQD5	82,67	64,00	55,00			71,83
⊞ WQF8		61,00	50,00	44,00		49,75
⊞ WQW6	74,50	64,50	56,50			65,17
⊞ WUR5	88,50	66,00	57,00			79,50
⊞ WUU6	95,00	64,67		49,00		67,60
⊞ WVL5	80,00	63,50				74,50
Grand mark	81,86	64,30	54,67	43,42	36,50	64,00

6. Filter the data to only show the statistics modules (**MODCODE** beginning with 'STAT'). Display all results again.

Average MARK	UCL Grade 🔽					
Candidate 🔽	A	B	C	D	FAIL	Grand mark
⊟ FTO6	82,00			40,00		61,00
STATB091				40,00		40,00
STATB092	82,00					82,00
⊞ PVR7		64,00				64,00
⊞ RFQ5	73,00	64,00				68,50
⊞ RGR3		64,00	55,00			59,50
⊞ RIE6		65,00	52,00			58,50
⊞ RLW3		66,00	58,00			62,00
⊞ RTC6	83,00					83,00
⊞ RTO9			56,00	41,00		48,50
⊞ VBT7	74,00	67,00				70,50
⊞ VCH5				41,00	32,00	36,50
⊞ VTG1			55,50			55,50
⊞ WBZ5			52,00		33,00	42,50
⊞ WNG9		60,00	58,00			59,00
⊞ WNY4					14,50	14,50
⊞ WOL5		60,00	57,00			58,50
⊞ WOQ9			50,00	40,00		45,00
⊞ WOV4		67,00		28,00		47,50
⊞ WPH1		67,00	54,00			60,50
⊞ WQD5		60,00	55,00			57,50
⊞ WQF8				45,00	33,00	39,00
⊞ WQW6	74,50					74,50
⊞ WUR5	86,00					86,00
⊞ WUU6		61,00		49,00		55,00
⊞ WVL5		63,50				63,50
Grand mark	79,56	63,73	54,83	42,67	25,83	57,10

MODCODE		📋	⯈	🔽
COMPB401				
ECONB009				
LANG0I01				
MASTB011				
MASTB012				
MATHB51A				
MATHB51B				
STATB091				
STATB092				

7. Change the data to show the **total** marks.

It is a Grand mark.

8. Use the **Top 10** feature to display only the **top 5** candidates by marks. Show all candidates again.

Average MARK	UCL Grade ▾							
Candidate ▣	A	B	C	D	E	FAIL	NOCWK	Grand mark
⊞ RTC6	85,29							85,29
⊞ WUR5	88,50	66,00	57,00					79,50
⊞ VBT7	81,80	67,00						79,33
⊞ WVL5	80,00	63,50						74,50
⊞ WQD5	82,67	64,00	55,00					71,83
Grand mark	83,83	64,67	56,00					78,32

MODCODE	⧉ ▾ ⤢
COMPB401	
ECONB009	
LANG0I01	
MASTB011	
MASTB012	
MATHB51A	
MATHB51B	
STATB091	
STATB092	