C++ Programming

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Streams

- We give input to the executing program and the execution program gives back the output.
- The sequence of bytes given as input to the executing program and the sequence of bytes that comes as output from the executing program are called stream.
- In other words, streams are nothing but the flow of data in a sequence.
- The input and output operation between the executing program and the devices like keyboard and monitor are known as “console I/O operation”.
- The input and output operation between the executing program and files are known as “disk I/O operation”.
- The I/O system of C++ contains a set of classes which define the file handling methods
- These include ifstream, ofstream and fstream classes. These classes are derived from fstream and from the corresponding iostream class.
- These classes, designed to manage the disk files, are declared in fstream and therefore we must include this file in any program that uses files.

Classes for File stream operations

- ios :
  - ios stands for input output stream.
  - This class is the base class for other classes in this class hierarchy.
  - This class contains the necessary facilities that are used by all the other derived classes for input and output operations.

- istream :
  - istream stands for input stream.
  - This class is derived from the class ‘ios’.
  - This class handle input stream.
  - The extraction operator(>>) is overloaded in this class to handle input streams from files to the program execution.
  - This class declares input functions such as get(), getline() and read().

- ostream :
  - ostream stands for output stream.
  - This class is derived from the class ‘ios’.
  - This class handle output stream.
  - The insertion operator(<<) is overloaded in this class to handle output streams to files from the program execution.
  - This class declares output functions such as put() and write().

Classes for File stream operations

- streambuf :
  - This class contains a pointer which points to the buffer which is used to manage the input and output streams.

- fstreambase :
  - This class provides operations common to the file streams. Serves as a base for fstream, ifstream and ofstream class.
  - This class contains open() and close() function.

- ifstream :
  - This class provides input operations.
  - It contains open() function with default input mode.
  - Inherits the functions get(), getline(), read(), seekg() and tellg() functions from the istream.

- ofstream :
  - This class provides output operations.
  - It contains open() function with default output mode.
  - Inherits the functions put(), write(), seekp() and tellp() functions from the ostream.

Classes for File stream operations

- fstream :
  - This class provides support for simultaneous input and output operations.
  - Inherits all the functions from istream and ostream classes through iostream.

- filebuf :
  - Its purpose is to set the file buffers to read and write.
  - We can also use file buffer member function to determine the length of the file.

- In C++, files are mainly dealt by using three classes fstream, ifstream, ofstream available in fstream headerfile.
  - ofstream: Stream class to write on files
  - ifstream: Stream class to read from files
  - fstream: Stream class to both read and write from/to files.

Thank You