

Lab #1

50 Points, Due: 09/14/2018

For each of the following assignments, create a C++ program that meets the requirements.

1. Simple I/O – 10 points

Write a simple C++ program that outputs three lines of text. The first line should be your name, the second is your student 800 number, and third is the date (month, day, year). These are all based on user input. Utilize a character variable to output '-' between the month, day, and year.

2. Convert minutes to hours and minutes – 10 points

Write a program that generates a random number of minutes and expresses that in terms of Hours and minutes. For example: If the user inputs 90, the output of your code must be 1 hour and 30 minutes. (Use the % operator.) The number of minutes should be between 60 and 1500.

3. Calculate Gross & Net Pay - 30 points

An employee is paid \$16.75 /hour for a 40 hour work week. Any additional hours of work are paid at an overtime rate of one and one-half times the hourly rate. Before the employee receives their check the following amounts are removed from their gross pay.

- 6% for Social Security
- 14% for federal income tax
- 5% for state income tax
- \$10 per week for union dues
- \$35 for three or more dependents to cover health insurance

Write a program that will take in the number of hours that were worked in a week and the number of dependents the employee has. Output the workers gross pay, each amount withheld and the net take-home pay for the week. (Tip: Be sure to test with values greater than and less than 40 hours).

4. Calculate room capacity violation – 20 points

Write a program that determines whether a meeting room is in violation of fire law regulations regarding the maximum room capacity. The program will read in the maximum room capacity and the number of people to attend the meeting. If the number of people is less than or equal to the maximum room capacity, the program announces that it is legal to hold the meeting and tells how many additional people may legally attend. If the number of people exceeds the maximum room capacity, the program announces that the meeting cannot be held as planned due to fire regulations and tells how many people must be excluded in order to meet the fire regulations.

5. Qualifying Age Comparison – 30 points

The U.S. has several legal age restrictions for certain activities.

- Driver's License – Age 16
- Right to Vote – Age 18
- Purchase Alcohol – Age 21
- Rent a Car w/o extra fees – Age 25
- Senior Citizen Privileges – Age 55

Write a program that takes in the user's age. Based on the input output a statement for each of these restriction to indicate if they are eligible for these yet.

II. Submission Instructions

Submit all of your programs in one file. Keep in mind that you can comment out each program while you work on the next.

You will be graded on both the functionality and presentation. Specifically, the program you turn in must be properly indented (in its use of line breaks and format), have good variable names, and important sections of code must have comments. Be sure to label each problem with the corresponding problem name as a comment.