

CS5008 Homework 2

Question 1:

During the tax season, every Friday, the J&J accounting firm provides assistance to people who prepare their own tax returns. Their charges are as follows:

- a. If a person has low income ($\leq 25,000$) and the consulting time is less than or equal to 30 minutes, there are no charges; otherwise, the service charges are 40% of the regular hourly rate for the time over 30 minutes.
- b. For others, if the consulting time is less than or equal to 20 minutes, there are no service charges; otherwise, service charges are 70% of the regular hourly rate for the time over 20 minutes.

(For example, suppose that a person has low income and spent 1 hour and 15 minutes, and the hourly rate is \$70.00. Then the billing amount is $70.00 \times 0.40 \times (45 / 60) = \21.00 .)

Write a program that prompts the user to enter the hourly rate, the total consulting time, and whether the person has low income. The program should output the billing amount. Your program must contain a function that takes as input the hourly rate, the total consulting time, and a value indicating whether the person has low income. The function should return the billing amount. Your program may prompt the user to enter the consulting time in minutes.

Question 2:

During winter when it is very cold, typically, everyone would like to know the windchill factor, especially, before going out. Meteorologists use the following formula to compute the windchill factor, W :

$$W = 35.74 + 0.6215 * T - 35.75 * V^{0.16} + 0.4275 * T * V^{0.16},$$

where V is the wind speed in miles per hour and T is the temperature in degrees Fahrenheit. Write a program that prompts the user to input the wind speed, in miles per hour, and the temperature in degrees Fahrenheit. The program then outputs the windchill factor. Your program must contain at least two functions: one to get the user input and the other to determine the windchill factor.

Question 3:

Write a program that prompts the user to input a string and outputs the string in uppercase letters. (Use a character array to store the string.)

Question 4:

Write a program that allows the user to enter the last names of five candidates in a local election and the number of votes received by each candidate. The program should then output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate. Your program should also output the winner of the election. A sample output is:

| Candidate | Votes Received | % of Total Votes |
|-----------|----------------|------------------|
| Johnson | 5000 | 25.91 |
| Miller | 4000 | 20.73 |
| Duffy | 6000 | 31.09 |
| Robinson | 2500 | 12.95 |
| Ashtony | 1800 | 9.33 |
| Total | 19300 | |

The Winner of the Election is Duffy.
