COSC1415 Calendar Program
Chapter 6 - Functions

Write a program to print a calendar for a given year. Design your main to be short and to call multiple functions.

The output should be sent to a file named "calendar.txt". All functions that print to this output file must have a reference parameter of type ofstream. Open the output file stream in main before any function calls.

Write a value-returning bool function called IsLeap to determine if a year is a leap year. The input parameter will be the year. Use the following to determine a leap year: any year divisible by 4 is a leap year except if it is a century year. Only century years divisible by 400 are leap years. (1900 was not a leap year, even though it is divisible by 4.) Now consider the following logical expression and see if it is correct:

(year % 400 == 0) || ((year % 4 == 0) && (year %100 != 0))

Write another value-returning function that has the year as the input parameter and returns the day of the week for Jan 1 of that year. Call this function from main after you ask the user for the year.
The formula below assumes that 0 – Sunday, 1 – Monday, …., 6 – Saturday. Assume y is the year.

y = y – 1
janfirst = (1 + y + (y / 4) – (y/100) + (y/400)) % 7

(Integer division is assumed – floating point division will not give the right answer.

You are to write at least two more functions. The first function will need the month number and the year as input parameters. It will print the header for the appropriate month's calendar and then return the number of days in that month. Write a **switch statement** with month number as the selector variable. For each month, print the month name and set a variable to the correct number of days in the month. What will the month of February need to consider?

The second function will accept as input the number of days in the month and the day of the week that the month starts on. It then prints out the days of the month in the form shown below. This function will need to update the day of the week variable so that when the function is finished, the variable holds the correct starting day for the next month. What kind of parameter will this day of week variable need to be?

All functions must have a comment block explaining preconditions and postconditions.

Main asks the user for the desired calendar year. There will be a loop structure in main that must be executed 12 times. This loop body will call the function to print the month header, then call the function to print the days of the month.

Produce a calendar (send to an output file) for each of the following years AND your birth year. Check your results to be sure that you computed January first and leap years correctly! Make sure that the next month starts the day after the previous month ends. Make sure December ends on the correct day of the week. ***If you turn in incorrect calendars, you will lose A LOT of points!!***

Year	**Jan 1 was on:**	**Leap Year?**	**Dec 31 will be on:**
1800	Wednesday	no	Wednesday
2015	Thursday	no	Thursday
2016	Friday	yes	Saturday
++++	----------*your birth year*----------		

For each month:
* You must design a "box" around the header.
* Header must include month name, year, and day indicators.
* The numbers must line up.

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#     January 2016     #
#  S  M  T  W  T  F  S #
========================
                   1  2
   3  4  5  6  7  8  9
  10 11 12 13 14 15 16
  17 18 19 20 21 22 23
  24 25 26 27 28 29 30
  31
```