# Problem 2. Fancy Barcodes

Your first task is to determine if the given sequence of characters is a **valid** barcode or **not**.

**Each line must not contain anything else but a valid barcode**. A barcode is **valid** when:

* Is surrounded with a "@" followed by one or more "#"
* Is **at least 6 characters long** (without the surrounding "@" or "#")
* **Starts** with a **capital letter**
* Contains **only letters** (lower and upper case) **and digits**
* **Ends** with a **capital letter**

Examples of valid barcodes: @#FreshFisH@#, @###Brea0D@###, @##Che46sE@##, @##Che46sE@###

Examples of invalid barcodes: **##InvaliDiteM##**, **@InvalidIteM@**, **@#Invalid\_IteM@#**

Next you have to determine the **product group** of the item from the **barcode**. The product group is obtained by **concatenating** **all the digits** found in the barcode. If there are **no digits** present in the barcode, the **default** product group is "00".

Examples:

@#FreshFisH@# -> product group: 00

@###Brea0D@### -> product group: 0

@##Che4s6E@## -> product group: 46

### Input

On the first line you will be given an integer **n** – the count of barcodes that you will be receiving next.

On the next **n** lines, you will receive different strings.

### Output

For each barcode that you process, you need to print a message.

If the barcode is invalid:

* "Invalid barcode"

If the barcode is valid:

* "Product group: {product group}"

### Constraints

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  @#FreshFisH@#  @###Brea0D@###  @##Che4s6E@## | Product group: 00  Product group: 0  Product group: 46 |
| **Input** | **Output** |
| 6  @###Val1d1teM@###  @#ValidIteM@#  ##InvaliDiteM## @?  @InvalidIteM@  @#Invalid\_IteM@# \_Не  @#ValiditeM@# | Product group: 11  Product group: 00  Invalid barcode  Invalid barcode  Invalid barcode  Product group: 00 |