

HOMEWORK #1:

My First Lexical Analyser

Due Date: Friday, September the 12nd, 11:59.59pm

Description:

Numbers can come in different formats:

- **Integers** are non-empty sequences of digits optionally preceded with either a '+' or '-' sign.
- **Decimal** numbers are Integers followed by a '.', followed by a non-empty sequence of digits.
- **Scientific** Numbers are Decimal numbers followed by character 'E', followed by a non-zero integer.

Write a Lexical Analyzer using the techniques used in class to recognize the languages of Integers, Decimal numbers and Scientific numbers.

Input:

The first line will be a positive integer **N**, followed by **N** strings.

Output:

The first line of the output should echo the number of input lines **N**.

For every line of input, your program should state if line is recognized as either an Integer, a Decimal number, a Scientific number, or an invalid string.

Sample:

| Input | Output |
|--------------|---------------------|
| 8 | 8 |
| 83462 | Found an Integer. |
| -39874.454 | Found a Decimal. |
| +234.34E-941 | Found a Scientific. |
| 124.235.234 | Invalid! |
| -1.23E-3.5 | Invalid! |
| 4. | Invalid! |
| +0 | Found an Integer. |
| 7 | Found an Integer. |

Solution:

```
#include <iostream>
#include <string>
using namespace std;

int main ()
{
    int T;
    string s;

    cin >> T;
    for (int i=0; i<T; i++){
        cin >> s;
        cout << "Hello " << s << "!" << endl;
    }
    return 0;
}
```