

## Objective

1. To understand the concept of input/output streams in C++.
2. To learn how to use standard I/O and file I/O streams.
3. To practice reading from and writing to files using streams.
4. To explore stream classes and their member functions.

## Theory

C++ uses the **iostream** and **fstream** libraries for stream computation. Streams are sequences of bytes used for input or output operations.

### Types of Streams:

- **Standard Input/Output Streams**
    - `cin` – Standard input stream (keyboard)
    - `cout` – Standard output stream (console)
    - `cerr` – Standard error stream (unbuffered)
    - `clog` – Standard log stream (buffered)
  - **File Streams**
    - `ifstream` – Input file stream
    - `ofstream` – Output file stream
    - `fstream` – File stream for both input and output
- 

## Syntax

### Header Files:

```
#include <iostream>    // For cin, cout
#include <fstream>     // For file stream classes
using namespace std;
```

### Standard Input and Output:

```
int var;
cin >> var;           // Taking input
cout << var;           // Displaying output
```

### Opening a File:

```
ifstream inFile;
ofstream outFile;
fstream file;

inFile.open("input.txt");    // For reading
outFile.open("output.txt");  // For writing
file.open("data.txt", ios::in | ios::out); // For both
```

**Reading and Writing to File:**

```
string data;  
inFile >> data;           // Reading  
outFile << data;          // Writing
```

**Closing a File:**

```
inFile.close();  
outFile.close();  
file.close();
```

**Checking File State:**

```
if (!inFile) {  
    cerr << "File could not be opened." << endl;  
}
```