Extra Exercise 2

1. Jimmy's restaurant is designed to serve different cuisines in 3 separated zones: **A**sian food, **J**apanese food and **W**estern food, each with a predefined capacity. He is asking for your help to program a robot who counts how many customers are dining in each zone, and respond to incoming and outgoing customers properly.

   First part of input consists of 3 positive integers no larger than 1000, representing the capacities (number of empty seats) of zone A, J and W respectively. Example:

   Please input the capacities of zone A, J and W respectively: 20 30 50

   Second part contains the 3 types of commands you need to process.

   Type 1: a certain number of customers want to dine in a specified zone. Format of command: zone name and a positive integer.

   Please input your command: A 3

   If there are enough empty seats in the specified zone, you should accept these customers and your program should output:

   Welcome to Jimmy's restaurant.

   If there are not enough seats in the specified zone, you should reject these customers and your program should output:

   Sorry, we do not have enough seats.

   Type 2: some customers are leaving a specified zone. Format of input: zone name and a negative integer. The input is guaranteed to be valid, i.e. you do NOT need to check the overall capacity.

   Please input your command: J -4

   Thank you and please come again.

   Type 3: end of operating hours, and no more command will be given. Input will be 'Q'. Your program should output the number of empty seats in each zone before exit.

   Please input your command: Q

   Seats left: A 7 J 10 W 5

   You do NOT need to worry about any invalid input, including incorrect number format, incorrect zone name or other incorrect inputs.

Sample run:

```
Please input the capacities of zone A, J and W respectively: 10 20 30
Please input your command: A 3
Welcome to Jimmy's restaurant.
Please input your command: A 5
Welcome to Jimmy's restaurant.
Please input your command: J 10
Welcome to Jimmy's restaurant.
Please input your command: W 3
Welcome to Jimmy's restaurant.
Please input your command: A -2
Thank you and please come again.
Please input your command: A 20
Sorry, we do not have enough seats.
Please input your command: Q
Seats left: A 4 J 10 W 27
```

2. Ask the user to input an integer and then transform the number by summing up all its digits. If the result is smaller than 10, stop the transforming process; otherwise, continue the transformation until it becomes smaller than 10. Your program should print the numbers of each transforming step.

Example:

$$9875 \xrightarrow{\text{transform}} 9+8+7+5=\boxed{29} \xrightarrow{\text{transform}} 2+9=\boxed{11} \xrightarrow{\text{transform}} 1+1=\boxed{2}$$

Sample run:

```
9875
29 11 2
```