

Reading from and writing to a File

C++ text file operations require the include file `fstream` which. This also includes `iostream`, so you do not need to include it separately. A text file is opened as an `ifstream`-type object. The extraction (`>>`) operator can then be used to read data into variables from the file. The insertion (`<<`) operator can be used to write information from variables to a file. The file to be read must be placed in the Projects main folder, not the src folder. One way is to select the Project folder and choose File -> New -> Other and choose the General -> untitled text file option. Then type what you need and save it.

Once a file has been opened and read from, you can close a file using the `close()` member function. Files should be closed once finished with the reading in process. To re-open a file use `open("filename.txt")` the member function.

The name of the file can be entered directly as literal strings, or using a string variable with the `c_str()` function attached as in the following example.

```
string filename;
cin>>filename;
ifstream inFile(filename.c_str());
```

Reading from a File Examples

The following segment reads and displays integers from the text file `testnum.dat`, until the end of the file is reached.

```
int x;
ifstream inFile("testnum.dat");
if (inFile.fail())
{
    cout << "File not found."
    exit(1);
}
else
{
    while (inFile >> x)
        cout << x;
    inFile.close();
}
```

Single characters can be read from an `ifstream` object with the `get` method. The following segment displays the file `testchar.txt` one character at a time.

```
char ch;
ifstream inFile("testchar.txt");
if (inFile.fail())
{
    cout << "File not found."
    exit(1);
}
else
{
    while (inFile.get(ch))
        cout << ch;
    inFile.close();
}
```

Lines of text can be read from an `ifstream` object with the `getline` method. The following segment displays the file `test.txt` one line at a time.

```
string line;
ifstream inFile("test.txt");
if (inFile.fail())
{
    cout << "File not found."
    exit(1);
}
else
{
    while (getline(inFile, line))
        cout << line;
    inFile.close();
}
```

Writing to a File Example

```
#include <fstream>                                // For file input/output

using namespace std;

int main()
{
    ofstream outFile("numbers.txt"); // Open the output file
    if (outFile.fail())
    {
        cout << "Unable to open output file."
        exit (1);                                //terminates program; file not found
    }
    else
    {
        for (int i = 0; i < limit; i++) // Write out some values
        {
            outFile << value[i] << endl;
        }
        outFile.close();
    }
    return 0;
}
```