**Programming Assignments (30 points) Source code and data files must be turned in by 11:00 AM November 17. (Angel Drop Box or printed out and turned in at beginning of class.)**

**Program 1.** (10 points) Write a program to convert the time from 24-hour notation to 12-hour notation and vice versa. Your program must contain a function that converts from 24-hour notation to 12-hour notation and a function that converts from 12-hour notation to 24-hour notation. The user will input the time as HH MM SS plus a two-letter code (AM, PM, UT). Then the appropriate function will be called. The output for 12-hour notation must include either AM or PM. The output for 24-hour notation must include UT (Universal Time). **You are not allowed to use any library functions that may be available for the conversion.**

Examples:

 INPUT OUTPUT

 17:30:00 UT 5:30:00 PM

 10:30:30 AM 10:30:00 UT

6:18:00 UT 6:18:00 AM

 6:15:45 PM 18:15:45 UT

**Program 2.** (20 points) Suppose you have a small company with 7 employees. For each employee you need the following information:

**PART A**

Name

Address

Birthdate

Social Security Number

Number of dependents

Hourly Wage

For each employee you need to produce a pay stub with the following information:

**PARTB**

Hours Worked

Gross Pay

Federal Tax - 12%

State Tax – 7%

FICA – 5%

Medical – 5%

Net Pay (After withholding)

1. Design and declare structures to organize the data (Part A and Part B) for your employees. You may combine all data into one structure if you like.
2. Write a program that utilizes the structures to create a file of records for your employees. Then using those records, plus an input for hours worked, calculate the PART B information and produce a pay stub for each employee. Your program should create a file containing PART A information for all employees. That file can then be used repeatedly as needed.
3. Your program must include the following functions:
	1. Initialize employee data record and save each record to a file: Fills in a data record for an employee with PART A information then writes the data to a file for later use. (Enter the data manually from the keyboard.)
	2. Pay stub: Calculate the PART B information given the employee data record file from PART A plus input (from keyboard) for hours worked. Then write the Part B information to a file formatted as a pay stub. (Your design)

Run your program to create the data records for all 7 employees. Then produce a file of pay stubs for your employees (7 stubs).

Turn in a copy of the files generated by your program along with the C++ code.

SAMPLE DATA

**PART A**

Johnson, Fred

300 Oak St. Huntsville Al. 35801

10 23 1974

453 62 8791

3

23.75

**PAY STUB for 40 hours (PART B) (You may design the output as you like.)**

NAME: Johnson, Fred

HOURS: 40.0

GROSS: $950.00

FED TAX: $114.00

STATE TAX: $66.50

FICA: $47.50

MEDICAL: $47.50

NET PAY: $674.50