

AP Computer Science A 2019-10-11

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2019 AP[®] COMPUTER SCIENCE A FREE-RESPONSE QUESTIONS

(b) Write the static method `dayOfWeek`, which returns the integer value representing the day of the week for the given date (month, day, year), where 0 denotes Sunday, 1 denotes Monday, ..., and 6 denotes Saturday. For example, 2019 began on a Tuesday, and January 5 is the 6th day of 2019. As a result, January 5, 2019, fell on a Saturday, and the method call `dayOfWeek(1, 5, 2019)` returns 6.

As another example, January 10 is the tenth day of 2019. As a result, January 10, 2019, fell on a Thursday, and the method call `dayOfWeek(1, 10, 2019)` returns 4.

In order to calculate this value, two helper methods are provided for you.

- `firstDayOfYear(year)` returns the integer value representing the day of the week for the first day of year, where 0 denotes Sunday, 1 denotes Monday, ..., and 6 denotes Saturday. For example, since 2019 began on a Tuesday, `firstDayOfYear(2019)` returns 2.
- `dayOfYear(month, day, year)` returns, where month, day, and year specify the nth day of the year. For the first day of the year, January 1 (month = 1, day = 1), the value 1 is returned. This method accounts for whether year is a leap year. For example, `dayOfYear(1, 1, 2017)` returns 60, since 2017 is not a leap year, while `dayOfYear(1, 1, 2016)` returns 61, since 2016 is a leap year.

Class information for this question

```
public class APCalendar {
    private static boolean isLeapYear(int year)
    public static int numberOfLeapYears(int year1, int year2)
    private static int firstDayOfYear(int year)
    private static int dayOfYear(int month, int day, int year)
    public static int dayOfWeek(int month, int day, int year)
}
```

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```
public static int numberOfLeapYears(int year1, int year2) {
    int counter = 0;
    for(int i = year1; i <= year2; i++) {
        if(isLeapYear(i)) {
            counter++;
        }
    }
    return counter;
}

public static
```

Compiler ready: JDK 8.0_144 from C:\Program Files\Java\jdk1.8.0_144\lib\tools.jar.

Checking (limited) ...

Checked matches: public static int numberOfLeapYears(int year1, int year2) {

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