STREAMS

In C++ there are number of stream classes for defining various streams related with files and for doing input-output operations. All these classes are defined in the file **iostream.h**. Figure given below shows the hierarchy of these classes.

1. **ios class** is topmost class in the stream classes hierarchy. It is the base class for **istream, ostream,** and **streambuf** class.

2. **istream** and **ostream** serves the base classes for **iostream** class. The class **istream** is used for input and **ostream** for the output.

3. Class **ios** is indirectly inherited to **iostream** class using **istream** and **ostream**. To avoid the duplicity of data and member functions of **ios** class, it is declared as virtual base class when inheriting in **istream** and **ostream** as

```
class istream: virtual public ios
{
};
class ostream: virtual public ios
{
};
```

The **_withassign classes** are provided with extra functionality for the assignment operations that's why **_withassign** classes.

Facilities provided by these stream classes.

1. **The ios class:** The ios class is responsible for providing all input and output facilities to all other stream classes.

2. **The istream class:** This class is responsible for handling input stream. It provides number of function for handling chars, strings and objects such as **get, getline, read, ignore, putback** etc..
   Example:

```
#include <iostream>
using namespace std;

int main()
{
    char x;

    // used to scan a single char
    cin.get(x);
```

```
    cout << x;
}
```

Input:

```
g
```

Output:

```
g
```

The ostream class: This class is responsible for handling output stream. It provides number of function for handling chars, strings and objects such as **write, put** etc..

Example:

```
#include <iostream>
using namespace std;

int main()
{
    char x;

    // used to scan a single char
    cin.get(x);

    // used to put a single char onto the screen.
    cout.put(x);
}
```

1. **Input:**

```
g
```

Output:

```
g
```