3.5 Figures and Other Floating Bodies

3.5.1 Figures and Tables

\LaTeX\ will break a sentence across pages to avoid a partially filled page. But some things, such as pictures, cannot be split; they must be "floated" to convenient places, like the top of the following page, to prevent half-empty pages. \LaTeX\ provides two environments that cause their contents to float in this way: \texttt{figure} and \texttt{table}. There are packages that define or allow you to define other environments for floating objects, such as a \texttt{program} environment for computer programs. \LaTeX\ doesn't care what you use any of these environments for; so far as it's concerned, the only difference between them is how they are captioned.

The caption on a figure or table is made with a \texttt{\caption} command having the caption's text as its argument. This is a moving argument, so fragile commands must be \texttt{\protect}ed (see Section 2.2.3). The \texttt{figure} or \texttt{table} environment is placed in with the text, usually just past the point where the figure or table is first mentioned.

This is the place in the running text that mentions Figure 7 for the first time.

\begin{figure}
\begin{center}
This is the place in the running text that mentions Figure 7 for the first time. The figure will not be put on an earlier page than the text preceding the \texttt{figure} environment.
\end{center}
\end{figure}

The body of the figure goes here. This figure happened to float to the top of the current page.

Figure 7: The caption goes here.

\begin{figure}
\begin{center}
This is the place in the running text that mentions Figure 7 for the first time. The figure will not be put on an earlier page than the text preceding the \texttt{figure} environment.
\end{center}
\end{figure}

The body of the figure goes here. This figure \ldots the current page.

\caption{The caption goes here.}
\end{figure}

Tables are numbered separately from figures, using the same numbering scheme. Section 4.2 explains how to number cross-references automatically, so you never have to type the actual figure numbers.

You can put anything you want in the body of a figure or table; \LaTeX\ processes it in paragraph mode just like any other text. The \texttt{figure} environment is generally used for pictures and the \texttt{table} environment for tabular information. Simple pictures can be drawn with the \texttt{picture} environment of Section 7.1. You can insert pictures prepared with other programs using the \texttt{graphics} package, described in Section 7.2. You can also use the \texttt{vspace} command of Section 6.4.2 to leave room for a picture to be pasted in later. Tabular material can be formatted with the \texttt{tabular} environment of Section 3.6.2. Section 6.5 explains how to center the figure or table.

The body of a figure or table is typeset as a paragraph the same width as in the ordinary running text. Section 6.4.3 explains how to make paragraphs of different widths, position two half-width figures side by side, and do other

3.5.2 Margins and Columns

A margin of 1.5in (the default), 1in (the \texttt{twocolumn} option), or 0.5in (the \texttt{twocolumn*} option) is understood to be a marginal note. Noun

and, having typed this paragraph, I will continue to type even when not in the margin mode when not in the margin mode and, having typed this paragraph, I will continue to type even when not in the margin mode

You may put them in at any point.

For example, an \texttt{arrow} in the margin:

\begin{margins}
\begin{center}
\texttt{This makes an arrow in the margin.}\footnote{The arrow is \texttt{\hspace{1in}}.}
\end{center}
\end{margins}

A margin note may extend below the bottom of the page to

\footnote{The arrow is \texttt{\hspace{1in}}.}