Commenting compound statements such as \texttt{if} blocks is somewhat more complicated than commenting simple statements such as \texttt{printf} statements.

(1) In the event that the \texttt{if} block has only an \texttt{if} clause, and no other clauses, then this is an example of the appropriate form:

\begin{verbatim}
/*
 * Idiotproof the temperature.
 */
if (temperature_in_degrees_C < absolute_zero_in_degrees_C) {
    /*
    * Output the idiotproof error message for the temperature.
    */
    printf("ERROR: can’t have a temperature less than %f degrees C.\n", absolute_zero_in_degrees_C);
    /*
    * Exit the program because of the temperature.
    */
    exit(program_failure_code);
} /* if (temperature_in_degrees_C < absolute_zero_in_degrees_C) */
\end{verbatim}

Notice:

\begin{itemize}
  \item The comment preceding the entire \texttt{if} block describes the purpose of the \texttt{if} block as a whole.
  \item The block close of the \texttt{if} block is immediately followed, on the same line, by:
    \begin{itemize}
      \item a single space, followed by
      \item the comment open delimiter, followed by
      \item a single space, followed by
      \item the entire \texttt{if} statement, \textbf{EXCLUDING} the block open, followed by
      \item the comment close delimiter.
    \end{itemize}
  \item The comment on the same line as the block close is \textbf{ABSOLUTELY FORBIDDEN} to continue on to the next line.
  \item In the event that the \texttt{if} condition is very long, then in the comment on the associated block close line, you can use the first part of the condition, followed by an ellipsis (three periods).
  \item The comments for the statements inside the \texttt{if} clause are indented farther, so that the asterisk at the beginning of each line of the comment lines up with the statement that the comment describes.
  \item There is no comment immediately preceding each block close, because block closes are not statements.
\end{itemize}
In the event that the \texttt{if} block has both an \texttt{if} clause and an \texttt{else} clause, but no other clauses:

\begin{verbatim}
/*
 * Set the cloud type for the case where the temperature
 * lies between the high and low temperature thresholds and
 * the stability factor is less than the medium threshold.
 */
if (cloud_depth_in_m <= cloud_depth_in_m_threshold) {
    /*
    * The cloud type is alto-cumulus.
    */
    cloud_type_code = alto_cumulus_code;
} /* if (cloud_depth_in_m <= cloud_depth_in_m_threshold) */
else {
    /*
    * The cloud type is cumulo-nimbus.
    */
    cloud_type_code = cumulo_nimbus_code;
} /* if (cloud_depth_in_m <= cloud_depth_in_m_threshold)...else */
\end{verbatim}

Notice that, in addition to the properties of just an \texttt{if} clause, above:

\begin{itemize}
  \item The comment preceding the entire \texttt{if} block describes the purpose of the \texttt{if} block as a whole, not just the purpose of the \texttt{if} clause.
  \item There is no comment immediately preceding the \texttt{else} statement.
  \item The \texttt{else} statement is immediately followed, on the same line, only by a blank space and then the block open.
  \item The block close for the \texttt{else} statement is immediately followed, on the same line, by:
    \begin{itemize}
      \item a single space, followed by
      \item the comment open delimiter, followed by
      \item a single space, followed by
      \item the entire \texttt{if} statement, \textbf{EXCLUDING} the block open, followed by
      \item three periods (that is, an ellipsis), followed by
      \item the keyword \texttt{else}, to indicate that this is the end of the \texttt{else} clause, followed by
      \item the comment close delimiter.
    \end{itemize}
  \item Again, the comment on the same line as the block close is \textbf{ABSOLUTELY FORBIDDEN} to continue on to the next line.
  \item Again, in the event that the \texttt{if} condition is very long, then in the comment on the associated block close line of the \texttt{else} clause (that is, the final block close of that \texttt{if} block), you can use the first part of the condition, followed by an ellipsis (three periods).
  \item Again, the comments for the statements inside the \texttt{else} clause are indented farther, so that the asterisk at the beginning of each line of the comment lines up with the statement that the comment describes.
  \item Again, there is no comment immediately preceding each block close, because block closes are not statements.
\end{itemize}
(3) In the event that the if block has both an if clause and one or more else if clauses, but no else clause:

```c
/*
 * Output the cloud type.
 */
if (cloud_type_code == cirrus_code) {
    /*
     * Output that the cloud type is cirrus.
     */
    printf("The cloud type is cirrus.\n");
} /* if (cloud_type_code == cirrus_code) */
else if (cloud_type_code == cumulus_code) {
    /*
     * Output that the cloud type is cumulus.
     */
    printf("The cloud type is cumulus.\n");
} /* if (cloud_type_code == cumulus_code) */
...
else if (cloud_type_code == strato_cumulus_code) {
    /*
     * Output that the cloud type is strato-cumulus.
     */
    printf("The cloud type is strato-cumulus.\n");
} /* if (cloud_type_code == strato_cumulus_code) */
```

Notice that, in addition to the properties of just an if clause, above:

- Again, the comment preceding the entire if block describes the purpose of the if block as a whole, not just the purpose of one of the if block’s individual clauses.
- There is no comment immediately preceding any of the else if statements.
- The condition in the comment immediately following and on the same line as each else if clause’s block close is the condition of the associated else if statement.
- The comment following, and on the same line as, each clause’s block close DOESN’T include the keyword else.
- Again, the comment on the same line as the block close is ABSOLUTELY FORBIDDEN to continue on to the next line.
- Again, in the event that the if condition or an else if condition is very long, then in the comment on the associated block close line of that clause, you can use the first part of the condition, followed by an ellipsis (three periods).
- Again, the comments for the statements inside the else if clause are indented farther, so that the asterisk at the beginning of each line of the comment lines up with the statement that the comment describes.
- Again, there is no comment immediately preceding each block close, because block closes are not statements.
(4) In the event that the if block has an if clause, one or more else if clauses, as well as an else clause:

```c
/*
 * Output the cloud type.
 */
if (cloud_type_code == cirrus_code) {
    /*
     * Output that the cloud type is cirrus.
     */
    printf("The cloud type is cirrus.\n");
} /* if (cloud_type_code == cirrus_code) */
else if (cloud_type_code == cumulus_code) {
    /*
     * Output that the cloud type is cumulus.
     */
    printf("The cloud type is cumulus.\n");
} /* if (cloud_type_code == cumulus_code) */
...
else if (cloud_type_code == strato_cumulus_code) {
    /*
     * Output that the cloud type is strato-cumulus.
     */
    printf("The cloud type is strato-cumulus.\n");
} /* if (cloud_type_code == strato_cumulus_code) */
else {
    /*
     * Output this weird message, which wouldn’t happen
     * in your actual code.
     */
    printf("This wouldn’t happen in your actual code!\n");
} /* if (cloud_type_code == strato_cumulus_code)...else */
```

Notice that, in addition to the properties of all of the previous cases:

- The comment preceding the entire if block describes the purpose of the if block as a whole, not just the purpose of the if clause.
- The condition in the comment immediately following and on the same line as the else clause’s block close is the condition of the FINAL else if clause, followed by an ellipsis and the keyword else.