

## Leap Year

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### Textbook

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## Leap Year Calculator

Recommended time to do this project: Beginning of the Python 2 unit. This is a good project to review Python 1 knowledge.



## Instructions

For this project you are a famous historian and need to be able to calculate whether or not a certain year in question is a leap year. You will need to prompt the user to enter a year and then calculate whether or not it is a leap year.

Leap Year Rules

A leap year is exactly divisible by 4 UNLESS it is a year that ends in 00.

The years that end in 00 are leap years only if they are also perfectly divisible by 400.

Start by prompting the user to input a year.

If the input is a leap year, print that it is a leap year.

If not, print that it is not a leap year.

For example:

Input: 2020

Output: 2020 is a leap year

Input: 2021

Output: 2021 is not a leap year

Hint: How you can use the modulus in this lesson?

Hint: How can you use if statements within if statements for this challenge?

## Selection Structures

In Python, **selection structures**, also known as **conditional statements**, are fundamental constructs that let a program make decisions. They execute different blocks of code based on whether specific conditions are true or false.

The primary selection structures are `if`, `elif` (else if), and `else`. An `if` statement checks a condition; if it's true, the indented code block beneath it runs. When you have several possible conditions to check in order, you can chain `elif` statements after an `if` statement.

Finally, an `else` statement provides a default block of code. This block executes if none of the preceding `if` or `elif` conditions are met. These structures are crucial for controlling program flow, allowing for dynamic responses to user input, handling various data scenarios, validating information, and implementing diverse logic paths within an application. For instance, you might use an `if-else` structure to see if a user is old enough to access content or an `if-elif-else` chain to categorize a numerical score into grades (A, B, C, etc.).

## Checkpoint

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#### Leap Year Rules

1. A leap year is exactly divisible by 4 UNLESS it is a year that ends in 00.
2. The years that end in 00 are leap years only if they are also perfectly divisible by 400.
3. Start by prompting the user to input a year.
4. If the input is a leap year, print that it is a leap year.
5. If not, print that it is not a leap year.

For example:

Input: 2020

Output: 2020 is a leap year

Input: 2021

Output: 2021 is not a leap year

Hint: How you can use the modulus in this lesson?

Hint: How can you use if statements within if statements for this challenge?

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## Answer Keys & Solutions

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### Checkpoint Solutions

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#### Leap Year Calculator

```
1 year = int(input("What year do you want to check?"))
2
3 if year % 4 == 0:
4     if year % 100 == 0:
5         if year % 400 == 0:
6             print(str(year) + " is a leap year")
7         else:
8             print(str(year) + " is not a leap year")
9     else:
10        print(str(year) + " is a leap year")
11 else:
12    print(str(year) + " is not a leap year")
```