

Introduction:

In this project you will do some of your first programming. You will be given most of a complete program with the calculation part missing. You will have to decide what needs to be done and then fill in those parts.

The main idea for this project is that you are going to be computing the balance on a investment using the formula $\text{balance} = \text{Principle} * e^{rt}$; where e is the natural log base.

In order to compute this you will need to know a couple of extra basic C++ math functions. In order to raise e to some power we use the `exp()` function. Here is a little on-line reference for `exp`: <http://www.cplusplus.com/ref/cmath/exp.html>. Note we will be `#include <cmath>` instead of `<math.h>`.

Details:

You will be given is a program that will read from the correct file and output to the correct file. It will create and initialize all the variables that are needed. What is left for you to do, is the actual calculations. You may need to make a few decisions either before or while you are computing the answer.

Here is the start of the program for you:

```
/*
 * Here is the beginning of project two. You will need to fill in the
 * computation part, compile it, test it and submit it to the curator.
 */
//
#include <iostream> //for general console based input and output
#include <cmath> //for mathematical functions
#include <fstream> //for file base input and output
#include <iomanip>

using namespace std;

int main()
{
    double principle; //the original amount invested
    double interestRate; //the interest rate for the investment
    double balance; //the ending balance.
    int time; //how many compound periods

    ifstream in; //create an input stream object
    ofstream out; //create an output stream object

    in.open( "investment.txt" ); //attach the stream to the file
    out.open( "portfolio.txt" ); //attach the stream to the file

    in.ignore( 200, '$' ); //ignore 200 characters or until you find a dollar
sign
    in >> principle; //read in the principle
    in.ignore( 200, ':' ); //ignore 200 characters or until you find a colon
    in >> interestRate; //read in the interest rate
    in.ignore( 200, ':' ); //ignore 200 characters or until you find a colon
```

Due July 16 by 11 pm

```

in >> time; //read in the time

in.close(); //we're done with the input stream so we will close it now

//now let's compute the balance using b = Pe^(rt)

//here's where your calculation goes

//now we print out the results
out << "Programmer: Dave McPherson" << endl;
out << "CS1044 Summer II 2006: Project 2" << endl;
out << "*****" <<
endl;
out << "Principle: $" << principle << endl;
out << "Interest Rate: " << interestRate << endl;
out << "Time: " << time << endl;
out << "Balance: $" << setprecision(2) << fixed << showpoint << balance <<
endl;

out.close(); //we close the output stream because we are done with it

return 0;
}

```

Don't forget to put your name in place of mine in the outputting.

Here is an example of an input file:

```

Principle: $1000
Interest Rate: 8.0%
Time: 1

```

Here is an example of an output file for the given example input:

```

Programmer: Dave McPherson
CS1044 Summer II 2006: Project 2
*****
Principle: $1000
Interest Rate: 8
Time: 1
Balance: $1083.29

```

Submission

This project will be submitted to the Curator for auto-grading. A link to the Curator is on the course website and the Curator should have emailed you your password to login. If you have lost it or can't find it, then email me and I can have the Curator reset and resend you your password.

The following header comment must be pre-pended to your submission. Failure to do so is an honor code violation and will be treated as such.

```

// On my honor:
//

```

Due July 16 by 11 pm

```
// - I have not discussed the C++ language code in my program with
// anyone other than my instructor or the teaching assistants
// assigned to this course.
//
// - I have not used C++ language code obtained from another student,
// or any other unauthorized source, either modified or unmodified.
//
// - If any C++ language code or documentation used in my program
// was obtained from another source, such as a text book or course
// notes, that has been clearly noted with a proper citation in
// the comments of my program.
//
// - I have not designed this program in such a way as to defeat or
// interfere with the normal operation of the Curator System.
//
// <Student Name>
```