Problem 268: CDRL Delivery Date

Difficulty: Hard

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Problem Background

A Contract Data Requirements List (CDRL) is an item that is due to the customer by a certain date. Often these dates are a certain number of calendar days before or after the date of a certain event. Teams must know not only by which date the item is due to the customer, but because the end dates can fall on a weekend or holiday, the team must ensure the deliverable date is a valid workday.

In order to ensure that all documents are delivered on time, Lockheed Martin Enterprise Operations is developing a tool for planning out project deadlines, and your team has been asked to help.

Problem Description

Your program should calculate the date the CDRL is due, and if the date falls on a weekend (Saturday or Sunday) or holiday, the due date should be adjusted based on the following guidance. The CDRL will be due either before or after a designated date of an event. The date of the event and whether the CDRL is due before or after that event is given as input.

- If a CDRL due date is due after the event, and the due date falls on a weekend or holiday, you will need to adjust that date to be the closest non-holiday weekday after the previously calculated due date.
- If a CDRL due date is due before the event, and the due date falls on a weekend or holiday, you will need to adjust that date to the closest non-holiday weekday before the previously calculated due date.
- If a CDRL due date is calculated to be a holiday which also falls on a Saturday or Sunday, the holiday observance date will need to be treated as a holiday.
    - If a holiday falls on a Saturday, the holiday observance date will be the preceding Friday.
    - If a holiday falls on a Sunday, the holiday observance date will be the following Monday.

Lockheed Martin has provided a list of holidays which are considered undeliverable dates. Some holiday dates are consistent every year, while others are dependent on a specific day in a month which may change every year. Since your program will be used going forward, your program must account for these different dates for any year. These holiday dates will need to be calculated dynamically during your program's runtime. All the CDRLs are related to contracts that involve employees from multiple different countries. So, holidays celebrated in a variety of countries are included in the list. Below is the list of holidays that need to be evaluated during your program's CDRL due date calculation.

Holiday Name	Country	Occurrence
All Saints' Day	PL	November 1
ANZAC Day	AU, NZ	April 25
Canada Thanksgiving	CA	2nd Monday in October
Christmas Day	Multiple	December 25
Code Quest Academy Day	N/A	First Sunday in November
Commemoration Day of King's Father	CAM	October 15
Memorial Day	US	Last Monday in May
National Day	SG	August 9
New Year's Day	Multiple	January 1
Summer Bank Holiday	UK (Except Scotland)	Last Monday in August
US Thanksgiving	US	4th Thursday in November
US Thanksgiving Observed	US	The Friday after "US Thanksgiving"

Sample Input

The first line of your program's input, **received from the standard input channel**, will contain a positive integer representing the number of test cases. Each test case will include:

- A line with three values, separated by a space. The three values are defined as follows:
    - The date of the event in format YYYY/MM/DD.
    - The word "BEFORE" or "AFTER" in all capital letters, which represents if the CDRL is due before or after the event date.
    - A positive integer, which represents the number of days before or after the event date that the CDRL is due. **10**

```
2028/03/25 AFTER 71
2025/10/03 BEFORE 104
2028/04/22 AFTER 87
2025/12/09 BEFORE 38
2030/09/26 BEFORE 48
2026/01/15 AFTER 100
2028/09/28 AFTER 47
2030/10/31 BEFORE 142
2027/01/05 BEFORE 146
2025/10/29 BEFORE 36
```

Sample Output

For each test case, your program must print the date the CDRL is due in the format YYYY/MM/DD. The month and day must contain two characters. If the CDRL date had to be adjusted due to being a weekend or holiday, print the adjusted due date with the word "ADJUSTED (+/-) 'X' DAY(S)" in all

capital letters separated from the date by a space, where X is the number of days adjusted from the original calculated due date. If the date was only adjusted one day, state "DAY" rather than "DAYS".

```
2028/06/05 ADJUSTED + 1 DAY
2025/06/20 ADJUSTED - 1 DAY
2028/07/18
2025/10/30 ADJUSTED - 2 DAYS
2030/08/08 ADJUSTED - 1 DAY
2026/04/27 ADJUSTED + 2 DAYS
2028/11/14
2030/06/11
2026/08/12
2025/09/23
```