Problem 185: The Daily Grind

Difficulty: Hard

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Problem Background

The United States and many other countries make use of a 40-hour work week in professional settings. However long an employee works each day, their schedule rounds out to about 40 hours over each seven-day period. Exactly how that 40 hours is reached, however, tends to vary, and the differences can drive the poor accountants in the payroll office absolutely bonkers.

Lockheed Martin has recently switched to a 4/10 work schedule - employees are asked to work only four days a week (Monday through Thursday), but work ten hours each day. However, this schedule is flexible, and employees can work with their managers to find a schedule that works best for them. Human Resources needs help sorting through the different schedule requests to determine how much work will actually get done each month.

Problem Description

A variety of different work schedules have cropped up over the last few decades, and four of these have seen fairly common use at Lockheed Martin recently:

- A 40-hour schedule is a traditional work week; employees work 8 hours each day, 5 days a week (Monday through Friday)
- A 4/10 schedule condenses the work week; employees work 10 hours each day, 4 days a week (Monday through Thursday)
- A 9/80 schedule works a bit differently; employees work 9 hours each day, 4 days a week (Monday through Thursday), plus 8 hours every other Friday. This works out to a total of 80 hours over a two-week period, averaging to 40 hours per week. There are two versions of this schedule, 9/80A and 9/80B, which determine which Fridays are taken off. For the purposes of this problem:
    - A 9/80A schedule will work the first Friday of each calendar year (without consideration of other years)
    - A 9/80B schedule will take off the first Friday of each calendar year (without consideration of other years).

Lockheed Martin's accounting system tracks the number of working days by period, rather than calendar months. Each period is centered around a calendar month, but may not start or end on the same dates. Each period ends on the last Friday of the calendar month; the next Monday, then, is the

start of the next period. For example, the period for April 2022 runs from Monday, March 28th to Friday, April 29th; the period for May 2022 runs from Monday, May 2nd to Friday, May 27th.

The Human Resources department has asked your team to create a calculator that determines the correct number of working days for each schedule in the period containing any given date. When a given date falls on a weekend (Saturday or Sunday), use the previous Friday to determine the correct period. Don't worry about any holidays, vacations, or other potential time off; part of the reason HR wants this is to determine when that time off should be scheduled!

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 single line containing a date in DD/MM/YYYY format.

```
3
14/03/2022
24/04/2022
29/05/2022
```

Sample Output

For each test case, your program must print a single line containing the number of working days for each work schedule within the period containing the given date. Print each schedule's working day count as an integer, separated by spaces, in the following order:

- 40-hour
- 4/10
- 9/80A
- 9/80B

```
20 16 18 18
25 20 23 22
20 16 18 18
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