

C++:  
Streams (specifically file I/O)

# PLEASE Look at this Video

- 3 minute video on pointers and references
- <https://www.youtube.com/watch?v=LwAPKuJpvmA>
- (BTW I'm sorry about it's weird background music)

# File I/O

- Use `<ofstream>` `<ifstream>`
- Provide char I/O to files
- Usually want to follow pattern  
open -> read or write -> close

Reading file use `ifstream`



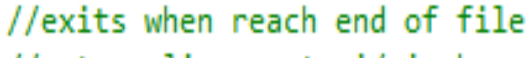
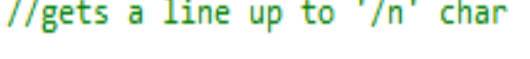

Writing file use `ofstream`

# File I/O Opening a file

- `.open(filename,mode)`
- Filename is `const char *`, *a pointer*, we will talk about these soon
- Use `std::string` instead, easier and safer (space is auto allocated for you)
- mode (flags)
  - `ios::inOpen` for input
  - `ios::outOpen` for output
  - `ios::binaryOpen` binary, encryption, images etc
  - `ios::ate` Set initial position at the end of the file. Default is beginning
  - `ios::app` append to end of the file
  - `ios::trunc` if exists, open and delete contents

# File I/O reading a file

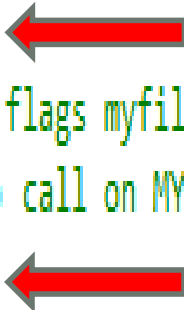
```
std::string myfile = "MyTestFile.txt";
```

```
void readFile(){  
    ifstream myInputfile;  
    myInputfile.open(myfile.c_str(), ios::in);   
    //note the .c_str() call on MYFILE  
    //read and count the data  
  
    if (myInputfile.is_open()) {   
        std::string line;  
  
        while (!myInputfile.eof()) {   
            getline(myInputfile, line);   
            cout<<line;  
        }  
        myInputfile.close();   
    }  
}
```

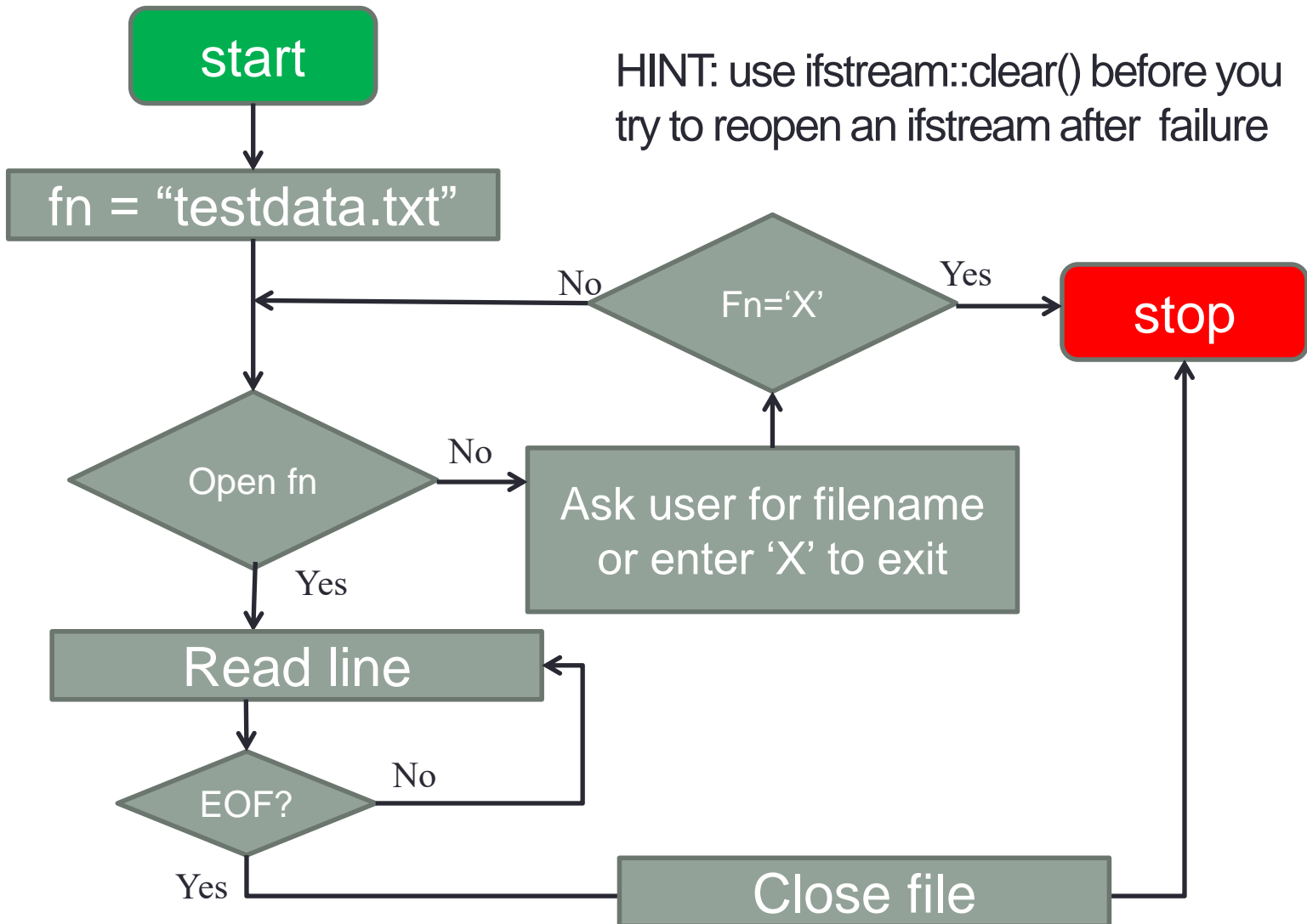
# File I/O writing a file

```
std::string myfile = "MyTestFile.txt";

void writeFile() {
    ofstream myOutputfile;
    myOutputfile.open(myfile.c_str()); //could open with flags myfile.open(MYFILE, ios::out)
                                     //note the .c_str() call on MYFILE
    myOutputfile << "Writing this to a file.\n";
    myOutputfile.close();
}
```



# Please implement this in C++



```

//=====
// Name      : 3_File_IO.cpp
// Author    :
// Version   :
// Copyright  : Your copyright notice
// Description : Hello World in C++, Ansi-style
//=====

#include <iostream>
#include <fstream>
#include <string>

using namespace std;
std::string MYFILE= "MyTestFile.txt";    //global to this file
const int FAIL = -1;
const int USER_CHOSE_TO_EXIT= -2;

const int SUCCESS =0;

/**README** use parts of the following code to implement the flowchart found in
//4- Headers, Streams, Namespaces lecture

int classExercise(string &filename){
    //code to read a file
    ifstream myInputfile;
    myInputfile.open(filename.c_str(), ios::in);

    while (!myInputfile.is_open()){
        cout << "Please enter a filename or \'x\' to exit"<<endl;
        cin >> filename;
        if (filename == "x" || filename == "X")
            return USER_CHOSE_TO_EXIT;
        myInputfile.open(filename.c_str(), ios::in);
    }

    //read and count the data
    if (myInputfile.is_open()){
        std::string line;

        //read entire file
        while (!myInputfile.eof()) {
            getline(myInputfile, line);
            cout<<line;
        }
        myInputfile.close();
    }
    return SUCCESS;
}

int main() {
    return classExercise(MYFILE);
}

```

```

//exits when reach end of file
//gets a line up to '\n' char

```