# Module 7.8 Data Structures - Advanced Dictionary Questions: Coding Questions

## Question 1: Implement a function for a CRM system that takes a dictionary of customer IDs (keys) and customer info (values) and updates the info for a specific customer.

Hint: Use conditional checks to find the customer by ID and then update their information within the dictionary.

## Question 2: Develop a function that simulates a stock trading system, taking a dictionary of stock symbols (keys) and prices (values), and returns a dictionary with updated prices after a trading day.

Hint: Iterate over the dictionary, applying a random percentage change to each stock price to simulate market fluctuations.

## Question 3: Create a function for a delivery service that takes a dictionary of package IDs (keys) and delivery statuses (values) and returns a list of delayed packages based on a status query.

Hint: Use a loop to filter packages by status and compile a list of IDs for those that are delayed.

## Question 4: Write a function for a library system that takes a dictionary of book titles (keys) and a list of authors and publication years (values), then returns a list of books published within a specified year range.

Hint: Iterate through the dictionary, checking the publication year for each book and collecting titles that fall within the specified range.

## Question 5: Implement a function for a social media analysis tool that takes a dictionary of post IDs (keys) and metadata (values), then categorizes posts by engagement level based on likes and comments.

Hint: Define thresholds for high, medium, and low engagement, then categorize each post accordingly in a new dictionary.

## Question 6: Develop a function for a logistics company that optimizes delivery routes. Given a dictionary of delivery points (keys) and distances (values), it should return an optimized route as a list of points.

Hint: Use a sorting algorithm or a library function to order the delivery points by distance, minimizing the total distance traveled.

## Question 7: Create a function for a music streaming service that recommends songs. It takes a dictionary of song IDs (keys) and attributes (values), and returns a list of song IDs that match a user's preference.

Hint: Analyze the attributes for each song and compare them to the user's preferences stored in a separate dictionary to find matches.

## Question 8: Write a function for an ecommerce platform that processes orders. Given a dictionary of order IDs (keys) and order details (values), it should update the stock quantities for products in another dictionary.

Hint: Loop through each order, deducting the ordered quantities from the stock dictionary, and handle cases where stock runs out.

## Question 9: Implement a function for a sports analytics app that aggregates player stats. Given a dictionary of player names (keys) and a list of game stats (values), it returns a dictionary with aggregated stats.

Hint: Summarize the stats for each player across games, calculating totals and averages for key metrics.

## Question 10: Develop a function for a network security application that analyzes log entries. Given a dictionary of log entry IDs (keys) and details (values), it identifies and returns entries that indicate potential security threats.

Hint: Define criteria for what constitutes a threat and filter log entries accordingly, returning a dictionary of suspicious entries.