**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@#  @#ValiditeM@# | Product group: 11  Product group: 00  Invalid barcode  Invalid barcode  Invalid barcode  Product group: 00 |