

CSC 2262, Fall 2021, Lab 3

In 325AD a council of Christian bishops met near the city of Nicaea, in present day Turkey. The council was convened in an attempt to obtain consensus within Christendom. One of their accomplishments, was to establish uniform observance of the date of Easter: the first Sunday after the first full moon occurring on or after the vernal equinox (the moment the Sun crosses the celestial equator).

In 1800 Carl Friedrich Gauss developed an algorithm to calculate the day that Easter falls on, for any given year:

1. Let y be the year (such as 1800 or 2001)
2. Get the remainder of y divided by 19 and call it a .
3. Get the integer part of y divided by 100 and call it b .
4. Get the remainder of y divided by 100 and call it c .
5. Get the integer part b divided by 4 and call it d .
6. Get the remainder of b divided by 4 and call it e .
7. Get the integer part of $8 * b + 13$ divided by 25 and call it g .
8. Get the remainder of $19 * a + b - d - g + 15$ divided by 30 and call it h .
9. Get the integer part of c divided by 4 and call it j .
10. Get the remainder of c divided by 4 and call it k .
11. Get the integer part of $a + 11 * h$ divided by 319 and call it m .
12. Get the remainder of $2 * e + 2 * j - k - h + m + 32$ divided by 7 and call it r .
13. Get the integer part of $h - m + r + 90$ divided by 25 and call it n .
14. Get the remainder of $h - m + r + n + 19$ divided by 32 and call it p .

Then Easter falls on day p of month n .

Write a MATLAB program as follows:

- 1) Use the input function to prompt the user to enter a year and then read the year that the user enters.
- 2) Call a function named DateOfEaster that has the year as an input variable and has output variables for the month and day.
- 3) Print the year and the date of Easter.
- 4) After the end of the main program, define the function DateOfEaster.

Run your program 4 times for the years 1800, 1988, 2000 and 2001. Your output must look exactly like the output shown below:

In 1800, Easter falls on 4/13

In 1988, Easter falls on 4/3

In 2000, Easter falls on 4/23

In 2001, Easter falls on 4/15

NOTE: The integer part of a divided by b is $\text{fix}(a/b)$

NOTE: The remainder of a divided by b is $\text{rem}(a,b)$