

### **Q13. Tyre Manufacturing Month (20 marks):**

Each tyre bears a unique four-digit code known as the DOT (Department of Transportation) code, which is imprinted on the tyre to indicate its manufacturing week. The first two digits represent the week in which the tyre was manufactured, and the subsequent two digits represent the year. It's advisable to check the age of a tyre before purchasing it.

For example, consider a tyre with the code 2120. This code also provides insight into its manufacturing month. The "21" indicates that it was produced in the 21st week of the year, and the "20" signifies that it was manufactured in the year 2020. Thus, this tyre was made in May 2020. If you were to buy this tyre in December 2020, it would be 7 months old from its manufacturing month.

**Note that** the first week of the year starts on the first Monday of the year, and then every week starts also on Monday; and if a week overlaps two months, the earlier month is the month of that week.

### **Write a programme to**

#### **Input, in sequence**

- 1)  $w$ , the week of manufacturing, where  $1 \leq w \leq 53$ .
- 2)  $y$ , the year of manufacturing, where  $2020 \leq y \leq 2023$ .
- 3)  $m$ , the month of purchasing, where  $1 \leq m \leq 12$ .
- 4)  $z$ , the year of purchasing, where  $2020 \leq z \leq 2023$ .

#### **Output, in sequence**

- 1) The manufacturing month and year.  
Note that there is a space between the month and the year; and the month should be one of the following: "January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December"
- 2) The number of months between the manufacturing month and the purchasing month.

### 试题 13. 轮胎制造月份 (20 分) :

每个轮胎都有一个独特的四位数代码，称为 DOT (Department of Transportation,交通部) 代码，印在轮胎上以表示其制造的星期。前两位数字代表轮胎制造的周数，接下来的两位数字代表年份。在购买轮胎之前检查其月龄是明智之举。

例如，考虑一个代码为 2120 的轮胎。该代码也揭示了它的制造月份。"21"表示它是在该年的第 21 周制造的，"20"表示它是在 2020 年制造的。因此，这个轮胎是在 2020 年 5 月制造的。如果你在 2020 年 12 月购买这个轮胎，它的月龄已经是 7 个月了。

**请注意**，一年的第一周从该年的第一个星期一开始，然后每周都从星期一开始；如果一周跨越了两个月，那么早的那个月份将是该周的月份。

### 试写一程式以

#### 依序输入

- (1) 制造周数  $w$ ，其中  $1 \leq w \leq 53$ ;
- (2) 制造年份  $y$ ，其中  $2020 \leq y \leq 2023$ ;
- (3) 购买月份  $m$ ，其中  $1 \leq m \leq 12$ ;
- (4) 购买年份  $z$ ，其中  $2020 \leq z \leq 2023$ 。

#### 依序输出

- (1) 轮胎制造的月份和年份。注意月份和年份之间有一个空格；月份应为以下其中之一：  
"January", "February", "March", "April", "May", "June", "July", "August",  
"September", "October", "November", "December"。;
- (2) 制造月份与购买月份之间相隔的月数。

**Test cases:**

Input (输入)	Output (输出)
48 2023 12 2023	November 2023 1
15 2023 8 2023	April 2023 4
40 2020 5 2022	October 2020 19
1 2021 2 2022	January 2021 13
10 2023 6 2023	March 2023 3
45 2022 2 2023	November 2022 3
22 2021 1 2023	May 2021 20