

7.19.5.3 The **fopen** function

Synopsis

```
1    #include <stdio.h>
    FILE *fopen(const char * restrict filename,
                const char * restrict mode);
```

Description

2 The **fopen** function opens the file whose name is the string pointed to by **filename**, and associates a stream with it.

3 The argument **mode** points to a string. If the string is one of the following, the file is open in the indicated mode. Otherwise, the behavior is undefined.

r open text file for reading
w truncate to zero length or create text file for writing
a append; open or create text file for writing at end-of-file
rb open binary file for reading
wb truncate to zero length or create binary file for writing
ab append; open or create binary file for writing at end-of-file
r+ open text file for update (reading and writing)
w+ truncate to zero length or create text file for update
a+ append; open or create text file for update, writing at end-of-file
r+b or **rb+** open binary file for update (reading and writing)
w+b or **wb+** truncate to zero length or create binary file for update
a+b or **ab+** append; open or create binary file for update, writing at end-of-file

4 Opening a file with read mode ('**r**' as the first character in the **mode** argument) fails if the file does not exist or cannot be read.

5 Opening a file with append mode ('**a**' as the first character in the **mode** argument) causes all subsequent writes to the file to be forced to the then current end-of-file, regardless of intervening calls to the **fseek** function. In some implementations, opening a binary file with append mode ('**b**' as the second or third character in the above list of **mode** argument values) may initially position the file position indicator for the stream beyond the last data written, because of null character padding.

6 When a file is opened with update mode ('+' as the second or third character in the above list of **mode** argument values), both input and output may be performed on the associated stream. However, output shall not be directly followed by input without an intervening call to the **fflush** function or to a file positioning function (**fseek**, **fsetpos**, or **rewind**), and input shall not be directly followed by output without an intervening call to a file positioning function, unless the input operation encounters end-of-file. Opening (or creating) a text file with update mode may instead open (or create) a binary stream in some implementations.

7 When opened, a stream is fully buffered if and only if it can be determined not to refer to an interactive device. The error and end-of-file indicators for the stream are cleared.

Returns

8 The **fopen** function returns a pointer to the object controlling the stream. If the open operation fails, **fopen** returns a null pointer