Date of the first Monday of a year in Python, R, Excel, Power Query, T-SQL, MySQL

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In Python, using timedelta

```python
from datetime import date, timedelta

def get_first_monday(year):
    d = date(year, 1, 1)
    return d + timedelta(days=(7 - d.weekday()) % 7)

get_first_monday(2021)
```

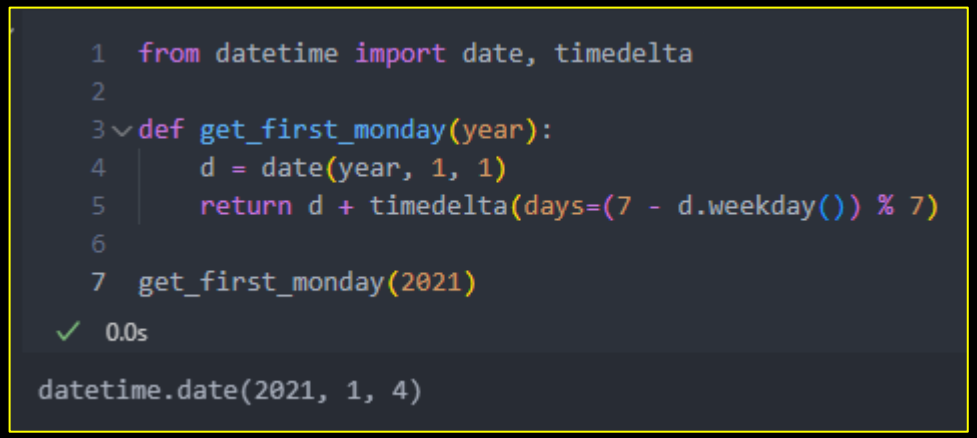
Create a date that represents the 1st of January

timedelta creates an interval to add to Jan 1.

Subtract the weekday of Jan 1 (where Mon=0 and Sun=6) from 7, to give us a # of days. So, if Jan 1 is a Saturday, then days = 7 - 5 = 2.

Then take that # modulo 7 to calculate the number of days in the interval (between 0 and 6).

Add the interval to Jan 1 to get the date of the first Monday of the year.



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In R, using lubridate::floor_date

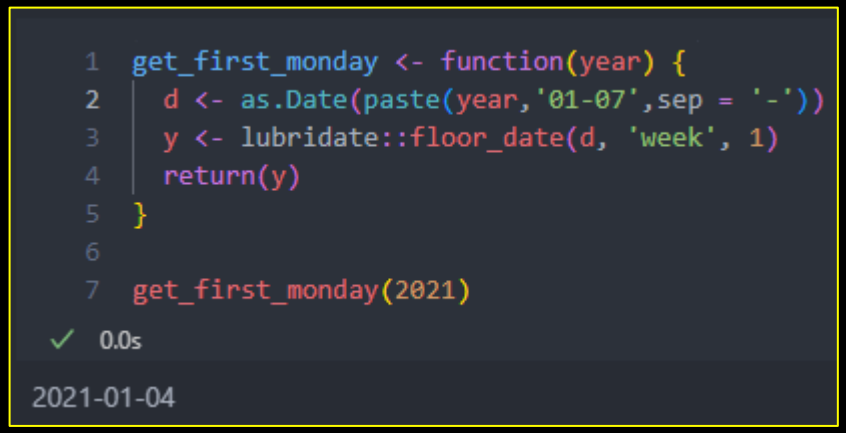
```r
get_first_monday <- function(year) {
  d <- as.Date(paste(year,'01-07',sep = '-'))
  y <- lubridate::floor_date(d, 'week', 1)
  return(y)
}

get_first_monday(2021)
```

Create a date that represents the 7th of January

floor_date in the lubridate library rounds down the date in the 1st argument to the beginning of the interval named in the 2nd arg. The 3rd arg is an optional override for the beginning of a week.

Here, we're getting the beginning of the week that contains the 7th of January, where a week begins on a Monday.



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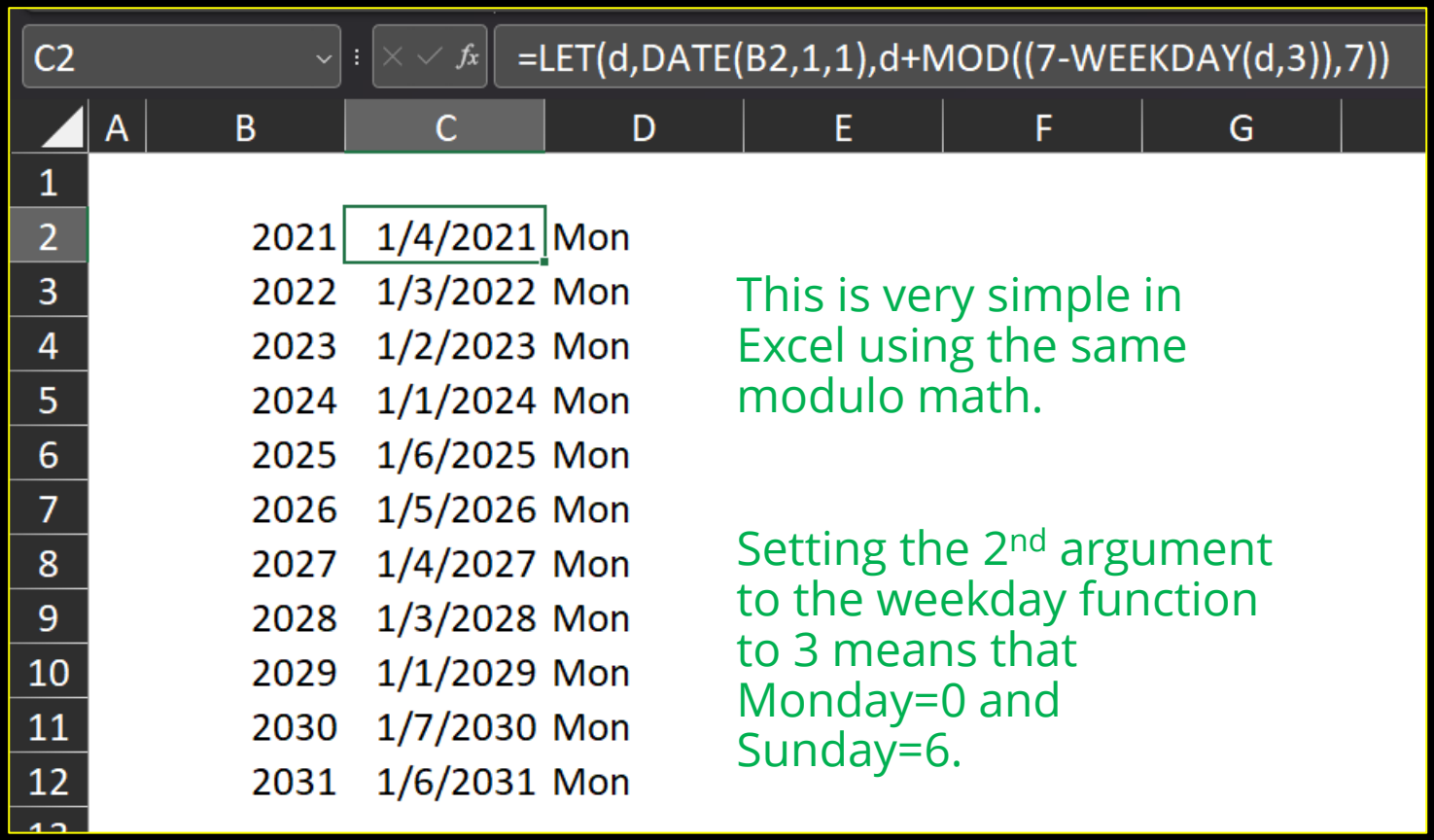
In Excel

```
=LET(
    d, DATE(H2, 1, 1),
    d + MOD((7 - WEEKDAY(d, 3)), 7)
)
```



This is very simple in Excel using the same modulo math.

Setting the 2nd argument to the weekday function to 3 means that Monday=0 and Sunday=6.

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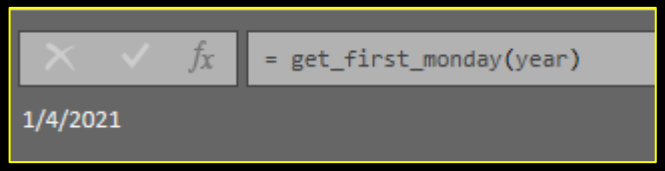
In Power Query

```
let
    year = 2021,
    get_first_monday = (year) =>
        let first_day = #date(year, 1, 1)
        in Date.AddDays(
            first_day,
            Number.Mod( 7 - Date.DayOfWeek(first_day) + 1 , 7
)
        )
in
    get_first_monday(year)
```

The logic in Power Query is the same.

We use modulo math to add some days to Jan 1 to get the date of the first Monday of the year.



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In T-SQL, using DATEADD and DATEPART

DATEFIRST defines on which weekday a week begins. 1 = Monday.

```
SET DATEFIRST 1;
DECLARE @Year varchar(4) = '2021'
DECLARE @Date datetime = @Year + '-01-01'
SELECT
    DATEADD(
        DAY,
        (7 - DATEPART(WEEKDAY, @Date) + 1) % 7,
        @Date
    ) AS FirstMondayOfYear;
```

	FirstMondayOfYear
1	2021-01-04 00:00:00.000

The calculation is similar to Python.

i.e. add between 0 and 6 days to Jan 1.

DATEPART(WEEKDAY... returns a value between 1 and 7, so we include + 1 to make the calculation work.

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In MySQL

```sql
SET @Year = '2021';
SET @Date = CONCAT(@Year, '-01-01');
SELECT
    DATE_ADD(
        @Date,
        INTERVAL (7 - DAYOFWEEK(@Date) + 2) % 7 DAY
    ) AS FirstMondayOfYear;
```

	FirstMondayOfYear
1	2021-01-04 00:00:00.000

Again, we add an interval to Jan 1.

The syntax is slightly different.

INTERVAL {#} UNIT

e.g. INTERVAL 5 DAYS to add 5 days.

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