E • brainf*ck

brainf*ck is the ungodly creation of Urban Müller, whose goal was apparently to create a Turing-complete language for which he could write the smallest compiler ever. http://en.wikipedia.org defines it as "a computer programming language designed to challenge and amuse programmers, and is not suitable for practical use. Its name has been variously euphemized, as in *brainf*ck."*

A brainf*ck program has an implicit byte pointer, called "the pointer", which is free to move around within an array of 32768 bytes, initially all set to zero. The pointer itself is initialized to point to the beginning of this array.

The brainf*ck programming language consists of seven commands, each of which is represented as a single character. Note: "Industry standard" brainf*ck actually has eight commands, but for the purposes of this problem one command was intentionally omitted.

COMMAND	OPERATION
>	Increment the pointer. Incrementing a pointer value of **32767** results in a pointer value of **0**.
<	Decrement the pointer. Decrementing a pointer value of **0** results in a pointer value of **32767**.
+	Increment the byte at the pointer. Incrementing the byte value **255** results in the byte value **0**.
-	Decrement the byte at the pointer. Decrementing the byte value **0** results in the byte value **255**.
.	Output the character whose ASCII value is the byte at the pointer
[	Jump forward past the matching **]** if the byte at the pointer is zero.
]	Jump backward to the matching **[** unless the byte at the pointer is zero.

For this problem, you will write a program that reads in, parses and executes a brainf*ck program.

Input

The first line of input contains an integer N, $(1 <= N <= 100)$, which is the number of brainf*ck programs that follow. Each program consists of one or more lines of brainf*ck commands ending with a line that consists of the word "**end**". Your program

should ignore any illegal characters (I.E. any character not in the set: `<>+=.[]`), If a percent sign (%) is encountered during parsing, the remainder of the line should be discarded. This constitutes a comment. The maximum number of commands in a brainf*ck program is 128000.

Output

For each brainf*ck program, your program should output the text "**PROGRAM #***n*:" on a single line (where *n* is the program number: **1** <= *n* <= **N**), followed by the output generated by the brainf*ck program, followed by a single *newline* character. The only possible parsing error that can occur is if there is an unmatched **[** or **]** in the brainf*ck program. If your program encounters such an error, it should simply print **COMPILE ERROR** instead of executing the program. All brainf*ck programs will use no more than the specified **32768** bytes of memory.

Sample Input	Sample Output

```3```
 ```+++++++[>+++++++++ % hello-world.```
 ```<-]>.<+++++[>++++++<-]>-.+++++++..```
 ```+++.<++++++++[>>++++<<-]>>.<<++++[>```
 ```------<-]>.<++++[>++++++<-]>.+++.```
 ```------.-------.>+.```
 ```end```
 ```+++[>+++++++[.```
 ```end```
 ```%% Print alphabet, A-Z.```
 ```+ + + + + ++++++++++++++++++>```
 ```++++++++++++++++++++++++++++++```
 ```++++++++++++++++++++++++++++++```
 ```+< [>.+<-]```
 ```end```
	```PROGRAM #1:```
	 ```Hello World!```
	 ```PROGRAM #2:```
	 ```COMPILE ERROR```
	 ```PROGRAM #3:```
	 ```ABCDEFGHIJKLMNOPQRSTUVWXYZ```