UNIT 06: IO STREAMS AND DATA FILES IN C++

Lesson 2

- Reading and Writing Text Files
- Random File Access
- String Streams

References

Bronson, G. (2012). Chapter 9 I/O Streams and Data Files. In *A First Book of C++* (4th ed.). Boston, MA: Course Technology.

Orientation

This Week

- ~~Lesson 1 (Today):~~
  - ~~Establish groups for lab assignment~~
  - ~~In-class guided instruction activities.~~
- Lesson 2 (Today):
  - More in-class guided instruction activities.
  - Introduce unit supplemental topics.

Next Week

- Lesson 3
  - Finish activities, if needed.
  - Time to work on the lab assignment
- Lesson 4
  - More time to work on the lab assignment, if needed.
  - Orientation to next unit.

Upcoming Evaluation

- Lessons 2, 3, 4 in-class marks.
  - Pass/Fail: need to be in class.
- Monday, 31 Mar
  - Group Lab 6 (8:00AM)
  - Quiz 6 (Noon)
- Tuesday, 1 Apr
  - Video Lab 7A: Classes (8:00AM)

In-Class Activity Requirements

- Each of the activities will involve writing programs. You will collaborate in groups of 2 to 3 students, but each of you will write your own programs on your own laptop.
- You will be submitting your source code at the end of the lesson for marks.
- You must be present, in class, to be eligible to participate in the activities, and thus be eligible for these marks.

Activity 4

- Guided Activity:
  - We will complete a simple program that will write text to an output file.
  - Open the starter file *CPRG06-04.cpp*
  - Add the code to write the following data to prices.txt:

```
Kettle      23.95
Toaster     25.49
Stove       549.99
Microwave   99.00
```

CPRG06-04.cpp

How the Text is Stored

```
4D 61 74 73 20 33 39 2E 39 35 0D 0A 42 75 6C 62 73 20
 M  a  t  s     3  9  .  9  5 cr 1f  B  u  l  b  s

33 2E 32 32 0D 0A 46 75 73 65 73 20 31 2E 30 38 0D 0A
 3  .  2  2 cr 1f  F  u  s  e  s     1  .  0  8 cr 1f
```

Figure 9.2 The `prices.dat` file as stored by the computer

Activity 4

- Writing text to a text file is nearly identical to writing text to the _____ using _____.

Reading from a Text File

Table 9.3 `fstream` Methods

Method Name	Description
`get()`	Returns the next character extracted from the input stream as an `int`.
`get(charVar)`	Overloaded version of `get()` that extracts the next character from the input stream and assigns it to the specified character variable, `charVar`.
`getline(strObj, termChar)`	Extracts characters from the specified input stream, `strObj`, until the terminating character, `termChar`, is encountered. Assigns the characters to the specified `string` class object, `strObj`.
`peek()`	Returns the next character in the input stream without extracting it from the stream.
`ignore(int n)`	Skips over the next *n* characters. If *n* is omitted, the default is to skip over the next single character.

Activity 5

- Guided Activity:
  - We will complete a program that will attempt to read from a text file.
  - Open the starter file *CPRG06-05.cpp*
  - Code a loop to read each item description and price and output them neatly in two columns.
    - Note how the column headings are output for hints to setting up the column widths and alignments.

CPRG06-02.cpp

Activity 5

- What is wrong with this solution?

```
while(inFile.good())
{
  inFile >> description >> price;
  cout << left << setw(10) << description
       << right << setw(6) << price << endl;
}
```


Supplemental* Topics

- Random File Access
  - Read/write anywhere in the file we want by manipulating the file position marker.
- String Streams
  - Read/Write to a string using similar techniques as read/write to a file.

RandomFileAccess.cpp


source.txt

StringStream.cpp

Submission

- Open the *Unit 6- Lesson 1 Activities* Dropbox
- Attach your source code files *individually* (**DO NOT ZIP**) and submit
  - *CPRG06-04.cpp,*
  - *CPRG06-05.cpp*