HIT 265 C Programming – Tutorial 4

Question 1

(Rounding Numbers) An application of function floor is rounding a value to the nearest integer. The statement

$$y = floor(x + 0.5)$$

will round the number x to the nearest integer and assign the result to y. Write a program that reads several numbers and uses the preceding statement to round each of these numbers to the nearest integer. For each number processed, print both the original number and the rounded number.

Question 2

(Parking Charges) A parking garage charges a $2.00 minimum fee to park for up to three hours and an additional $0.50 per hour for each hour *or part thereof* over three hours. The maximum charge for any given 24-hour period is $10.00. Assume that no car parks for longer than 24 hours at a time. Write a program that will calculate and print the parking charges for each of three customers who parked their cars in this garage yesterday. You should enter the hours parked for each customer. Your program should print the results in a neat tabular format, and should calculate and print the total of yesterday's receipts. The program should use the function calculateCharges to determine the charge for each customer. Your outputs should appear in the following format:

Question 3

(Hypotenuse Calculations) Define a function called hypotenuse that calculates the length of the hypotenuse of a right triangle when the other two sides are given. Use this function in a program to determine the length of the hypotenuse for each of the following triangles. The function should take two arguments of type double and return the hypotenuse as a double.

Question 4

(Temperature Conversions) Implement the following integer functions:

a) Function celsius returns the Celsius equivalent of a Fahrenheit temperature.

b) Function fahrenheit returns the Fahrenheit equivalent of a Celsius temperature.

c) Use these functions to write a program that prints charts showing the Fahrenheit equivalents of all Celsius temperatures from 0 to 100 degrees, and the Celsius equivalents of all Fahrenheit temperatures from 32 to 212 degrees. Print the outputs in a neat tabular format that minimizes the number of lines of output while remaining readable.