

Scenario: Managing a To-Do List Application

You are developing a simple To-Do List application that allows users to add, remove, and view their tasks. You decide to use a linked list and an array list to store the tasks. Additionally, you need to implement iterator loops to traverse through the tasks and perform specific operations.

Question 1:

Linked List Operations You have implemented a linked list to manage the tasks in the To-Do List application. Each task has a task name and a priority level associated with it. Define a class Task with attributes taskName and priority, and then create a linked list of tasks to represent the user's To-Do List. Perform the following operations:

- a) Add a new task "Buy groceries" with priority level "High" to the linked list.
- b) Remove the task with priority level "Low" from the linked list.
- c) Traverse through the linked list and print the task names of all tasks with priority level "Medium".

Question 2:

Array List Operations You decide to implement an array list to store the tasks in the To-Do List application. Each task has a due date associated with it. Create an array list of tasks using a class Task with attributes taskName and dueDate. Perform the following operations:

- a) Add three tasks with names "Complete report", "Call client", and "Pay bills" along with their respective due dates to the array list.
- b) Update the due date of the task "Pay bills" to a new date.
- c) Iterate through the array list using an iterator loop and print out all tasks that are due within the next two days.

Question 3:

Using Iterator Loops You have successfully implemented both linked list and array list functionalities in your To-Do List application. Now, you need to implement iterator loops to navigate through the tasks efficiently.

- a) Implement an iterator loop for the linked list that prints the task names of all tasks with even priority levels.
- b) Implement an iterator loop for the array list that finds and prints the task with the earliest due date.
- c) Compare the efficiency of iterating through tasks using iterator loops versus traditional for loops. Provide your observations on when each approach might be more suitable.

Remember to consider the logic for each operation and how the linked list, array list, and iterator loop can be effectively used to accomplish the tasks in the To-Do List application.