

Lookups and PivotTables

DATA PREPARATION IN EXCEL



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Lookup and reference functions

- Many lookup and reference functions available
- Excel's address book functions
 - Use an address book to find information based on a single criteria
 - Lookup and reference functions allow similar action



Two LOOKUP functions

- Focus on two lookup functions
 - `VLOOKUP()`
 - `HLOOKUP()`
- Can be used to:
 - Lookup specific values based on an input value
 - Transfer information into a dataset from another sheet or file



VLOOKUP

VLOOKUP()

- *Syntax:* VLOOKUP (lookup_value, table_array, col_index_num, [range_lookup])
- Function arguments include:
 - lookup_value - value searched in data
 - table_array - table or dataset to be searched
 - col_index_num - column number with return value
 - range_lookup - exact match (FALSE) or approximate match (TRUE)

VLOOKUP

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4									
5		student_id ▾	first_name ▾	last_name ▾	test_date ▾	gender ▾↓	class ▾	math_score ▾	
6		1002	Elvin	Philcott	01/03/23	Male	Blue	73	
7		1003	Giavani	Buckner	01/15/23	Male	Red	51	
8		1005	Bartolomeo	Heck	01/15/23	Male	Green	5	
9		1007	Abram	Verrell	01/03/23	Male	Red	85	
10		1008	Rossy	Yele	01/15/23	Male	Blue	66	
11		1001	Marline	Pail	01/15/23	Female	Red	12	
12		1004	Hyacinthia	Berger	01/03/23	Female	Green	88	
13		1006	Kissie	Kirkham	01/15/23	Female	Blue	18	
14		1009	Randa	Coatman	01/03/23	Female	Blue	32	
15		1010	Reyna	Crickmer	01/15/23	Female	Green	81	
16									
17									
18									
19									
20									
21									
22									
23									
24									

Student Name	Test Result
Rossy	

VLOOKUP

	A	B	C	D	E	F	G	H	I
1									
2									
3			1	2	3	4	5	6	
4									
5		student_id	first_name	last_name	test_date	gender	class	math_score	
6		1002	Elvin	Philcott	01/03/23	Male	Blue	73	
7		1003	Giavani	Buckner	01/15/23	Male	Red	51	
8		1005	Bartolomeo	Heck	01/15/23	Male	Green	5	
9		1007	Abram	Verrell	01/03/23	Male	Red	85	
10		1008	Rossy	Yele	01/15/23	Male	Blue	66	
11		1001	Marline	Pail	01/15/23	Female	Red	12	
12		1004	Hyacinthia	Berger	01/03/23	Female	Green	88	
13		1006	Kissie	Kirkham	01/15/23	Female	Blue	18	
14		1009	Randa	Coatman	01/03/23	Female	Blue	32	
15		1010	Reyna	Crickmer	01/15/23	Female	Green	81	
16									
17									
18									
19									
20									
21									
22									
23									
24									

Lookup column

Lookup value

Result column

`=VLOOKUP(D20,C5:H15,6,FALSE)`

HLOOKUP

HLOOKUP()

- *Syntax:* `HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])`
- Searches data horizontally
 - Has argument `row_index_num` instead of `col_index_num`
- Provides output by row number

HLOOKUP

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5		Product ▼	2015 ▼	2016 ▼	2017 ▼	2018 ▼↓	2019 ▼	2020 ▼		
6		Apples	\$ 14,651	\$ 10,505	\$ 16,795	\$ 15,512	\$ 18,952	\$ 11,830		
7		Pears	\$ 18,449	\$ 15,862	\$ 18,477	\$ 17,640	\$ 17,115	\$ 17,362		
8		Bananas	\$ 19,859	\$ 12,992	\$ 16,214	\$ 15,297	\$ 10,183	\$ 12,541		
9		Oranges	\$ 19,743	\$ 14,471	\$ 16,982	\$ 14,681	\$ 12,642	\$ 14,211		
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										

Year	Banana Sales Amount
2017	

HLOOKUP

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5		Product ▾	2015 ▾	2016 ▾	2017 ▾	2018 ▾	2019 ▾	2020 ▾		
6		Apples	\$ 14,651	\$ 10,505	\$ 16,795	\$ 15,512	\$ 18,952	\$ 11,830		
7		Pears	\$ 18,449	\$ 15,862	\$ 18,477	\$ 17,640	\$ 17,115	\$ 17,362		
8		Bananas	\$ 19,859	\$ 12,992	\$ 16,214	\$ 15,297	\$ 10,183	\$ 12,541		
9		Oranges	\$ 19,743	\$ 14,471	\$ 16,982	\$ 14,681	\$ 12,642	\$ 14,211		
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										

Lookup row

Result row

Lookup value

`=HLOOKUP(D14,B5:H9,4,FALSE)`

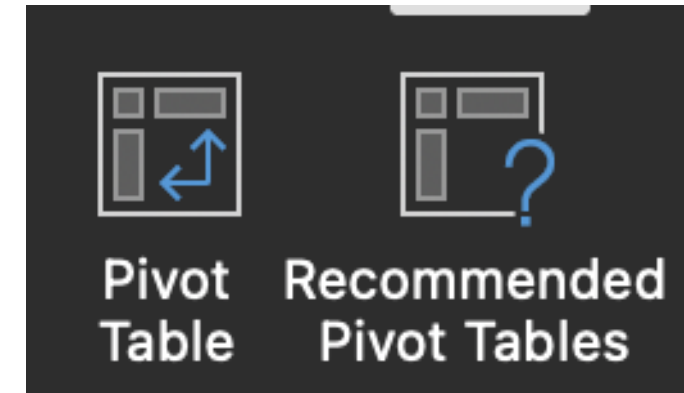
A new perspective

- Data preparation process
 - Transformed raw, tabular data
 - Cleaned, sorted, and organized
- Time to view data differently
 - summarized data



PivotTables

- Able to summarize and analyze large data volumes
- Aggregate and organize data in dynamic tables
- Transform rows to columns, and vice versa
- Group, filter, and aggregate data as we wish
- Identify trends and ensure data readiness for analysis




PivotTables

	A	B	C	D	E	F	G	H	I
1	Customer ID	Insurance Type							
2	45	Life							
3	77	Medical							
4	88	Home							
5	322	Travel							
6	402	Home							
7	517	Medical							
8	571	Medical							
9	603	Life							
10	688	Travel							
11	708	Home							
12	884	Home							
13	905	Life							
14	944	Travel							
15	965	Medical							
16	981	Medical							
17	1023	Life							
18	1024	Travel							

PivotTables

	A	B	C	D	E	F	G	H
1	Customer ID	Insurance Type						
2	45	Life						
3	77	Medical						
4	88	Home						
5	322	Travel						
6	402	Home						
7	517	Medical						
8	571	Medical						
9	603	Life						
10	688	Travel						
11	708	Home						
12	884	Home						
13	905	Life						
14	944	Travel						
15	965	Medical						
16	981	Medical						
17	1023	Life						
18	1024	Travel						



Row Labels	Count of Customer ID
Home	35677
Life	38575
Medical	23301
Travel	52445
Grand Total	149998

Let's practice!

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Referencing and summarization

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Let's practice!

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Congratulations!

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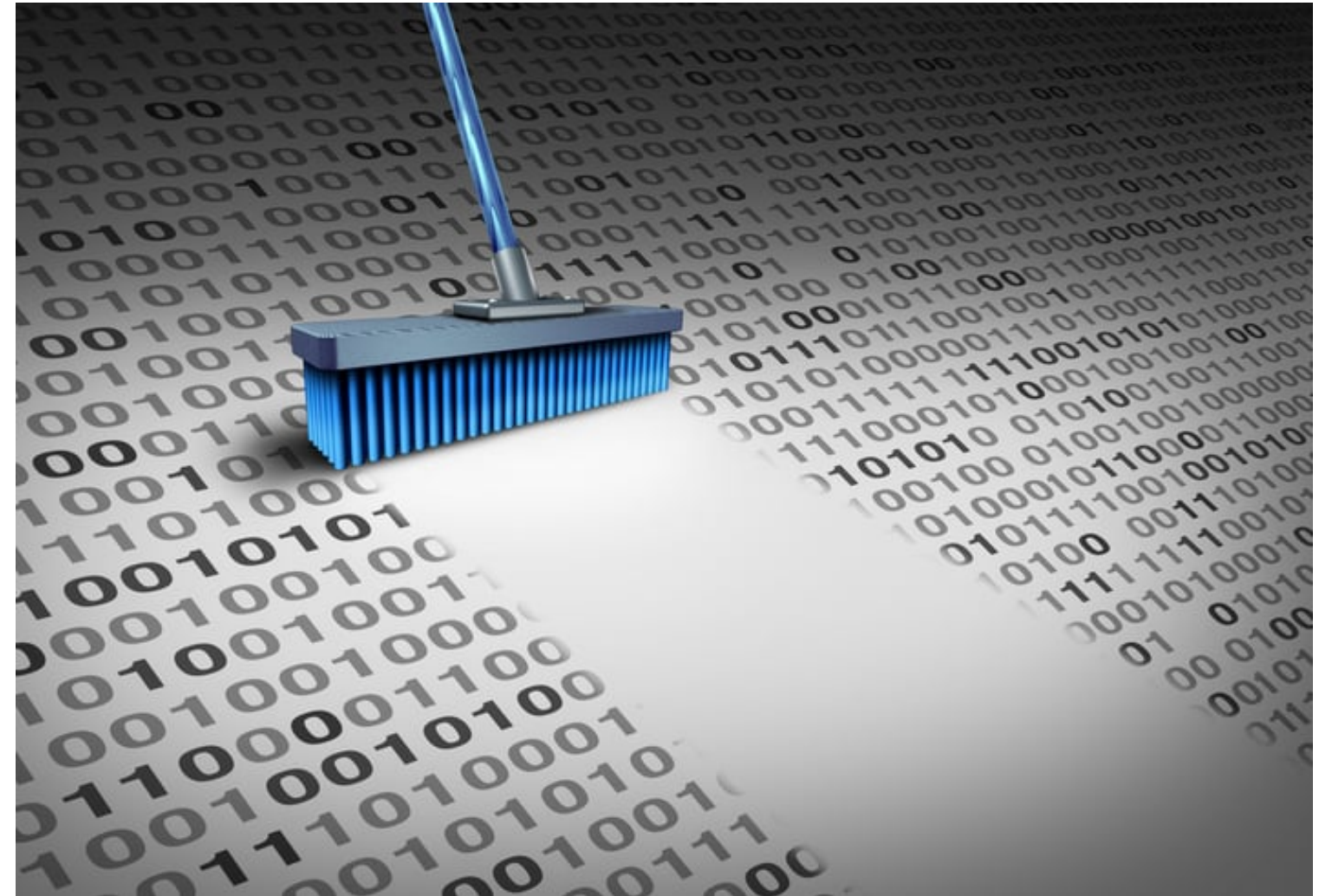
Chapter 1

- Ways to import data
 - Using different file types



Chapter 1

- Ways to import data
 - Using different file types
- Clean our data
 - Remove duplicates feature



Chapter 1

- Ways to import data
 - Using different file types
- Clean our data
 - Remove duplicates feature
- Added and manipulated data
 - Utilized Excel fill features



Chapter 2

- Learned new text functions
 - Combined text strings together



Chapter 2

- Learned new text functions
 - Combined text strings together
- Learned new date functions
 - Added extra date information to our dataset



Chapter 2

- Learned new text functions
 - Combined text strings together
- Learned new date functions
 - Added extra date information to our dataset
- Considered security and protection in Excel
 - Protecting specific worksheets



Chapter 3

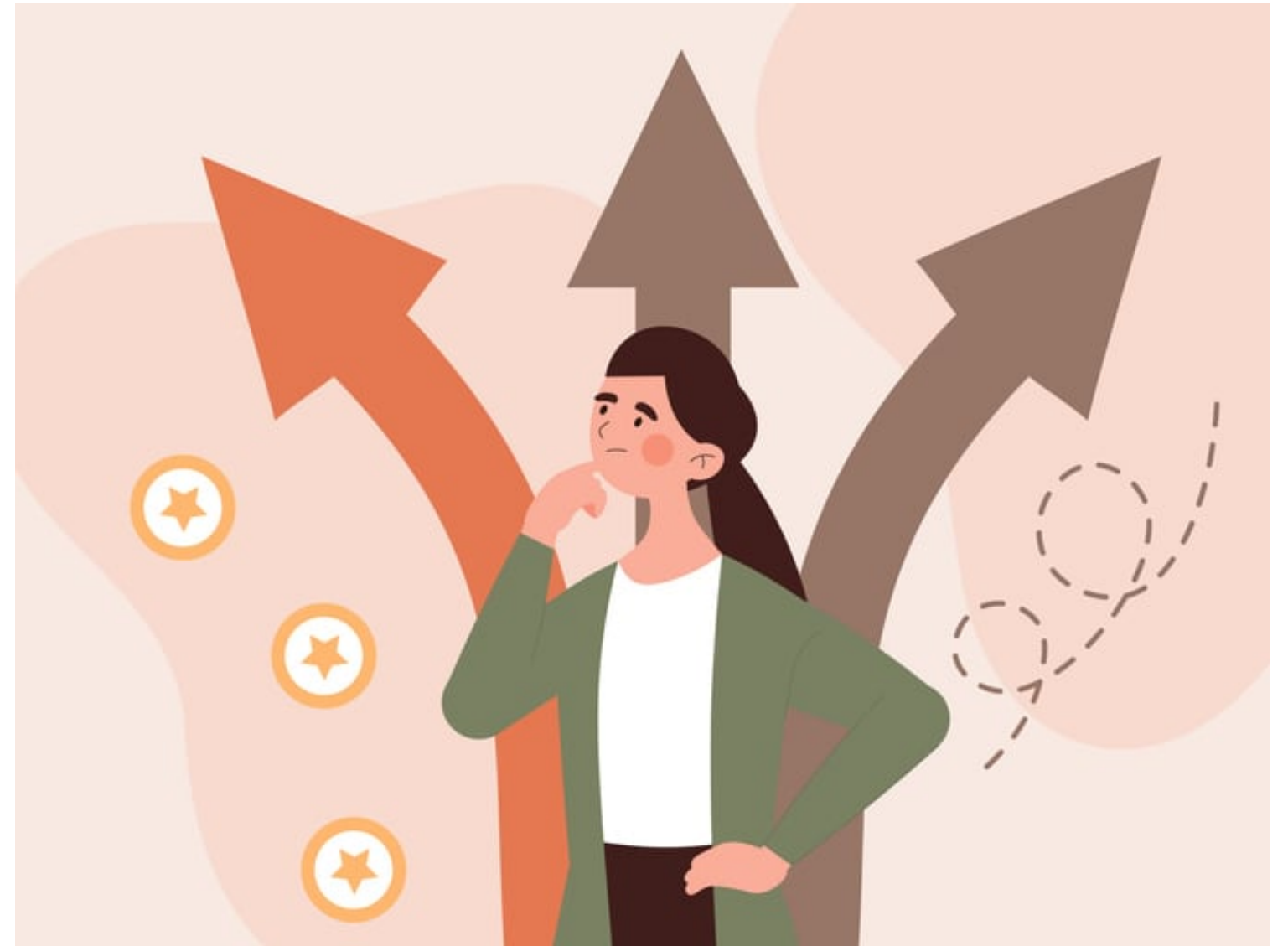
- Used logical operators
 - Created flags for filtering

TRUE

FALSE

Chapter 3

- Used logical operators
 - Created flags for filtering
- Nested functions using IF() function
 - Added new categorical variables



Chapter 3

- Used logical operators
 - Created flags for filtering
- Nested functions using IF() function
 - Added new categorical variables
- Sharing is caring
 - Notes and comments when sharing files



Chapter 4

- Lookup functions
 - Bring information in from other sheets



Chapter 4

- Lookup functions
 - Bring information in from other sheets
- PivotTables
 - Summarize data in dynamic tables



The Excel journey!

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