CSC-101 – HW2

Q1 (25 Points) During each summer, John and Jessica grow vegetables in their backyard and buy seeds and fertilizer from a local nursery. The nursery carries different types of vegetable fertilizers in various bag sizes.

When buying a particular fertilizer, they want to know the price of the fertilizer per pound and the cost of fertilizing per square foot.

Instructions

The following program prompts the user to enter the size of the fertilizer bag, in pounds, the cost of the bag, and the area, in square feet, that can be covered by the bag.

The program should output the desired result. However, the program contains logic errors. Find and correct the logic errors so that the program works properly.

```
//Logic errors.
#include <iostream>
#include <iomanip>

using namespace std;

int main()
{
   double cost;
   double area;
   double bagSize;

   cout << fixed << showpoint << setprecision(2);

   cout << "Enter the amount of fertilizer, in pounds, "
        << "in one bag: ";
   cin >> bagSize;
   cout << endl;

   cout << "Enter the cost of the " << bagSize
        << " pound fertilizer bag: ";
   cin >> cost;
   cout << endl;
```

```
    cout << "Enter the area, in square feet, that can be "
         << "fertilized by one bag: ";
    cin >> area;
    cout << endl;

    cout << "The cost of the fertilizer per pound is: $"
         << bagSize / cost << endl;

    cout << "The cost of fertilizing per square foot is: $"
         << area / cost << endl;
    return 0;
}
```

Format your output with `setprecision(2)` to ensure the proper number of decimals for testing!

Q2 (25 points) Interest on a credit card's unpaid balance is calculated using the average daily balance.

Suppose that `netBalance` is the balance shown in the bill, `payment` is the payment made, `d1` is the number of days in the billing cycle, and `d2` is the number of days payment is made before billing cycle.

Then, the average daily balance is:

```
averageDailyBalance = (netBalance * d1 – payment * d2) / d1
```

If the interest rate per month is, say, **0.0152**, then the interest on the unpaid balance is:

```
interest = averageDailyBalance * 0.0152
```

Instructions

Write a program that accepts as input `netBalance`, `d1`, `payment`, `d2`, and interest rate per month (`interestRate`).

The program outputs the interest.

Format your output to two decimal places.

Q3 (25 Points) Dairy Farm decided to ship milk in containers in the form of cubes rather than cylinders.

Write a program that prompts the user to input:

1. The radius of the base of a cylindrical container
2. The height of the cylindrical container

The program then outputs:

1. The side of the cube with the same volume as the cylindrical container with a precision of 2 decimal places.

You may assume that the value of π = **3.141593**.

Format your output with `setprecision(2)` to ensure the proper number of decimals for testing!

Q4 (25 Points) Write a program that reads data from a file specified by the user at runtime (i.e. your program should accept the filename as user input) and stores the output in the file *Ch3_Ex5Output.dat*. To test your program, use the *Ch3_Ex5Data.txt* file.

Your program will not pass all checks if it does not accept a filename as input from the user.

For each employee, the data must be output in the following form: **firstName lastName updatedSalary**.

Format the output of decimal numbers to two decimal places.

Since your program handles currency, make sure to use a data type that can store decimals.

Create a file to hold this data

Miller Andrew 65789.87 5
Green Sheila 75892.56 6
Sethi Amit 74900.50 6.1