ITM
IT MUSTAKBIL

Exercise 16

Combined Conditional Statements

Tasks:

1. You're building a tax calculation program for the local tax authority. Write a C++ program that takes a citizen's annual income as input and calculates their income tax based on the following progressive tax rates:
   a. If the income is less than or equal to $10,000, the tax rate is 5%.
   b. If the income is between $10,001 and $30,000, the tax rate is 10%.
   c. If the income is between $30,001 and $60,000, the tax rate is 15%.
   d. If the income is above $60,000, the tax rate is 20%.

2. You're developing a software application that handles user data and need to ensure GDPR compliance. Write a C++ program that simulates a scenario where a user requests access to their personal data stored in your application. The program should check various conditions to determine if the request is valid and compliant with GDPR regulations.
   Implement the following logic:
   a. If the user is under 16 years old, they cannot access their data.
   b. If the user is between 16 and 18 years old (inclusive), they can access their data only if they have explicit parental consent.
   c. If the user is 18 years old or older, they can access their data without any restrictions.

3. Write a C++ program that to verify if a customer is eligible to watch a movie at a cinema. The program is used by the company to ensure staff follow the cinema's policies regarding protecting underage minors. Your program should take the customer's age and whether they are accompanied by an adult as inputs. The movie is restricted to viewers aged 18 and above, unless accompanied by an adult or if the movie being played is a cartoon. Use the following criteria:
   a. If the movie is being played between 2 pm and 5 pm, then minors can watch the movie without supervision (only cartoons are played at this time).
   b. If the customer is 18 or older, they can watch any movie outside of 2 pm and 5 pm (adults are not mixed with minors alone for safety concerns).
   c. If the customer is under 18 but accompanied by an adult, they can watch the movie.

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    d. If the customer is under 18 and not accompanied by an adult, they cannot watch the movie.

4. You're developing a program for a government office that handles public service requests. Write a C++ program that assigns priority and service-type based queue numbers to each person. There are 5 different counters that each to handle different types of requests. Your program should implement the following rules:

    a. In general, priority is given on a first-come, first-served basis.

    b. Emergency / urgent services (e.g., urgent medical assistance) have exceptional priority and will be added to the queue with the lowest number of people, regardless of service request type.

    c. Counter A serves utility bills related services.

    d. Counter B serves public transport related services.

    e. Counter C serves public healthcare related services.

    f. Counter D serves municipality related services.

    g. Counter E serves all other services.

    h. The queue numbers will all restart counting from ticket number 1 for all counters at mid-night.

5. You're building an HR management system and need to determine whether an employee's company vacation request can be approved. Write a C++ program that takes the employee's years of service and the number of applied vacation days as inputs. The program should follow these rules:

    a. If the company is sponsoring the vacation, it applies the policies outlined below:

        i. If the employee has less than 5 years of service and requests more than 10 vacation days, the request is denied regardless of whether it was a local or foreign vacation.

        ii. If the employee has less than 5 years of service and requests more than 7 vacation days, the request is denied unless it was a local vacation.

        iii. If the employee has 5 years or more of service and requests more than 15 vacation days, the request is denied regardless of whether it was a local or foreign vacation.

        iv. If the employee has more than 5 years of service and requests more than 10 vacation days, the request is denied unless it was a local vacation.

    b. If the vacation is self-sponsored, then a maximum of 22 days can be availed altogether.

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