In the first four chapters of Part IV, you learned how to use mm, nroff, and troff to format text. In this chapter, we’ll discuss methods for producing double-column printing, tables, equations, your own macro requests, and custom modifications to the formatting programs.

20.1 Using double-column format

**Setting up the text**

If you would like to see your text in narrower columns, you can have mm print your document in double-column format with the .2C command. Then use the .1C command to revert to single-column format.

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>.2C</td>
<td></td>
</tr>
<tr>
<td>.P</td>
<td></td>
</tr>
<tr>
<td>22222222222222222222222222</td>
<td>2222222222  222222222222222222</td>
</tr>
<tr>
<td>2222222222222222</td>
<td>2222222222  222222222222222222</td>
</tr>
<tr>
<td>2222222222222222222222222.</td>
<td>2222222222. 222222222222222222</td>
</tr>
<tr>
<td>.1C</td>
<td></td>
</tr>
<tr>
<td>.P</td>
<td></td>
</tr>
<tr>
<td>1111111111111111111111111</td>
<td>1111111111111111111111111</td>
</tr>
<tr>
<td>1111111111111111111111111</td>
<td>1111111111111111111111111</td>
</tr>
</tbody>
</table>

**Preparing the output for your printer**

Ordinarily, a printer will be able to print a document in more than one column only if the printer is capable of reversing the motion of the paper. Since most printers do not have this capability, you usually have to pipe the text from nroff to a filter program called col (columns) and then on to lp. The col program rearranges the text in such a way that the printer is not required to reverse the motion of the paper. (This also applies to text that you plan to preview on your screen.)

Whenever you use col, it is a good idea to specify the type of printer to which you are sending the text. You can do this by including the -T (type) option with the nroff command. For example, to specify a line printer,
Using double-column format

type \texttt{-T}, followed by \texttt{lp} (line printer), or \texttt{-Tlp} on the command line. For example, to print a file called \texttt{story} in double-column format, you could use this:

\begin{verbatim}
$ nroff -cm -Tlp story | col | lp
\end{verbatim}

or

\begin{verbatim}
$ mm -c -Tlp story | lp
\end{verbatim}

You must also use \texttt{col} whenever you use either the \texttt{box} or \texttt{allbox} option with \texttt{tbl} (see later in this chapter).

A TWO-COLUMN EXAMPLE

To see an example of two-column printing very quickly, make a copy of file \texttt{wall} called \texttt{wall.2C}, then begin an editing session with \texttt{wall.2C} and add the six formatting requests shown below. Now the first seven lines of the text will look like this:

\begin{verbatim}
.pl 33
.DE
Request for Wall
.DE
.2C
.P 1
\end{verbatim}

Beijing (Peking). The Mayor of West Berlin

With these formatting requests in place (plus \texttt{.P 1} on the blank line above each of the other three paragraphs), execute the following command line:

\begin{verbatim}
$ mm wall | col
\end{verbatim}

\begin{verbatim}
-1-
Request for Wall

     Beijing (Peking). The Mayor of West Berlin stood on top of the Great Wall of China next to Deng Xiaoping, leader of the nation of one billion people.

     Begun during the Ch’in dynasty (about the time Rome fought the first Punic War), the wall was not completed until the Ming dynasty (about the time the Mayflower arrived at Plymouth Rock).

     The purpose of the wall was to protect China against invaders from the north. The mayor told his host, "This wall was here to keep people out. We have a wall that is greater than the distance between New York and Dallas."

     Some 25 feet high, 15 to 30 feet wide at the base, and 12 feet wide at the top, the wall is over 1,500 miles (2,400 km) long, greater than the distance between New York and Dallas.
\end{verbatim}