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LAB TASKS:

TASK – 01:

This programming exercise demonstrates a program that calculates a customer's bill for a local cable company. There are two types of customers: residential and business. There are two rates for calculating a cable bill: one for residential customers and one for business customers. For residential customers, the following rates apply:

- Bill processing fee: $4.50
- Basic service fee: $20.50
- Premium channels: $7.50 per channel.

For business customers, the following rates apply:

- Bill processing fee: $15.00
- Basic service fee: $75.00 for first 10 connections, $5.00 for each additional connection
- Premium channels: $50.00 per channel for any number of connections

The program should ask the user for an account number (an integer) and a customer code. Assume that R or r stands for a residential customer, and B or b stands for a business customer

Input: The customer's account number, customer code, number of premium channels to which the user subscribes, and, in the case of business customers, number of basic service connections.

Output: Customer's account number and the billing amount.

Because there are two types of customers, residential and business, the program contains two separate functions: one to calculate the bill for residential customers and one to calculate the bill for business customers. Both functions calculate the billing amount and then return the billing amount to the function main. The function main prints the amount due. Let us call the function that calculates the residential bill residential and the function that calculates the business bill business. The formulas to calculate the bills are the same as before.

TASK – 02:

Write a menu-driven program which converts length from feet and inches to meters and centimeters and vice versa. The program should contain three functions: *showChoices, feetAndInchesToMetersAndCent, and metersAndCentTofeetAndInches*. The function showChoices informs the user how to use the program. The user has the choice to run the program as long as the user wishes. (You should use both value and reference parameters for this program)

TASK – 03:

Write a program that calculates and prints the bill for a cellular telephone company. The company offers two types of service: regular and premium. Its rates vary, depending on the type of service. The rates are computed as follows:
Regular service: $10.00 plus first 50 minutes are free. Charges for over 50 minutes are $0.20 per minute.
Premium service: $25.00 plus:
a. For calls made from 6:00 a.m. to 6:00 p.m., the first 75 minutes are free; charges for more than 75 minutes are $0.10 per minute.
b. For calls made from 6:00 p.m. to 6:00 a.m., the first 100 minutes are free; charges for more than 100 minutes are $0.05 per minute.

Your program should prompt the user to enter an account number, a service code (type char), and the number of minutes the service was used. A service code of r or R means regular service; a service code of p or P means premium service. Treat any other character as an error. Your program should output the account number, type of service, number of minutes the telephone service was used, and the amount due from the user.
For the premium service, the customer may be using the service during the day and the night. Therefore, to calculate the bill, you must ask the user to input the number of minutes the service was used during the day and the number of minutes the service was used during the night.

TASK - 04:

The following formula gives the distance between two points, (x1, y1) and (x2, y2) in the Cartesian plane:
Given the center and a point on the circle, you can use this formula to find the radius of the circle. Write a program that prompts the user to enter the center and a point on the circle. The program should then output the circle's radius, diameter, circumference, and area. Your program must have at least the following functions:
a. **distance**: This function takes as its parameters four numbers that represent two points in the plane and returns the distance between them.

b. **radius**: This function takes as its parameters four numbers that represent the center and a point on the circle, calls the function distance to find the radius of the circle, and returns the circle's radius.

c. **circumference**: This function takes as its parameter a number that represents the radius of the circle and returns the circle's circumference. (If r is the radius, the circumference is $2\pi r$.)

d. **area**: This function takes as its parameter a number that represents the radius of the circle and returns the circle's area. (If r is the radius, the area is πr2.)

Assume that π = 3.1416.

TASK – 05:

During the tax season, every Friday, 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 (<= 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 x 0.40 x (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.