Q1

Write a function that takes the time as three integer arguments (hours, minutes and seconds) and returns the number of seconds since the last time the clock "struck 12." Use this function to calculate the amount of time in seconds between two times,both of which are within one 12-hour cycle of the clock.

Q2

An integer is said to be prime if it's divisible by only 1 and itself. For example, 2, 3, 5 and 7 are prime, but 4, 6, 8 and 9 are not.

a) Write a function that determines whether a number is prime.

b) Use this function in a program that determines and prints all the prime numbers between 2 and 10,000. How many of these numbers do you really have to test before being sure that you've found all the primes?

c) Initially, you might think that n/2 is the upper limit for which you must test to see whether a number is prime, but you need only go as high as the square root of n.

Textbook Search Engine

The purpose of this program is to write a search function to fill a vector with the search results of "Textbook.txt" file. *(it is OK to load the file into memory for faster processing).*

Create a user menu with the options to toggle search & ranking. The user can input the number to change the setting or directly input the terms to search for.

```
Text Book Search Engine
    1-  Toggle case sensitive search (currently ON)
    2-  Toggle AND/OR search (currently AND)
    3-  Toggle Ranking with OR search (currently OFF)
    4-  Exit
Your Input >  1

Case sensitive search is now OFF

Text Book Search Engine
    1-  Toggle case sensitive search (currently OFF)
    2-  Toggle AND/OR search (currently AND)
    3-  Toggle Ranking with OR search (currently OFF)
    4-  Exit
Your Input >  co  C++

There are 2 results:
    ------------------------------------------------
    The C++ Complete Reference by Herbert Schlidt
    Writing Accounting Programs in C++ by D. Addington
    ------------------------------------------------

Text Book Search Engine
    1-  Toggle case sensitive search (currently OFF)
    2-  Toggle AND/OR search (currently AND)
    3-  Toggle Ranking with OR search (currently OFF)
    4-  Exit
Your Input >  4

Good Bye.
```

More Exercises

Q7

Write a C++ program that prompts the user for the radius of a circle, and then calls inline function circleArea to calculate the area of that circle.

Q8

Write a complete C++ program with the two alternate functions specified below, each of which simply triples the variable count defined in main. Then compare and contrast the two approaches. These two functions are

a) function tripleByValue that passes a copy of count by value, triples the copy and returns the new value and

b) function tripleByReference that passes count by reference via a reference parameter and triples the original value of count through its alias (i.e., the reference parameter).

Q9

Define a table of the names of months of the year and the number of days in each month. Write out that table. Do this using an array of structures, with each structure holding the name of a month and the number of days in it.

Write a program that inputs the month number and prints the month's name and number of days using the table above.