



Introduction to C++ (Season 2)

Unit 7: File Input and Output

第7单元: 出入虽同趣, 所向各有宜 - 文件输入输出

Section 03 : Read data from a file

第03节: 从文件读数据



Reading Data from a File (从文件读数据)

- ❖ ifstream class can be used to read data from a text file. (用ifstream类读文件)
 - Create an instance of ifstream (创建ifstream对象)
 - Open the file (use open() or ifstream constructor) (用open()函数或构造函数打开文件)
 - Read data from the file with ">>" (用流提取运算符从文件读数据)
 - Close the file (explicitly using close()) (显式调用close()函数关闭文件)

❖ Example:

Testing File Existence (检测文件是否存在)

❖ What will happen if:

- the file does not exist when **reading** a file (读文件时文件不存在)
- the media is ReadOnly when writing a file (e.g. write to a CD) (写文件时介质只读)

❖ To detect if a file is successfully opened: (检测文件是否正确打开的方法)

- invoke fail() immediately after open(). (open() 之后马上调用 fail() 函数)
- If fail() returns true, the file is not opened (does not exist). (fail() 返回 true, 你rp--)

```
ofstream output("scores.txt");  
if (output.fail()) {  
    cout<<"Can't open file \"scores.txt\"!";  
}
```

Testing End of File (检测是否已到文件末尾)

❖ What if:

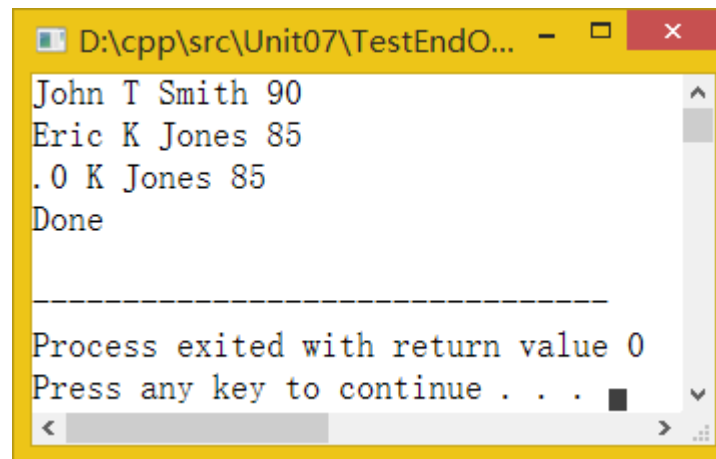
- Don't know how many lines are in the file (若你不知道文件有多少行)
- Want to read them all (还想把他们全读出来)

❖ Use eof() function to detect the end of file (用eof()函数检查是否是文件末尾)

Know data format (了解数据格式)

- ❖ To read data correctly, you need to know exactly **how data is stored**. (若想正确读出数据，必须确切了解数据的存储格式)
- ❖ For example, the program in previous would not work if the score is a **double** value with a decimal point.

```
John T Smith 90  
Eric K Jones 85.0
```



The screenshot shows a console window titled "D:\cpp\src\Unit07\TestEndO...". The output of the program is as follows:

```
John T Smith 90  
Eric K Jones 85  
.0 K Jones 85  
Done
```

Below the output, a dashed line separates it from the program's exit message:

```
-----  
Process exited with return value 0  
Press any key to continue . . .
```

The output demonstrates that the program incorrectly reads the decimal part of the score as a separate line of input, leading to a malformed line ".0 K Jones 85".