

ENGINEERING H192 DAILY ASSIGNMENT B21

This assignment is designed to give you some experience working with user defined data structures, or structs. Use the **Calendar** structure below in a program to determine the elapsed time in seconds since a person was born. Use the **GetTime()** function, also defined below, to read data from the user into the appropriate **Calendar** structures. The user will enter the date and time of birth along with the current date and time, each of which will be stored in separate **Calendar** structures. Prototypes for two additional user written functions, **SecondsFromZero()** and **ConvertToCalendar()**, are also listed below. You are to write the function definitions for both as well as a **main()** function so that your program can complete all of the requirements spelled out in the list below.

Before you begin, copy **b21.cpp** from **~engh192/students** to your working directory.

```
typedef struct Calendar
{
    int year;
    int month;
    int day;
    int hour;
    int minute;
    int second;
} Time;

void GetTime (Time *);
long int SecondsFromZero (Time);
void ConvertToCalendar (long int, Time *);
```

Program **b21.cpp** must:

- 1) Prompt the user for the time of birth and the current time.
- 2) Convert each date and time entered into a number of seconds from a set point using **SecondsFromZero()**. January 1, 1980 at 00:00:00 works well, assuming the dates entered are after 1980.
- 3) Take the difference of the two values in seconds.
- 4) Display the elapsed time in seconds.
- 5) Convert the elapsed time in seconds to a variable of type **Time** using **ConvertToCalendar()**.
- 6) Display the elapsed time in the format: "You have been alive **uu** years, **vv** months, **ww** days, **xx** hours, **yy** minutes, and **zz** seconds." using a variable of type **Time**.

```
void GetTime (Time *pz)
{
    printf("Enter Date (mm-dd-yyyy): ");
    scanf("%2d%c%2d%c%4d", &(*pz).month, &(*pz).day, &(*pz).year);

    printf("Enter 24-Hour Clock Time (hh:mm:ss): ");
    scanf("%2d%c%2d%c%2d", &(*pz).hour, &(*pz).minute, &(*pz).second);
}
```

Using defined constants for time constants will be particularly useful in this program. For example, you may want to create a constant like **#define YEAR_TO_SECONDS 31557600**. Also, assume that there are 365/12 days per month, and therefore 2,628,000 seconds per month. Compile, link, test, and if necessary, debug your program. When it is working correctly modify it so that everything displayed on the screen is written to the file **b21result.txt**. Print **b21.cpp** and **b21result.txt** and submit both with this sheet.

Name _____ Instructor _____ Seat _____ Hour _____