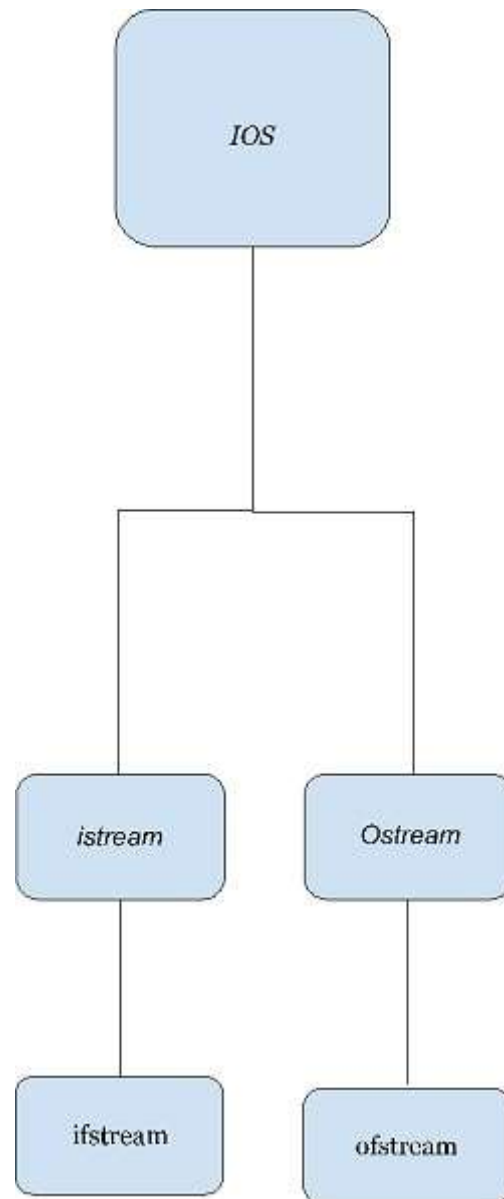# C++ Stream Class

# Definition

- Stream in C++ means a stream of characters that gets transferred between the program thread and input or output.

- There are a number of C++ stream classes eligible and defined which is related to the files and streams for providing input-output operations.

- All the classes and structures maintaining the file and folders with hierarchies are defined within the file with iostream.h standard library.

- Classes associated with the C++ stream include ios class, istream class, and ostream class.

- Class ios is indirectly inherited from the base class involving iostream class using istream class and ostream class which is declared virtually.

- There is a number of stream classes in the hierarchy which is defining and giving different flows for the varied objects in the class.

- The hierarchy is maintained in a way where it gets started from the top class which is the ios class followed by all the other classes involving istream class, ostream class, iostream class, istream_withassign class, and ostream_withassign class.

- The iosclass in the hierarchy is the parent class which is considered as a class from where both the istream and ostream class gets inherited. Both the istream class and ostream class constitute the ios class which is the highest level of the entire hierarchy of C++ stream classes.

- The other classes which include functions for the operations include assignment operation like _withassign classes.

```
                              ┌─────────────┐
                              │             │
                              │     IOS     │
                              │             │
                              └──────┬──────┘
                                     │
                        ┌────────────┴────────────┐
                        │                         │
                 ┌──────┴──────┐           ┌──────┴──────┐
                 │   istream   │           │   Ostream   │
                 └──────┬──────┘           └──────┬──────┘
                        │                         │
                 ┌──────┴──────┐           ┌──────┴──────┐
                 │   ifstream  │           │   ofstream  │
                 └─────────────┘           └─────────────┘
```

# Various stream classes in C++ are as follows:

- istream class
- ostream class
- iostream class
- ios class
- ostream_withassign class
- istream_withassign class

# C++ FileStream example: writing to a file

```cpp
#include <iostream>
#include <fstream>
using namespace std;
int main () {
  ofstream filestream("testout.txt");
  if (filestream.is_open())
  {
    filestream << "Welcome to CSVTU.\n";
    filestream << "C++ Class.\n";
    filestream.close();
  }
  else
cout <<"File opening is fail.";
  return 0;
}
```

# C++ FileStream example: reading from a file

```cpp
#include <iostream>
#include <fstream>
using namespace std;
int main () {
  string srg;
  ifstream filestream("testout.txt");
  if (filestream.is_open())
  {
    while ( getline (filestream,srg) )
    {
      cout << srg <<endl;
    }
    filestream.close();
  }
  else {
    cout << "File opening is fail."<<endl;
  }
  return 0;
}
```

# Thank You