

Project 4 – Cell References

In this project, we will discuss the concept of absolute and relative cell referencing. Also, we will go over referencing cells that are in different worksheets within the same workbook. To start, please visit my website below to attain the worksheet you'll work with here.

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	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value					
6	Business Analyst	Hours	20	25	40		
7		Value					
8	Software Developer	Hours	25	25	40		
9		Value					
10	Quality Assurance	Hours	25	25	25		
11		Value					
12	TOTAL OPERATING		\$ -	\$ -	\$ -	\$ -	\$ -

We will first look at how to work with cell ranges on other worksheets.

Step 1: Go into cell C5 and start to enter the formula: =C4*. Stop here then click on the COUNTRY RATES tab at the bottom of the screen.

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	=C4*				
6	Business Analyst	Hours	20	25	40		
7		Value					
8	Software Developer	Hours	25	25	40		
9		Value					
10	Quality Assurance	Hours	25	25	25		
11		Value					
12	TOTAL OPERATING		\$ -	\$ -	\$ -	\$ -	\$ -

Step 2: Click on cell A3 to select this merged cell then press ENTER.

	A	B	C	D
1				
2	Rates	Country	Rates	
3	\$ 80.00	United States	\$ 80.00	
4		Canada	\$ 80.00	
5	\$ 45.00	Puerto Rico	\$ 45.00	
6		Mexico	\$ 45.00	

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Step 3: You will notice that you will get the error in cell C5 where there should've been a mathematical calculation. What is happening here is that the cell being referenced in the COUNTRY RATES is a range (A3:A4) and not a specific cell. You will also notice that cell C6 is highlighted because the relative cell reference involves a cell range and not a specific cell.

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	#SPILL!				
6	Business Analyst	Hours	20	25	40		
7		Value					
8	Software Developer	Hours	25	25	40		
9		Value					
10	Quality Assurance	Hours	25	25	25		
11		Value					
12	TOTAL OPERATING		#SPILL!	\$ -	\$ -	\$ -	\$ -

Step 4: The way to get rid of this error is to go to the formula bar at the top and edit the formula to read as follows: `=C4*'Country Rates'!A3`. Copy and paste this formula into cells C7, C9, and C11. You will get the result similar to the image below.

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	\$ 3,200.00				
6	Business Analyst	Hours	20	25	40		
7		Value	\$ 900.00				
8	Software Developer	Hours	25	25	40		
9		Value	\$ -				
10	Quality Assurance	Hours	25	25	25		
11		Value	\$ -				
12	TOTAL OPERATING		\$ 4,100.00	\$ -	\$ -	\$ -	\$ -

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Step 5: Why are there no results in cells C9 and C11? You are using relative cell references when you copy the formula to every other row. This means that the automatic relative cell reference will be every other row as noted in the below image. See the problem with this type of cell reference? Merged cell A3 and merged cell A5 have dollar values in them so this is why dollar values are returned.

	A	B	C
1			
2	Rates	Country	Rates
3	\$ 80.00	United States	\$ 80.00
4		Canada	\$ 80.00
5	\$ 45.00	Puerto Rico	\$ 45.00
6		Mexico	\$ 45.00
7	\$ 45.00	Australia	\$ 45.00
8		Singapore	\$ 45.00
9		China	\$ 45.00
10		Malaysia	\$ 45.00
11		India	\$ 45.00

Step 6: To fix this issue, you will need to reference the appropriate cells. Within cell C9, enter the following formula: `=C8*'Country Rates'!A12`. In cell C11, enter the formula: `=C10*'Country Rates'!A20`. Your sheet should look similar to the below...

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	\$ 3,200.00				
6	Business Analyst	Hours	20	25	40		
7		Value	\$ 900.00				
8	Software Developer	Hours	25	25	40		
9		Value	\$ 2,250.00				
10	Quality Assurance	Hours	25	25	25		
11		Value	\$ 1,750.00				
12	TOTAL OPERATING		\$ 8,100.00	\$ -	\$ -	\$ -	\$ -

Step 7: Go to cell C5 and copy the formula to the right until Column E. You will notice the below results. Notice that cell D5 has an error.

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	\$ 3,200.00	#VALUE!	\$2,000.00		
6	Business Analyst	Hours	20	25	40		
7		Value	\$ 900.00				
8	Software Developer	Hours	25	25	40		
9		Value	\$ 2,250.00				
10	Quality Assurance	Hours	25	25	25		
11		Value	\$ 1,750.00				
12	TOTAL OPERATING		\$ 8,100.00	#VALUE!	\$2,000.00	\$ -	\$ -

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What is happening here is that the relative cell reference is being copied. You can see the effect of what is happening on the COUNTRY RATE sheet below. What is happening is that the formula copied above is referencing cells A3, B3, and C3. B3 doesn't have a numerical value but text. This is why you get the error in the above cell D5 as formulas cannot work with text on a simple copy. You will need an absolute cell reference to put yourself in a position to copy this formula properly.

	A	B	C
1			
2	Rates	Country	Rates
3	\$ 80.00	United States	\$ 80.00
4	\$ 80.00	Canada	\$ 80.00

Step 8: Go into cell C5 and enter the formula: `=C4*'Country Rates'!A3`. Then, copy this formula to the right until you get to Column E.

	A	B	C	D	E	F	G
3	Internal Resources	Label	January	February	March	TOTALS	Average
4	Project Manager	Hours	40	35	25		
5		Value	\$ 3,200.00	\$ 2,800.00	\$ 2,000.00		

Now, you will notice that all the formulas have been properly copied. The reason for this is that you are using an absolute reference - `A3` – that specifies that only cell A3 on the *COUNTRY RATES* sheet will be referenced in the formula even if you copy that formula across different cells.

Step 9: Repeat the above step for cells C7, C9, and C11. Then, copy the formula over to the right until you get to column E. You should arrive at the format below...

	A	B	C	D	E
3	Internal Resources	Label	January	February	March
4	Project Manager	Hours	40	35	25
5		Value	\$ 3,200.00	\$ 2,800.00	\$ 2,000.00
6	Business Analyst	Hours	20	25	40
7		Value	\$ 900.00	\$ 1,125.00	\$ 1,800.00
8	Software Developer	Hours	25	25	40
9		Value	\$ 2,250.00	\$ 2,250.00	\$ 3,600.00
10	Quality Assurance	Hours	25	25	25
11		Value	\$ 1,750.00	\$ 1,750.00	\$ 1,750.00
12	TOTAL OPERATING		\$ 8,100.00	\$ 7,925.00	\$ 9,150.00