Write a Lex program that recognizes the following types of numbers and strings:

<table>
<thead>
<tr>
<th>token</th>
<th>examples</th>
<th>informal description</th>
</tr>
</thead>
<tbody>
<tr>
<td>unsigned integer</td>
<td>1, 5125, 315, ...</td>
<td>all sequences of digits</td>
</tr>
<tr>
<td>signed integer</td>
<td>+6, −152, ...</td>
<td>all sequences of digits starting with + or -</td>
</tr>
<tr>
<td>decimal number</td>
<td>10.151, 3.1415, −0.0001, ...</td>
<td>includes a decimal point and at least one digit</td>
</tr>
<tr>
<td>scientific number</td>
<td>10e-01, −43.21e+10, 21e10, ...</td>
<td>signed integer followed by e and a signed or</td>
</tr>
<tr>
<td>name</td>
<td>a512, key, ch153, counter, ...</td>
<td>starts with a letter.</td>
</tr>
<tr>
<td>string</td>
<td>1a512, 61a, 12df as0, 01basdf, ...</td>
<td>starts with a digit but contains also other</td>
</tr>
<tr>
<td>unknown</td>
<td>any other character (errors)</td>
<td></td>
</tr>
</tbody>
</table>

Your Lex program should (i) scan out the white space, (ii) count the numbers, strings and names it reads (as well as the unknowns) (iii) print the corresponding token name.

Also each number should be stored in a “Number Table” as a float/double, (except for unknowns and strings) and at the end your program you should print the total sum of all numbers in the Number Table as well as the contents of the number table. You may have a fixed size for the Number Table (which can be defined as an array of doubles of a fixed size).

**What to Submit**

Submit (i) short description of your code (1 page) (ii) the LEX code (iii) the output of your program in the three sample files to be found in the web-site of the class (Use of “PRINTSCREEN” is required).

The whole assignment should be prepared as a single file using MS Word or other word-processing / type-setting software package of your liking. The first page should contain only: (i) your name, (ii) the class number “CSE 244”, (iii) the semester “Fall 2003”, (iv) the homework number “Homework #1”.
Example

9 local 0.2 21fa43
5.45 -3.153e+02
+1520 a=3

should be processed as:

unsigned integer
name
decimal number
string
decimal number
scientific number
signed integer
name
error! unrecognized character at line 3, '='
unsigned integer

6 numbers found.
SUM = 1222.35

Contents of Number Table
0  9.000000
1  0.200000
2  5.450000
3  -315.300000
4  +1520.000000
5  3.000000