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Assignment 01

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1 The leap year algorithm

The *leap year algorithm* calculates whether or not a given year is a leap year or not.

The algorithm is contained within a single function, that takes an integer as a parameter.

The input goes through a series of judgements and immediately returns when the first check is deemed to be **true**

1. The first judgement is the check to see if the number is greater than 1582.
    1.1. If true, the algorithm returns an ArgumentException, as it is not a valid input.
    1.2. Otherwise the judging moves along
2. The year input is divisible by 400
    2.1. If true, the algorithm deems the year to be a leap year (returns true)
    2.2. Otherwise the judging moves along
3. The year input is divisible by 100
    3.1. If true, the algorithm deems the year to **not** be a leap year (returns false)
    3.2. Otherwise the judging moves along
4. The year input is divisible by 4
    4.1. If true, the algorithm deems the year to be a leap year (returns true)
    4.2. Otherwise the judging moves along
5. If true, the algorithm deems the year to **not** be a leap year (returns false)

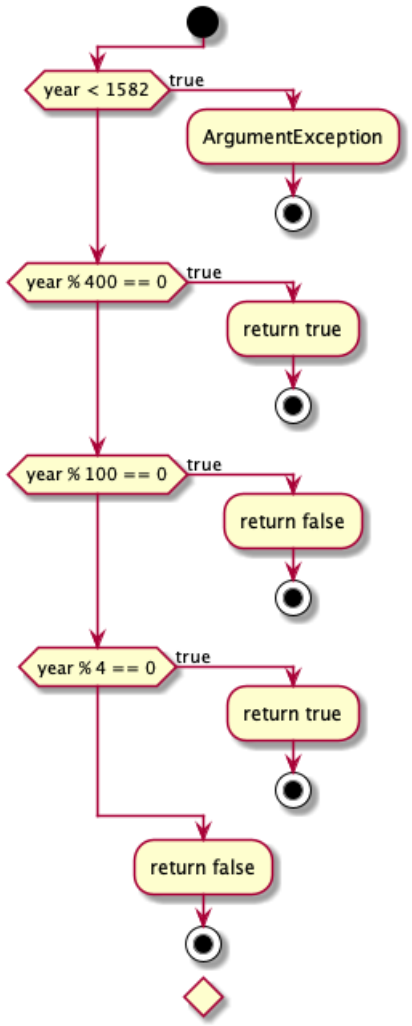

Figure 1: *The leap year algorithm*

2 Source code

```
public static bool IsLeapYear(int year)
  {
    if (year < 1582)
    {
      throw new ArgumentException($"the␣
         input␣year␣\"#{year}\"␣should␣
         be␣greater␣or␣equal␣to␣1582");
    }
    else if (year % 400 == 0)
    {
      return true;
    }
    else if (year % 100 == 0)
    {
      return false;
    }
    else if (year % 4 == 0)
    {
      return true;
    }
    else
    {
      return false;
    }
  }
```