Using the Modulus Operator to Convert Time

Corresponding Material

Lesson 3: Modulus and If Statements

Discussion

Time can be formatted using the 12-hour or 24-hour clock system.

The time on the 12-hour analog clock reads 3 'o clock. To interpret the time on the 24-hour digital clock, we subtract 12 from the hours. In this case, we subtract 12 from 15 to find that 15:00 also reads as 3:00.

We can also use the modulator to convert time by computing 15 **mod** 12, which evaluates to 3.

Exercise

Convert the time on a 24-hour digital clock to a 12-hour format. For each of the given times, fill in the modulus expression necessary to convert the hours to a 12-hour format. After, fill in the conditions that can be used to determine whether a 24-hour formatted time is in A.M. or P.M.. For example, the conversion and condition for midnight are given below.

Midnight:

Time (24-hour format)	hour and min Values	Modulus Expression to Convert Hours	Converted Time (12-hour format)
00:00	hour = 0 min = 0	0 mod 12 = 12	12:00

Python condition to determine if a 24-hour formatted time is at midnight.:

```
hours == 0 and min == 0
```

P.M. Times:

Time (24-hour format)	hour and min Values	Modulus Expression to Convert Hours	Converted Time (12-hour format)
13:15			
15:45			
23:22			

Python condition to determine if a 24-hour formatted time is P.M.:

A.M. Times:

Time (24-hour format)	hour and min Values	Modulus Expression to Convert Hours	Converted Time (12-hour format)
3:15			
9:00			
11:30			

Python condition to determine if a 24-hour formatted time is A.M.:

Conclusion

Complete the if statement below with the conditions used to determine if a 24-hour formatted time is A.M. or PM.

```
if  hour == 0 and min == 0          :
    print("It is midnight")


if _____:
    print("It is AM")


if _____:
    print("It is PM")
```