

## LinkedList1

```
import java.util.LinkedList;
import java.util.Scanner;

public class LinkedList1 {
    public static void main(String[] args) {
        // Create a LinkedList of Strings
        LinkedList<String> items = new LinkedList<>();
        Scanner scanner = new Scanner(System.in);

        while (true) {
            // Display menu
            System.out.println("\n--- LinkedList Menu ---");
            System.out.println("1. Add an item");
            System.out.println("2. Add an item at a specific position");
            System.out.println("3. Remove an item");
            System.out.println("4. Display items");
            System.out.println("5. Exit");
            System.out.print("Enter your choice: ");
            int choice = scanner.nextInt();
            scanner.nextLine(); // Consume newline

            switch (choice) {
                case 1:
                    // Add an item to the end of the LinkedList
                    System.out.print("Enter item to add: ");
                    String itemToAdd = scanner.nextLine();
                    items.add(itemToAdd);
                    System.out.println("Item added successfully.");
                    break;

                case 2:
                    // Add an item at a specific position
                    System.out.print("Enter item to add: ");
                    String itemToAddAtPosition = scanner.nextLine();
                    System.out.print("Enter position (0-based index): ");
                    int position = scanner.nextInt();
                    scanner.nextLine(); // Consume newline
                    if (position >= 0 && position <= items.size()) {
                        items.add(position, itemToAddAtPosition);
                        System.out.println("Item added at position " +
position + ".");
                    } else {
                        System.out.println("Invalid position.");
                    }
                    break;

                case 3:
```

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        // Remove an item
        System.out.print("Enter item to remove: ");
        String itemToRemove = scanner.nextLine();
        if (items.remove(itemToRemove)) {
            System.out.println("Item removed successfully.");
        } else {
            System.out.println("Item not found.");
        }
        break;

    case 4:
        // Display items
        System.out.println("\nItems in the LinkedList:");
        if (items.isEmpty()) {
            System.out.println("The list is empty.");
        } else {
            for (int i = 0; i < items.size(); i++) {
                System.out.println(i + ": " + items.get(i));
            }
        }
        break;

    case 5:
        // Exit the program
        System.out.println("Exiting program. Goodbye!");
        scanner.close();
        return;

    default:
        System.out.println("Invalid choice. Please try again.");
    }
}
}
}
}

```

## LinkedList2

```

//Example: Managing a Linked List of Numbers

import java.util.LinkedList;
import java.util.Scanner;

public class LinkedList2 {
    public static void main(String[] args) {
        // Create a LinkedList of integers
        LinkedList<Integer> numbers = new LinkedList<>();
        Scanner scanner = new Scanner(System.in);
    }
}

```

```

while (true) {
    // Display menu
    System.out.println("\n--- LinkedList Menu ---");
    System.out.println("1. Add a number");
    System.out.println("2. Remove a number");
    System.out.println("3. Display all numbers");
    System.out.println("4. Exit");
    System.out.print("Enter your choice: ");
    int choice = scanner.nextInt();

    switch (choice) {
        case 1:
            // Add a number to the list
            System.out.print("Enter a number to add: ");
            int numberToAdd = scanner.nextInt();
            numbers.add(numberToAdd);
            System.out.println("Number added successfully.");
            break;

        case 2:
            // Remove a number from the list
            if (numbers.isEmpty()) {
                System.out.println("The list is empty. Nothing to
remove.");
            } else {
                System.out.print("Enter the index of the number to
remove (0-based index): ");
                int indexToRemove = scanner.nextInt();
                if (indexToRemove >= 0 && indexToRemove <
numbers.size()) {
                    int removedNumber = numbers.remove(indexToRemove);
                    System.out.println("Removed number: " +
removedNumber);
                } else {
                    System.out.println("Invalid index.");
                }
            }
            break;

        case 3:
            // Display all numbers in the list
            System.out.println("\nNumbers in the LinkedList:");
            if (numbers.isEmpty()) {
                System.out.println("The list is empty.");
            } else {
                for (int i = 0; i < numbers.size(); i++) {

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                                System.out.println("Index " + i + ": " +
numbers.get(i));
                                }
                                }
                                break;

                                case 4:
                                    // Exit the program
                                    System.out.println("Exiting program. Goodbye!");
                                    scanner.close();
                                    return;

                                default:
                                    System.out.println("Invalid choice. Please try again.");
                                }
                            }
                        }
                    }
                }
            }
        }
    }
}

```

### LinkedList3

```

//Java Program: Using LinkedList Add and Remove Methods

import java.util.LinkedList;

public class LinkedList3 {
    public static void main(String[] args) {
        // Create a LinkedList of Strings
        LinkedList<String> linkedList = new LinkedList<>();

        // Adding elements to the LinkedList
        linkedList.add("Apple"); // add to the end
        linkedList.add("Banana");
        linkedList.add("Cherry");
        System.out.println("After add(E): " + linkedList);

        linkedList.add(1, "Blueberry"); // add at index
        System.out.println("After add(index, E): " + linkedList);

        linkedList.addFirst("Date"); // add to the beginning
        System.out.println("After addFirst(E): " + linkedList);

        linkedList.addLast("Elderberry"); // add to the end
        System.out.println("After addLast(E): " + linkedList);

        // linkedList.addLast("Elderberry"); // add to the end
        System.out.println("First element is : " + linkedList.getFirst());
    }
}

```

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        System.out.println("First element is : " + linkedList.peekFirst());

        System.out.println("First element is : " + linkedList.getLast());
        System.out.println("First element is : " + linkedList.peekLast());

        // Removing elements from the LinkedList
        linkedList.remove(); // removes the first element
        System.out.println("After remove(): " + linkedList);

        linkedList.remove(2); // removes the element at index 2
        System.out.println("After remove(index): " + linkedList);

        linkedList.remove("Blueberry"); // removes the first occurrence of
        "Blueberry"
        System.out.println("After remove(Object): " + linkedList);

        linkedList.removeFirst(); // removes the first element
        System.out.println("After removeFirst(): " + linkedList);

        linkedList.removeLast(); // removes the last element
        System.out.println("After removeLast(): " + linkedList);
    }
}

```

## ArrayList1

```

//This program allows a user to manage a list of items, such as adding,
removing, and displaying elements in the ArrayList.

import java.util.ArrayList;
import java.util.Scanner;

public class ArrayList1 {
    public static void main(String[] args) {
        // Create an ArrayList of Strings
        ArrayList<String> items = new ArrayList<>();
        Scanner scanner = new Scanner(System.in);

        while (true) {
            // Display menu
            System.out.println("\n--- ArrayList Menu ---");
            System.out.println("1. Add an item");
            System.out.println("2. Remove an item");
            System.out.println("3. Display items");
            System.out.println("4. Exit");

```

```

System.out.print("Enter your choice: ");
int choice = scanner.nextInt();
scanner.nextLine(); // Consume newline

switch (choice) {
    case 1:
        // Add an item
        System.out.print("Enter item to add: ");
        String itemToAdd = scanner.nextLine();
        items.add(itemToAdd);
        System.out.println("Item added successfully.");
        break;

    case 2:
        // Remove an item
        System.out.print("Enter item to remove: ");
        String itemToRemove = scanner.nextLine();
        if (items.remove(itemToRemove)) {
            System.out.println("Item removed successfully.");
        } else {
            System.out.println("Item not found.");
        }
        break;

    case 3:
        // Display items
        System.out.println("\nItems in the list:");
        if (items.isEmpty()) {
            System.out.println("The list is empty.");
        } else {
            for (String item : items) {
                System.out.println("- " + item);
            }
        }
        break;

    case 4:
        // Exit the program
        System.out.println("Exiting program. Goodbye!");
        scanner.close();
        return;

    default:
        System.out.println("Invalid choice. Please try again.");
}
}
}
}

```

## ArrayList2

```
// Java Program Example to Demonstrate
// Addition, Deletion and Updation of Element
import java.util.*;

class ArrayList2 {
    public static void main(String args[])
    {

        // Creating an Array of string type
        ArrayList<String> al = new ArrayList<>();
        // 1. Addition
        // Adding elements to ArrayList
        // at the end
        al.add("GIT");
        al.add("Karnataka");

        System.out.println("Original List : "+al);

        // Adding Elements at the specific
        // index
        al.add(1, "Belagavi");

        System.out.println("After Adding element at index 1 : "+ al);

        // 2. Deletion of Element

        // Removing Element using index
        al.remove(0);

        System.out.println("Element removed from index 0 : "+ al);

        // Removing Element using the value
        al.remove("Belgaum");

        System.out.println("Element removed : "+ al);

        // 3. Updating Values

        // Updating value at index 0
        al.set(0, "Belagavi");

        // Printing all the elements in an ArrayList
        System.out.println("List after updation of value : "+al);

        al.add("Belagavi");

        System.out.println("List after updation of value : "+al);
```

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        al.remove("Belagavi");

        System.out.println("List after removal : "+al);

        al.clear();

        System.out.println("List after clear : "+al);

        System.out.println("Size of list : "+al.size());

    }
}

```

### ArrayList3

```

import java.util.ArrayList;

public class ArrayList3 {
    public static void main(String[] args) {
        // Create an ArrayList
        ArrayList<String> fruits = new ArrayList<>();

        // Add elements to the ArrayList
        fruits.add("Apple");
        fruits.add("Banana");
        fruits.add("Cherry");
        fruits.add("Date");

        // Display the ArrayList
        System.out.println("ArrayList: " + fruits);

        // Convert ArrayList to Array
        String[] fruitsArray = new String[fruits.size()];
        fruitsArray = fruits.toArray(fruitsArray);

        // Display the array
        System.out.println("\nArray elements:");
        for (String fruit : fruitsArray) {
            System.out.println(fruit);
        }
    }
}

```



## ArrayList4

```
//Java Program: Convert ArrayList of Integers to Array

import java.util.ArrayList;

public class ArrayList4 {
    public static void main(String[] args) {
        // Create an ArrayList of Integers
        ArrayList<Integer> numbers = new ArrayList<>();
        //ArrayList<int> numbers1 = new ArrayList<>();

        // Add elements to the ArrayList
        numbers.add(10);
        numbers.add(20);
        numbers.add(30);
        numbers.add(40);

        // Display the ArrayList
        System.out.println("ArrayList: " + numbers);

        // Convert ArrayList to Array
        Integer[] numbersArray = new Integer[numbers.size()];
        numbersArray = numbers.toArray(numbersArray);

        // Display the array
        System.out.println("\nArray elements:");
        for (int num : numbersArray) {
            System.out.println(num);
        }
    }
}
```