A short doc about Patrick Jane Year Calculation Feat

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In The Mentalist season 3, episode 21, Patrick Jane and Lisbon go to a Criminology university for questioning. During the lesson, the teacher says: "The human brain is not a computer." As an example, she writes on the board that May 31, 1976 and asks the class what day it fell on?
Patrick immediately replies monday. And the answer is correct.

Well the series doesn't explain how Patrick Jane calculated it, so we use the simplest method as a basis.

The simplest algorithm for calculating the year is Zeller's congruence.

Zeller's congruence is an algorithm developed by Christian Zeller to calculate the day of the week. The formula is

$$h = \left(q + \frac{26\,(m+1)}{10} + k + \frac{k}{4} + \frac{j}{4} + 5j\right) \% 7$$

where

- h is the day of the week (0: Saturday, 1: Sunday, 2: Monday, 3: Tuesday, 4: Wednesday, 5: Thursday, 6: Friday).
- q is the day of the month.
- m is the month (3: March, 4: April, . . . , 12: December). January and February are counted as months 13 and 14 of the previous year.
- j is year/100.
- k is the year of the century (i.e., year % 100).

Note that all divisions in this problem perform an integer division.

- **Year**: 1976
- **Month**: May (m = 5)
- **Day**: 31 (q = 31)
- **Last two digits of the year**: K=76
- **First two digits of the year**: J=19

Step 1

$$\frac{[13x(5+1)]}{5} = [\frac{13x6}{5}] = \frac{78}{5} = [15.6] \sim 15$$

Step 2

$$\frac{K}{4} = [\frac{76}{4}] = 19$$

Step 3

$$\frac{J}{4} = \frac{19}{4} = 4,75 \sim 4$$

Step 4

h= (31+15+76+19+4−38) mod7

h=107
mod 7=2

Step 5: Determine the day of the week

The result h=2h corresponds to Monday in the following scheme:

0 = Saturday

1 = Sunday

2 = Monday

3 = Tuesday

4 = Wednesday

5 = Thursday

6 = Friday

Conclusion

May 31, 1976, fell on a Monday.

And Patrick calculated this in 1 second. 🗿

Thanks For reading our doc