CSCI 2170 OLA 3   Due: Midnight, Tuesday, February 19th

Program One

Write a program, named **time.cpp** that converts time in 24-hour notation as two integers - one for hours and one for minutes - and converts it to 12-hour notation. **Your program should implement 3 functions: one to get input from a data file, one to do the conversion, and one to do output the converted time.**

Record the A.M./P.M. information as a char with the value 'A' for AM or 'P' for PM. Pass the char as a call-by-reference formal parameter to the conversion function.

Your main function should open the data file and use a while loop to process the time stored in the file one by one. For each time, call the three user defined function to read, convert, and output the result.

Navigate to your project directory under the codelite directory. Copy the data file into your project directory using the following Unix command:
        cp ~cen/data/times.dat .

Here is an example of the data file:
20:45
10:20
23:59
5:03
8:10

For this data file, the output from the program should be:
8:45 PM
10:20 AM
11:59 PM
5:03 AM
8:10 AM

Program Two

Write a program named change.cpp. It takes one change value (between 1 and 99) and prints out what coins can be used to make that change. Use coin denominations of 25 cents (quarters), 10 cents (dimes), and 1 cent (pennies). Do not use nickels and half-dollar coins.

Your program should implement the following function (among others):

void computeCoin(int cointValue, int& number, int& amountLeft);
// Precondition: 0 < coinValue < 100; 0 <= amountLeft < 100.
// Postcondition: number has been set equal to the maximum number
// of coins of denomination coinValue cents that can be obtained
// from amountLeft cents. amountLeft has been decreased by the
// value of the coins, that is, decreased by (number * coinValue).

For example, if the <u>value</u> of the <u>variable</u> amountLeft is 86, after the following call:
computeCoins(25,number,amountLeft);
the <u>value</u> of number will be 3 and the <u>value</u> of amountLeft will be 11, because if you take 3 quarters from 86 cents, that leaves 11 cents.

After a second call:
ComputeCoins(10, number, amountLeft);
the <u>value</u> of number will be 1 and the <u>value</u> of amountLeft will be 1, because if you take 1 dime from 11 cents, that leaves 1 cent.

Therefore, for this example, the coins can be used to make change for 86 is 3 coins and 1 dime and 1 cent.

Your main function should consist of a while loop that reads the change values from a data file one value at a time. For each value read, it computes and displays what coins can be used to make that change.

Navigate to your project directory under the codelite directory. Copy the data file into your project directory using the following Unix command:
cp ~cen/data/coins.dat .

Here is an example of the data file:

86
30
56
69

For this data file, the output from the program should be:

86 cents can be changed using:
3 quarter(s)
1 dime(s)
1 cent(s)

30 cents can be changed using:
1 quarter(s)
0 dime(s)
5 cent(s)

56 cents can be changed using:
2 quarter(s)
0 dime(s)
6 cent(s)

69 cents can be changed using:
2 quarter(s)
1 dime(s)
9 cent(s)