

Date Validation

In this exercise you will write a program that checks to see if years entered by the user are **valid** years and if valid, whether or not the years are **leap** years. A skeleton of the program is in **dates.java**. As indicated by the comments in the program, fill in the missing code:

Carefully note the following:

1. Set boolean variable `validYear` to true if the year is between **1000** and **3000** inclusive. Otherwise set `validYear` to false.
2. Set boolean variable `leapYear` to true if the year is a leap year, and to false if it is not. Here is the **leap year rule**:

If a year is evenly divisible by 4, it is a leap year
UNLESS it is also evenly divisible by 100, in which case it is
not a leap year
UNLESS it is also evenly divisible by 400, in which case it is a leap year.

Put another way, a year is a leap year if
a) the year is divisible by 400,
b) the year is divisible by 4 and it is not divisible by 100.

Examples: 1980, 1996, and 2000 were leap years but 1900 was not a leap year.

3. If the year entered is invalid, display **The year `xxxx` is invalid.** where **`xxxx`** is the year entered by the user.

If the year entered is valid, display **The year `xxxx` is valid.**
Then if the year entered is a leap year, display **The year `xxxx` is a leap year.**
If the year is not a leap year display **The year `xxxx` is not a leap year.**