Data Analysis in Spreadsheets

NASHVILLE SOFTWARE SCHOOL

Objective: To understand use cases, and output, of basic Excel functions

Parts of a Function

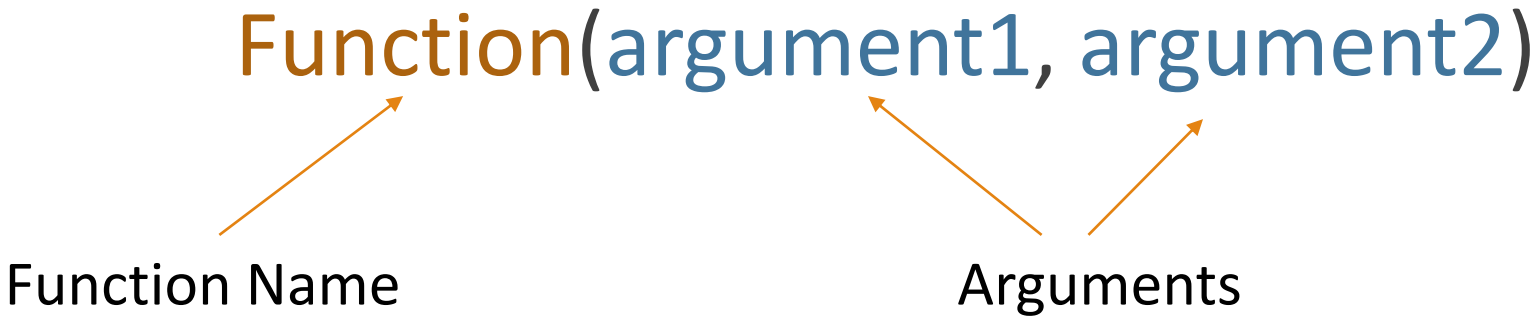
- How the function name explains its use
- The role of arguments within a function

Useful basic functions

- String Functions
- Date/Time Functions
- Conditional Functions
- VLOOKUP/HLOOKUP/XLOOKUP

Introduction to functions

A function consists of two parts: A function name which describes what the function will do and arguments which are information the function needs



Introduction to Functions

Function	Output
today(*no arguments needed*)	
=today()	<today's date>
round(number, decimal places)	
=round(148.39, 1)	148.4
sqrt(number)	
=sqrt(64)	8

Introduction to Functions

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
MIN(C2:C4)	103
MAX(D2:D4)	12/25/2015
RANK(E4, E2:E4)	1
RANK(E4, E2:E4, 1)	3

Introduction to Functions – RANK()

A closer look at the RANK() Function

Why does it work with 2 or 3 arguments?

Why does it give a different answer?

RANK(Argument1, Argument2, [Argument3])

Argument1 – Which value is being ranked

Argument2 – Range of values to which it is being compared

Argument3 – Ascending? (Optional, but the default is no)

String Functions

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
CONCAT(A2:A4)	The RingDjango UnchainedScream
LEFT(A2, 5)	The R
RIGHT(A4, 3)	eam
LEN(A2)	8
SEARCH(“ “, A3)	7

Date-Time Functions

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
WEEKDAY(D3)	6
DATEDIF(D4, D2, “D”)	2128
DATEDIF(D4, D2, “Y”)	5
NOW()	5/11/2021 14:34:28

Conditional Functions

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
IF(A2 = “The Ring”, 1, 0)	1
IF(A3 = “The Ring”, 1, 0)	0
COUNTIF(B2:B4, “=100”)	1
SUMIF(E2:E4, “>75”)	170
AVERAGEIF(C2:C4, “<150”)	116

VLOOKUP()

=VLOOKUP(Argument1, Argument2, Argument3, [Argument4])

Argument 1 – **Search Key**, this is what is being searched for by the function

Argument 2 – **Search Range**, this is the range of cells being searched

Argument 3 – **Index**, this is how many cells to move horizontally once key if found

Argument 4 – Sorted List? (Optional, Default = FALSE. FALSE will only return an exact match while TRUE will return the highest value without going over)

VLOOKUP()

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
VLOOKUP(48, B2:D4, 2)	129
VLOOKUP(“The Ring”, A2:E4, 1)	The Ring
VLOOKUP(150, C2:E4, 3, TRUE)	81
VLOOKUP(“Scream”, B2:E4, 5, TRUE)	89

HLOOKUP()

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
HLOOKUP(48, B2:D4, 2)	100
HLOOKUP(“The Ring”, A2:E4, 2)	Django Unchained
HLOOKUP(150, A3:E4, 2, TRUE)	14
HLOOKUP(100, B2:E4, 3, TRUE)	14

XLOOKUP() – Excel Only

=VLOOKUP(Argument1, Argument2, Argument3)

Argument 1 – **Search Key**, this is what is being searched for by the function

Argument 2 – **Search Array**, this is the range of cells being searched

Argument 3 – **Return Array**, the value returned will be in this array in an equal position

(https://support.office.com/en-us/article/xlookup-function-b7fd680e-6d10-43e6-84f9-88eae8bf5929)

XLOOKUP() - Excel Only

	A	B	C	D	E
1	Title	Budget ($M)	Gross ($M)	Release Date	Profit ($M)
2	The Ring	48	129	10/18/2002	81
3	Django Unchained	100	162	12/25/2015	62
4	Scream	14	103	12/20/1996	89

Function	Output
XLOOKUP(48, B2:B4, E2:E4)	81
XLOOKUP(162, C2:C4, A2:A4)	Django Unchained
XLOOKUP(162, A3:E3, A2:E2)	129
HLOOKUP("Scream", A4:E4, A2:A2)	The Ring

Exercises

1. Write a formula to RANK each BMI, within the column. Did you get the result you expected? Why did you get this result?

2. Use multiple IF statements to check if the height and weight are NA. If either are NA, output 0, otherwise output the BMI. HINT: your formula may look something like =IF(___, ___, IF(___, ___, ___))

3. Calculate the average BMI for the values that are not 0.

4. The age column is in years. Add a new column that is age in days, called age(days). Add another column called birthdate that subtracts age(days) from the current time.

5. Use a lookup function to find the character closest in age to you.

6. BONUS: Add a new column called first_movie that contains just the first movie listed for each character.