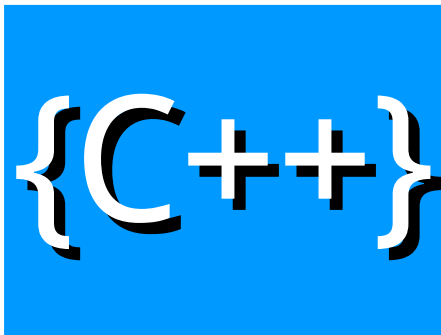




Sequential-Access Files

Week 11

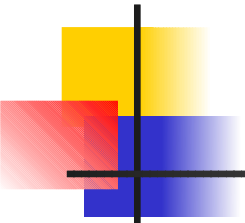


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Read data from the file in C++

- There are two ways to read texts from a file
 - Word by Word
 - Line by line



Read data from the file, Word by Word

```
#include <fstream>
ifstream fin("data.txt");
string s;
while( fin >> s ) {

    cout << "Read from file: " << s << endl;
}
```

data.txt

Fry: One Jillion dollars.
[Everyone gasps.]
Auctioneer: Sir, that's not a number.
中文字，測試。

Output

Read from file: Fry:
Read from file: One
Read from file: Jillion
Read from file: dollars.
Read from file: [Everyone
Read from file: gasps.]
Read from file: Auctioneer:
Read from file: Sir,
Read from file: that's
Read from file: not
Read from file: a
Read from file: number.
Read from file: 中文字，測試。



Read the data from file, Line by Line

Read lines into strings

```
#include <fstream>
ifstream fin("data.txt");
string s;
while( getline(fin,s) ){
    cout << "Read from file: " << s << endl;
}
```

Output

```
Read from file: Fry: One Jillion dollars.
Read from file: [Everyone gasps.]
Read from file: Auctioneer: Sir, that's not a number.
Read from file: 中文字，測試。
```

Newline character

windows

```
Fry: One Jillion dollars.\r\n[Everyone gasps.]\r\nAuctioneer: Sir, that's not a number.\r\n 文字，測試。
```

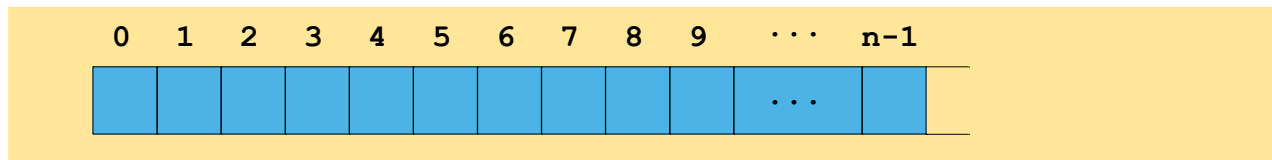
unix

```
Fry: One Jillion dollars.\n[Everyone gasps.]\nAuctioneer: Sir, that's not a number.\n 文字，測試。
```

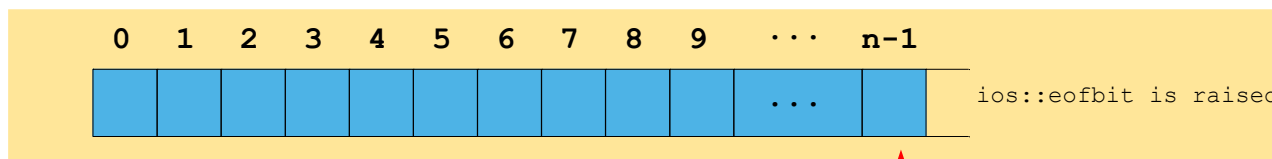
The most frequency mistake when use `fstream::eof()`

Wrong: It reads the last line twice

```
ifstream ifs("input.txt")
string w;
while(!ifs.eof()){
    ifs >> w;
    cout << w << endl;
}
```



File pointer



File pointer

| input.txt | output |
|-----------|--------|
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |

| input.txt | output |
|-----------|--------|
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |
| 30 | 30 |



The most frequency mistake when use `fstream::eof()`

Correct

```
ifstream ifs("data.txt")
string w;
while(ifs >> w){
    cout << w << endl;
}
```



Assignment 11

- Write a program to process a CSV file.
 - Read all data from a text file(records.csv). The input format is `id,name,weight,height`

| |
|-----------------|
| 1,victor,74,161 |
| 2,may,45,153 |
| 3,joe,76,164 |

- Output average weight and height.
 - Output all the data which is sorted by height.



Use getline and stringstream to split a string by multiple delimiters

```
#include <fstream>
#include <sstream>
```

```
stringstream ss;
string value;
```

```
// clear error flags and stream buffer
ss.str("");
ss.clear();
```

```
ss << "tim,100,1";
while(getline(ss,value','))
{
    std::cout << "Value:" << value << endl;
}
```

Output

```
Value:tim
Value:100
Value:1
```

```
(1) istream& getline (istream& is, string& str, char delim);
(2) istream& getline (istream& is, string& str);
```

Parameters

is

istream object from which characters are extracted.

str

string object where the extracted line is stored.

The contents in the string before the call (if any) are discarded and replaced by the extracted line.



Convert string to integer using stringstream

```
#include <iostream>
#include <sstream>
using namespace std;
int main(int argc, const char *argv[])
{
    string sList[3] = { "100", "1", "3" };
    int nList[3];
    stringstream sn;
    for (int i = 0; i < 3; i++) {
        sn.str("");
        sn.clear();
        sn << sList[i];
        sn >> nList[i];
    }
    int sum = 0;
    for (int i = 0; i < 3; i++) {
        cout << nList[i] << endl;
        sum += nList[i];
    }
    cout << "sum: " << sum << endl;
    return 0;
}
```