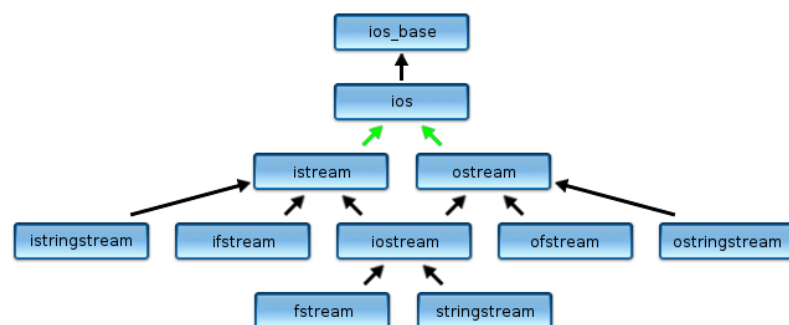


The Stream Classes

The C++ standard library stream headers contain several different classes that form a **class hierarchy**, designed using the object-oriented facility known as **inheritance**.



Note **headers**, not header. Until now, have one stream header: `<iostream>`. To read and write to files (instead of the standard streams, we'll use the **file stream** classes—`ifstream` and `ofstream`—found in the `<fstream>` header. The name `ifstream` stands for **input-file-stream**, while the name `ofstream` stands for **output-file-stream**.

In the diagram above, each class is a **derived class** (or **subclass**), of the class above it. Thus, `istream` and `ostream` are both **derived from** `ios`, and are **specialized** kinds of `ios` objects. In the opposite direction, `ios` is a **base class** (or **superclass**) of both `istream` and `ostream`. Similarly, `ifstream` is derived from `istream` and `ofstream` is the base class of `ostreamstream`.

This relationship—between base and derived classes—is conveyed by the words **is a**. Every `ifstream` object **is a** `istream` and, by continuing up the hierarchy, an `ios`. This means that characteristics of any class are **inherited** by its derived classes.



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