

From a prior lecture, we worked on a problem that started out this way:

I have a sum of money to invest at a particular rate of interest for 10 years.
 How much money will I have at the end of 10 years, if compounded annually?
 What is my total interest earned?

By the time we closed the lecture we had refined the program several times until it worked for n investment decisions. Here is that program reproduced with some additional statement in bold. The code in bold is all that is needed to output a report from the program.

```
//case5.cpp
// Compound Interest Program - Case 5
// Using a report textfile
// This program computes interest on some initial investment,
// compounded annually for any number of years.

#include <fstream>
#include <iostream>
#include <iomanip>

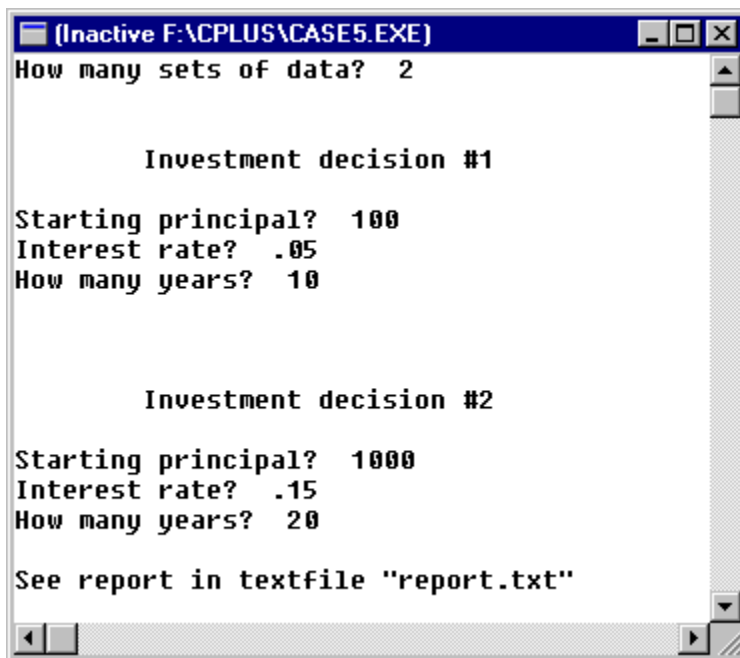
int main()
{
    int n, year, years;
    float pzero, p, rate, earned;
    ofstream cprn ("report.txt"); //File contains the report

    cout << "How many sets of data? ";
    cin >> n;
    for (int count = 1; count <=n; count++) {
        cout << "\n\n\tInvestment decision #" << count << endl;
        cout << "\nStarting principal? ";
        cin >> pzero;
        cout << "Interest rate? ";
        cin >> rate;
        cout << "How many years? ";
        cin >> years;
        cout << endl;
        cprn << setiosflags(ios::fixed |ios::showpoint)
            << setprecision(2);
        p = pzero;
        cprn << "\n\n\tInvestment decision #" << count << endl;
        cprn << "Starting Principal = $" << pzero <<endl
            << "Interest rate = " << rate <<endl<<endl;
        for (year=1; year<=years; year++){
            p = p + p * rate;
            cprn << "After " << setw(3) << year
                << " years, you will have $"
                << p <<endl;
        } //end for
        earned = p - pzero;
        cprn << "\nTotal interest earned: $" << earned <<endl;
    }//end for
    cout << "See report in textfile \"report.txt\"\n\n";
    return 0; //successful termination of program
}
```

```
} //end main
```

ofstream is a class defined in the **fstream.h** header file. We use it to define an object called **cprn**. When we use **cprn** in place of **cout**, the stream output is sent to the **report.txt** textfile rather than to the standard output (screen). This will become clearer when we write our own classes and objects.

We still use the console window for interactive I/O:



Then we have to find and print the report file produced by the program – report.txt. If you have trouble locating it, you may wish to use the entire path in your file name, for example:

```
ofstream outReport
("C:\\Users\\lwfriedman\\Documents\\cplusplus\\invest\\report.txt");
```

Notice that since the backslash (\) usually denotes a control character (like ‘\n’) we must use \\ when we really want the backslash character itself.

For you Mac users the path will be something different, more like:

```
/Users/<yourusername>/Desktop/<filename>
```

Print the contents of report.txt:

```

      Investment decision #1
Starting Principal = $100.00
Interest rate = 0.05

After 1 years, you will have $105.00
After 2 years, you will have $110.25
After 3 years, you will have $115.76
After 4 years, you will have $121.55
After 5 years, you will have $127.63
After 6 years, you will have $134.01
After 7 years, you will have $140.71
After 8 years, you will have $147.75
After 9 years, you will have $155.13
After 10 years, you will have $162.89

Total interest earned:  $62.89

      Investment decision #2
Starting Principal = $100.00
Interest rate = 0.15

After 1 years, you will have $115.00
After 2 years, you will have $132.25
After 3 years, you will have $152.09
After 4 years, you will have $174.90
After 5 years, you will have $201.14
After 6 years, you will have $231.31
After 7 years, you will have $266.00
After 8 years, you will have $305.90
After 9 years, you will have $351.79
After 10 years, you will have $404.56
After 11 years, you will have $465.24
After 12 years, you will have $535.03
After 13 years, you will have $615.28
After 14 years, you will have $707.57
After 15 years, you will have $813.71
After 16 years, you will have $935.76
After 17 years, you will have $1076.13
After 18 years, you will have $1237.55
After 19 years, you will have $1423.18
After 20 years, you will have $1636.65

Total interest earned:  $1536.65

```