KARTHIKEYAN
23/07/2025

1.

```
package com.training.ooc;
interface LibraryUser {
  void registerAccount();
  void requestBook();
}
class KidUser implements LibraryUser {
  int age;

  String bookType;
  public KidUser(int age, String bookType) {
    this.age = age;
    this.bookType = bookType;
  }
  @Override
  public void registerAccount() {
    if (age < 12) {
      System.out.println("You have successfully registered under a Kids Account");
    } else {
      System.out.println("Sorry, Age must be less than 12 to register as a kid");
    }
  }
  @Override
  public void requestBook() {
    if ("Kids".equals(bookType)) {
      System.out.println("Book Issued successfully, please return the book within 10 days");
    } else {
      System.out.println("You are allowed to take only kids books");
    }
  }
}
class AdultUser implements LibraryUser {
  int age;
  String bookType;
  public AdultUser(int age, String bookType) {
    this.age = age;
    this.bookType = bookType;
  }
  @Override
  public void registerAccount() {
    if (age > 12) {
      System.out.println("You have successfully registered under an Adult Account");
    } else {
      System.out.println("Sorry, Age must be greater than 12 to register as an adult");
    }
  }
  @Override
  public void requestBook() {
```

```
        if ("Fiction".equals(bookType)) {
            System.out.println("Book Issued successfully, please return the book within 7 days");
        } else {
            System.out.println("You are allowed to take only adult Fiction books");
        }
    }
}
public class UserMain {
    public static void main(String[] args) {
        KidUser kid1 = new KidUser(10, "Kids");
        kid1.registerAccount();
        kid1.requestBook();
        KidUser kid2 = new KidUser(15, "Fiction");
        kid2.registerAccount();
        kid2.requestBook();
        AdultUser adult1 = new AdultUser(25, "Fiction");
        adult1.registerAccount();
        adult1.requestBook();
        AdultUser adult2 = new AdultUser(10, "Kids");
        adult2.registerAccount();
        adult2.requestBook();
    }
}
```

OUTPUT

```
You have successfully registered under a Kids Account
Book Issued successfully, please return the book within 10 days
Sorry, Age must be less than 12 to register as a kid
You are allowed to take only kids books
You have successfully registered under an Adult Account
Book Issued successfully, please return the book within 7 days
Sorry, Age must be greater than 12 to register as an adult
You are allowed to take only adult Fiction books
```

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2.

```
package com.training.ooc;
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class ArrayListMergeSort {
  public static ArrayList<Integer> mergeSortAndFetch(ArrayList<Integer> list1, ArrayList<Integer> list2) {

    ArrayList<Integer> mergedList = new ArrayList<>(list1);
    mergedList.addAll(list2);
    Collections.sort(mergedList);
    ArrayList<Integer> resultList = new ArrayList<>();
    int[] indexes = {2, 6, 8};
    for (int index : indexes) {
      if (index < mergedList.size()) {
        resultList.add(mergedList.get(index));
      }
    }
    return resultList;
  }
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.println("Enter 5 integers for first list:");
    ArrayList<Integer> list1 = new ArrayList<>();
    for (int i = 0; i < 5; i++) {
      list1.add(scanner.nextInt());
    }
    System.out.println("Enter 5 integers for second list:");
    ArrayList<Integer> list2 = new ArrayList<>();
    for (int i = 0; i < 5; i++) {
      list2.add(scanner.nextInt());
    }
    ArrayList<Integer> finalList = mergeSortAndFetch(list1, list2);
    System.out.println("Elements at indices 2, 6 and 8 of the sorted merged list:");
    System.out.println(finalList);
    scanner.close();
  }
}
```

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OUTPUT

```
Enter 5 integers for first list:
21
33
45
65
78
Enter 5 integers for second list:
66
69
34
26
48
Elements at indices 2, 6 and 8 of the sorted merged list:
[33, 65, 69]
```

3.

```
package com.training.ooc;
import java.util.HashMap;
import java.util.Scanner;
public class StudentGrade {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    HashMap<String, Float> studentMap = new HashMap<>();
    System.out.println("Enter number of students:");
    int n = scanner.nextInt();
    scanner.nextLine();
    for (int i = 0; i < n; i++) {
      System.out.println("Enter student name:");
      String name = scanner.nextLine();
      System.out.println("Enter mark (float):");
      float mark = scanner.nextFloat();
      scanner.nextLine();
      studentMap.put(name, mark);
    }
    System.out.println("Enter student name to get grade:");
    String queryName = scanner.nextLine();
    if (studentMap.containsKey(queryName)) {
      float mark = studentMap.get(queryName);
      if (mark < 60.0) {
        System.out.println(queryName + " has grade: FAIL");
      } else {
        System.out.println(queryName + " has grade: PASS");
      }
    } else {
```

```
            System.out.println("Student not found.");
        }
        scanner.close();
    }
}
```

OUTPUT

```
Enter number of students:
2
Enter student name:
karthi
Enter mark (float):
80.9
Enter student name:
sugi
Enter mark (float):
90.0
Enter student name to get grade:
sugi
sugi has grade: PASS
```

4.

```
package com.training.ooc;
import java.util.ArrayList;
import java.util.Scanner;
public class EvenOddSeparator {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    ArrayList<Integer> inputList = new ArrayList<>();
    ArrayList<Integer> evenNumbersList = new ArrayList<>();
    ArrayList<Integer> oddNumbersList = new ArrayList<>();
    System.out.println("Enter the number of integers you want to input:");
    int n = scanner.nextInt();
    System.out.println("Enter " + n + " integers:");
    for (int i = 0; i < n; i++) {
      int num = scanner.nextInt();
      inputList.add(num);
      if (num % 2 == 0) {
        evenNumbersList.add(num);
      } else {
        oddNumbersList.add(num);
      }
    }
    System.out.println("Input List: " + inputList);
```

```
        System.out.println("Even Numbers List: " + evenNumbersList);
        System.out.println("Odd Numbers List: " + oddNumbersList);
        scanner.close();
    }
}
```

OUTPUT

```
Enter the number of integers you want to input:
5
Enter 5 integers:
2
9
4
10
3
Input List: [2, 9, 4, 10, 3]
Even Numbers List: [2, 4, 10]
Odd Numbers List: [9, 3]
```