Introduction to Python Programming

Exercise Sheet 2: Functions

Please note: This is not the only exercise! See the 2_Functions.py file.

Zeller’s Congruence (6 points)

Zeller’s congruence is an algorithm devised by Christian Zeller to calculate the day of the week for any Gregorian calendar date. Your task is to implement this algorithm in Python. Day, month and year are to be read from the command line or the console.

The formula is the following:

\[ h = \left( q + \left\lfloor \frac{(m+1) \times 26}{10} \right\rfloor + K + \left\lfloor \frac{K}{4} \right\rfloor + \left\lfloor \frac{J}{4} \right\rfloor - 2 \times J \right) \mod 7 \]

- \( h \) indicates the day of the week (0=Saturday, 1=Sunday, 2=Monday, ...)
- \( q \) is the day of the month
- \( m \) is the month
- \( K \) is the year within the century (e.g. 68 for 1968)
- \( J \) is the century within the year (e.g. 19 for 1968)
- January and February are treated as months number 13 and 14 of the previous year, e.g. 01/01/2000 becomes 13/01/1999.
- All the divisions in the formula are integer divisions, i.e. we divide the numerator by the denominator and then discard the fractional part, e.g. \( \frac{7}{2} = 3 \). You can achieve this in Python by using the integer division operator: \( 7 \div 2 \). Hint: This operator is also useful at another part of this program.

Sample Output:

** ZELLER’s CONGRUENCE **
Let’s compute the weekday!
Please enter year: 2011
Please enter month (a number between 1 and 12): 10
Please enter day of the month: 6
10/6/2011 is a Thursday!

** ZELLER’s CONGRUENCE **
Let’s compute the weekday!
Please enter year: 2000
Please enter month (a number between 1 and 12): 1
Please enter day of the month: 1
13/1/1999 is a Saturday!