**Q. Regular expression given below designed to match dates in the format of YYYY-MM-DD?**

pattern="(?:19|20)(?:(?:[13579][26]|[02468][048])-(?:(?:0[1-9]|1[0-2])-(?:0[1-9]|1[0-9]|2[0-9])|(?:(?!02)(?:0[1-9]|1[0-2])-(?:30))|(?:(?:0[13578]|1[02])-31))|(?:[0-9]{2}-(?:0[1-9]|1[0-2])-(?:0[1-9]|1[0-9]|2[0-8])|(?:(?!02)(?:0[1-9]|1[0-2])-(?:29|30))|(?:(?:0[13578]|1[02])-31)))".

**Ans:**-

1. **(?:19|20):**

**This part matches the first two digits of the year, ensuring that the year starts with either 19 or 20 (for years from 1900 to 2099).**

1. **Leap Year Handling:**
   * **(?:[13579][26]|[02468][048]):**
     + This checks whether the year is a leap year.
     + In a leap year, the last two digits must be divisible by 4. This expression divides the years into two groups.

**.[13579][26]**: Odd-numbered decades that end in 26, like 1926, 2026.

**.[02468][048]**: Even-numbered decades that end in 00, 04, 08, like 2000, 2004, 1908.

* + **A leap year has 366 days, and February has 29 days.**

1. **Month and Day Handling in a Leap Year:**
   * **-(?:(?:0[1-9]|1[0-2])-(?:0[1-9]|1[0-9]|2[0-9])|(?:(?!02)(?:0[1-9]|1[0-2])-(?:30))|(?:(?:0[13578]|1[02])-31)):**

**> This part of the regex handles the month and day in a leap year:**

**.0[1-9] matches months from January to September (01-09), and 1[0-2]matches months October to December (10-12).**

**.0[1-9]|1[0-9]|2[0-9]: Matches the days (01-29) for all months.**

**.(?:(?!02)(?:0[1-9]|1[0-2])-(?:30)): Ensures that months that are not February (since February only has 29 days in a leap year) can have up to 30 days.**

**. (?:0[13578]|1[02])-31: Months with 31 days (January, March, May, July, August, October, December).**

1. **Non-Leap Year Handling:**
   * **(?:[0-9]{2}-(?:0[1-9]|1[0-2])-(?:0[1-9]|1[0-9]|2[0-8]):**
     + **This handles non-leap years where February has only 28 days.**
     + **[0-9]{2}: Matches the last two digits of the year, ensuring it's not a leap year.**
     + **0[1-9]|1[0-2]: Matches months 01-12.**
     + **0[1-9]|1[0-9]|2[0-8]: Matches days 01-28, valid for February in non-leap years.**
   * **(?:(?!02)(?:0[1-9]|1[0-2])-(?:29|30)): Handles months that have 29 or 30 days in non-leap years (not February).**
   * **(?:0[13578]|1[02])-31: Matches months with 31 days (January, March, May, July, August, October, December) in non-leap years.**

**Output:-**

* **This regex matches years between 1900 and 2099.**
* **It checks whether the year is a leap year (based on whether the year is divisible by 4, with exceptions).**
* **It allows for:**
  + **28 days in February in non-leap years, and 29 days in February for leap years.**
  + **30 days for April, June, September, and November.**
  + **31 days for January, March, May, July, August, October, and December.**