

Problem 2 - Fancy Barcodes

Problem for exam preparation for the [Programming Fundamentals Course @SoftUni](#).
Submit your solutions in the SoftUni judge system at <https://judge.softuni.org/Contests/Practice/Index/2303#1>.

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:

- It is surrounded by a "@" followed by one or more "#"
- It is **at least 6 characters long** (without the surrounding "@" or "#")
- It **starts** with a **capital letter**
- It contains **only letters** (lower and upper case) **and digits**
- It **ends** with a **capital letter**

Examples of valid barcodes: @###Che46sE@##, @#FreshFisH@#, @###Brea0D@###, @##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 following **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}"

Examples

Input	Output
3	Product group: 00
@#FreshFisH@#	Product group: 0

@###Brea0D@### @##Che4s6E@##	Product group: 46
Input	Output
6	Product group: 11
@###Val1d1teM@###	Product group: 00
@#ValidItem@#	Invalid barcode
##InvalidDiteM##	Invalid barcode
@InvalidItem@	Invalid barcode
@#Invalid_Item@#	Product group: 00
@#ValiditeM@#	

JS Examples

Input	Output
(["3", "@#FreshFisH@#", "@###Brea0D@###", "@##Che4s6E@##"])	Product group: 00 Product group: 0 Product group: 46
Input	Output
(["6", "@###Val1d1teM@###", "@#ValidItem@#", "##InvalidDiteM##", "@InvalidItem@", "@#Invalid_Item@#", "@#ValiditeM@#"])	Product group: 11 Product group: 00 Invalid barcode Invalid barcode Invalid barcode Product group: 00