

CS150-01 Assignment 2

Currency Converter

Date Assigned: Friday, September 10, 2004

Date Due: Friday, September 17, 2004

Points: 50

1 Problem

You've just been hired by a British travel company to write a currency conversion program. They have many British travelers going to the US who would like to know how many American dollars they should expect to get for their British Pound. Further, they want you to explain how the American dollar amount will translate to the number of different bills and coins.

Now, there are many different ways to split a particular dollar amount into bills and coins, but they want to have as many high denomination bills and coins as possible. (Assume that the highest denomination bill that they would receive is a \$20 dollar bill and that they will not receive any half dollar coins). For example, \$62.30 would be split into 3-\$20 bill, 0-\$10 dollar bills, 0-\$5 bill, 2-\$1 bill, 1-quarters, 0 dimes, 1-nickel and 0-pennies. It would NOT be 0-\$20 bills, 6-\$10 bills, 0-\$5 bills, 2-\$1 bills, 0-quarters, 3-dimes, 0-nickels and 0-pennies. Don't worry too much about this calculation now as we will cover a similar example in class. It turns out that it's quite easy!

The exchange rate that the travel agency has provided you is 1 British Pound is equal to 1.78 US dollars. They want the program interface to look as follows. Sample input is given in bold.

```
Hello, traveler. Please enter your name: Shereen
```

```
Welcome Shereen!
```

```
Please enter the number of British Pounds you wish to convert to US dollars: 35
```

```
35 British Pounds are equal to $62.30
```

```
That is:
```

```
3 $20 bills
```

```
0 $10 bills
```

```
0 $5 bills
```

```
2 $1 bills
```

```
1 quarters
```

```
0 dimes
```

```
1 nickels
```

```
0 pennies
```

2 You need to do the following for this assignment

1. Program Documentation

- (a) **Assignment Details and Introduction:** At the top of the page, write down the course number, assignment number, your name, my name, due date and submission date. After that, write one paragraph describing what your program does. Here you are restating the problem in your own words

- (b) **Problem Analysis:** Identify the input to your program, the output from your program, and any internal data in your program. You should also identify the data type and indicate whether it should be a variable or a constant.
 - (c) **Algorithm:** Write out the steps that you'll need to do complete the program. Be as detailed as possible. It will help you write the program. When writing the steps of the algorithm, don't write any C++ code.
 - (d) **Test Results:** These are solutions to the problem using some method other than your computer program. They are often done by hand, but could include experimental or other results. These results should be explicitly compared to those from the program to demonstrate that the program works. The number of specific cases done should be sufficient to prove beyond a reasonable doubt that the program works.
2. **Program Implementation:** Write the C++ code and build and run it in Visual Studio .NET. Make sure to include as many comments as possible. For this code, you will be repeating similar calculations for each bill amount. While this makes for easy work, be careful to make sure all the calculations are correct! Test the code as much as you can for different values to make sure it works. Remember—a code that does not build or run loses 70% of the points.

3 What to turn in

1. Turn in your problem analysis and algorithm to me in class on the day it's due. These should be hard copies. You may write them by hand or use a word processing program to generate them, but please make sure that they are neat and easy to read! I have included a sample analysis and algorithm for the miles to kilometers conversion program. Your analysis and algorithm should look very similar.
2. Place your completed project in the CS150-01 Drop folder by 1pm on Friday, September 17. Anything turned in after that but before 1pm on Saturday, September 18, will be considered late and you will automatically lose 20% of the grade. Your project must be created in Visual Studio .NET. I will not accept any other project.

Note: You may only use the C++ programming concepts covered in Chapter 1 of your book. Do not use any more advanced concepts we will cover next week or any other programming concepts that you have had experience with.

START EARLY!!