Then
\countcamaosi#1
makes the value of \count1 be the number of commas in #1.

The \endd trick is used to handle "hidden" commas, but the * trick isn't needed, since we don't care what \cm does to #1.

(d) If we do \countcommas(#1), then \ifpos1 will tell us whether #1 contains at least one comma. But it is preferable to use the following scheme, which doesn't involve any counters, and which stops as soon as the first comma is found:
\def\cm#1,#2\ismarker#2
\if\trans\gdef\nextcm{}}
\else\gdef\hascomma{T}
\gdef\nextcm#1\marker{}}
\nextcm}
\def\hascomma#1<\gdef\Hascomma{F}
\cm#1,marker{}}

(e) Suppose we want to perform the operation in part (b) on some input of the form
(string)\(string)\(string)
where the separator is the control sequence \( which is never used in isolation, and is initially defined by \def{}{}. We could use exactly the same scheme, replacing \def\op#1,#2\endd by \def\op#1\#2\endd. But we can also take advantage of the fact that the separator is a control sequence to obtain a definition that is both more elegant and more efficient:
\def\operate#1\def\<#2}{\def\op{\kill}
\cm#1,\marker{}}

\begin{itemize}
  \item The \def\op{} needs to be replaced by \gdef\op{} if \op puts things inside braces; in this case, the original definition of \op should be made part of the definition of \operate.
  \item There might appear to be possible confusion if some (string) contains \( within a group \(\ldots\). In \LaTeX this occurs only in constructions like
\begin{verbatim}
\align...\endalign
\end{verbatim}
where \( is temporarily re-defined anyway.
\end{itemize}

V. Searching For Strings
\TeX's method of determining where an argument in a definition ends has the following peculiar feature. Suppose we define
\def\cs#1#2{\ldots}
Then the first argument is the smallest (possibly empty) token or group that is followed by a, not the smallest group that is followed by ab. So the input
\cs xayabc
gives the error message
\begin{verbatim}
! Use of \cs does not match its definition.
\end{verbatim}
So if we want to know whether ab occurs in some string we can't simply replace the comma by ab in the method of part IV(d), because an a might occur alone. Instead we have to do something like the following:
\def\isb#1<\compare*b#1{}}
\def\finder#1a#2\endd\ismarker#2{}}
\iff\trans\gdef\nextfinder{}}
\else\isb{#2}{}}
\fi\gdef\nextfinder
\finder#2\#3\endd{}}
\nextfinder}
\def\hasab#1<\gdef\Hasab{F}
\finder#1\marker\endd{}}

* * * * * * * * * *

Problems
* * * * * * * * * *

The first formatting problems posed in this column come from the videotaped \TeX\arcana Class taught by Don Knuth last March. Solutions will be presented in the next issue. Readers with working \TeX systems are encouraged to attempt solutions to these problems, in order to better appreciate the problems and their solutions.

Lynne A. Price

Problem no. 1:

Type:
\vskip 12pt
\noindent\hide{--}Allan Temko

\vskip 2pt
\noindent Architecture Critic

To get:

\begin{verbatim}
--Allan Temko
Architecture Critic
\end{verbatim}
Problem no. 2:

Type:
\texttt{\fancy Senator and Mrs. \texttt{Stanford had reserved to themselves control of the University's affairs during their lifetimes, including the parceling out of "all the money that could be wisely used." Mrs. \texttt{Stanford had remained in her husband's shadow---on opening day she could not bring herself to deliver the short speech she had written out. But following the death of the Senator she, at age 65, took on full responsibility for the University with unsuspected strength.}}

To get:

\texttt{Senator and Mrs. Stanford had reserved to themselves control of the University's affairs during their lifetimes, including the parceling out of "all the money that could be wisely used." Mrs. Stanford had remained in her husband's shadow---on opening day she could not bring herself to deliver the short speech she had written out. But following the death of the Senator she, at age 65, took on full responsibility for the University with unsuspected strength.}

Problem no. 3:

Type:
\texttt{\hsize 25em
\noindent This is a case where the name and address fit in nicely with the review.\signed{A. Reviewer}\{Ann Arbor, Mich.\}}

\vskip 8pt
\noindent But sometimes an extra line must be added.\signed{N. Bourbaki}\{Paris\}

To get:

This is a case where the name and address fit in nicely with the review. \texttt{A. Reviewer (Ann Arbor, Mich.)}

But sometimes an extra line must be added. \texttt{N. Bourbaki (Paris)}
Problem no. 4:

Type:
\point 0 0
\point 1 2
\point 2 1
\point .5 5
\point -1 -1

To get:

* (0, 0)

* (1, 2)

* (−1, −1)

Problem no. 5:

Type:
\hsize 20em
End of a paragraph. \par
\rightjustif\the\following
This is the first line
\it This is the second line.\)
\sl The third.\)
\bf The last.\)
\endrightjustif
Beginning of another paragraph.

To get:
End of a paragraph.

This is the first line.

This is the second line.

The third.

The last.

Beginning of another paragraph.

Problem no. 6:

Type:
How do you do this?
$\$\lineskip 2pt
\baselineskip 1.3ex
\vcenter{\halign{\hfil\text\hfil\cr
\linedown{Look at this \{strange\} pile.\}}\quad\text{qquad}\cr
\vcenter{\halign{\hfil\text\hfil\cr
\lineup{And at this \{stranger\} one.\}}}\$}$

To get:
How do you do this?

Look at this stranger

This is the third.

Strange pile.

\text\hfil\cr
\linedown{Look at this \{strange\} pile.\}}\quad\text{qquad}\cr
\vcenter{\halign{\hfil\text\hfil\cr
\lineup{And at this \{stranger\} one.\}}}\$}$