

Learn from Excel templates

Simplify an unknown formula using LET and LAMBDA



The “Shift Work Calendar” template uses interesting techniques to control conditional formatting

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Monmartre Café

City Center Catering

Midnight Snacks

February 2024

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Monmartre Café

City Center Catering

Midnight Snacks

Each cell has a complex formula that parses a “shift pattern” to determine the value in that cell. The cell’s value is then used by the conditional formatting to color the cell.

The shifts are defined on the “Job and shift details” sheet

Job and shift details			
Lead server	Job 1		
	Monmartre Café		
Shift 1	Shift name	Morning shift	
	Code	M	
	Time of shift	6:00 AM to 10:00 AM	
Shift 2	Shift name	Day shift	
	Code	D	D
	Time of shift	11:00 AM to 9:00 PM	11:00 AM to 9:00 PM
Shift 3	Shift name	Night shift	Night shift
	Code	N	N
	Time of shift	10:00 PM to 2:00 AM	10:00 PM to 2:00 AM
Day off code		x	x
Pattern start date		January 5, 2024	January 15, 2024
Shift pattern		xxxMxxxMxxxMxxxM	DxxxDxxxDxxxDxxx

The “shift pattern” is a string of codes to determine, in a given number of days, which days are which shifts and which are days off.

For example, “xxxMxxxMxxxMxxxM” indicates three days off, one day on morning shift, which then repeats every 16 days.

The original formula is long and confusing at first glance, but even without knowing out what this formula is doing, there's clearly **repetition**.

```
1 =IF(  
2   OR(NOT(ISNUMBER(I6)), I6 < Job1_StartDate),  
3   "",  
4   IF(  
5       MID(Job1_Pattern, MOD(I6 - Job1_StartDate, LEN(Job1_Pattern)) + 1, 1) = Job1_Shift1_Code,  
6       1,  
7       IF(  
8           MID(Job1_Pattern, MOD(I6 - Job1_StartDate, LEN(Job1_Pattern)) + 1, 1) = Job1_Shift2_Code,  
9           2,  
10          IF(MID(Job1_Pattern, MOD(I6 - Job1_StartDate, LEN(Job1_Pattern)) + 1, 1) = Job1_Shift3_Code, 3, "")  
11      )  
12  )  
13 )
```

By naming the repetitive element **modCalc**, the calculation is easier to understand.

```
19 ShiftCalc = LAMBDA(day,  
20 LET(  
21     modCalc, MID(Job1_Pattern, MOD(day - Job1_StartDate, LEN(Job1_Pattern)) + 1, 1),  
22     IF(  
23         OR(NOT(ISNUMBER(day)), day < Job1_StartDate),  
24         "",  
25         IF(modCalc = Job1_Shift1_Code, 1,  
26             IF(modCalc = Job1_Shift2_Code, 2,  
27                 IF(modCalc = Job1_Shift3_Code, 3, "")))  
28     )  
29 )  
30 )
```