Q.1. Write a Java program that takes input from the user to create an ArrayList of integers and then prints the elements of the ArrayList.

**Example Input**

5

1 2 3 4 5

**Example Output**

[1, 2, 3, 4, 5]

**#Solution**

import java.util.ArrayList;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

ArrayList<Integer> list = new ArrayList<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

int num = scanner.nextInt();

list.add(num);

}

System.out.println(list);

}

}

Q.2. Write a Java program that takes input from the user to create an ArrayList of integers and then finds and prints the sum of all the elements of the ArrayList.

**Example Input**

5

1 2 3 4 5

**Example Output**

15

**#Solution**

import java.util.ArrayList;

import java.util.Scanner;

public class Main{

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

ArrayList<Integer> list = new ArrayList<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

int num = scanner.nextInt();

list.add(num);

}

int sum = 0;

for (int i : list) {

sum += i;

}

System.out.println(sum);

}

}

Q.3. Write a Java program that takes input from the user to create a HashSet of strings and then finds and prints the number of unique elements in the HashSet.

**Example Input**

5

Aman Rahul Rahul Ashish Aman

**Example Output**

3

**#Solution**

import java.util.HashSet;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

HashSet<String> set = new HashSet<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

String str = scanner.next();

set.add(str);

}

int uniqueElements = set.size();

System.out.println(uniqueElements);

}

}

Q.4. Write a Java program that takes input from the user to create a LinkedList of integers and then finds and prints the smallest element of the LinkedList.

**Example Input**

5

66 67 12 00 79

**Example Output**

0

**#Solution**

import java.util.LinkedList;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

LinkedList<Integer> list = new LinkedList<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

int num = scanner.nextInt();

list.add(num);

}

int smallest = Integer.MAX\_VALUE;

for (int i : list) {

if (i < smallest) {

smallest = i;

}

}

System.out.println(smallest);

}

}

Q.5. Write a Java program that takes input from the user to create an ArrayList of strings and then finds and prints the length of the longest string in the ArrayList.

**Example Input**

6

Chitkara is Best University in Punjab

**Example Output**

10

**#Solution**

import java.util.ArrayList;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

ArrayList<String> list = new ArrayList<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

String str = scanner.next();

list.add(str);

}

int longestLength = 0;

for (String str : list) {

int length = str.length();

if (length > longestLength) {

longestLength = length;

}

}

System.out.println(longestLength);

}

}

Q.6. Write a Java program that takes input from the user to create a HashMap of strings and integers and then finds and prints the value with the highest key.

**Example Input**

4

apple 3

banana 5

cherry 7

kiwi 9

**Example Output**

9

**#Solution**

import java.util.HashMap;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

HashMap<String, Integer> map = new HashMap<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

String key = scanner.next();

int value = scanner.nextInt();

map.put(key, value);

}

String highestKey = null;

for (String key : map.keySet()) {

if (highestKey == null || key.compareTo(highestKey) > 0) {

highestKey = key;

}

}

int highestKeyValue = map.get(highestKey);

System.out.println(highestKeyValue);

}

}

Q.7. Write a Java program that takes input from the user to create a PriorityQueue of integers and then finds and prints the kth smallest element of the PriorityQueue.

**Example Input**

5

7 1 3 9 2

1

**Example Output**

1

**#Solution**

import java.util.PriorityQueue;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

PriorityQueue<Integer> queue = new PriorityQueue<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

int num = scanner.nextInt();

queue.offer(num);

}

int k = scanner.nextInt();

int kthSmallest = 0;

if (k > size)

System.out.println("Not Available");

else

{

for (int i = 0; i < k; i++) {

kthSmallest = queue.poll();

}

if (k <= size)

{

System.out.println(kthSmallest);

}

}

}

}

Q.8. Write a Java program that takes input from the user to create a LinkedList of strings and then removes all the elements of the LinkedList that are less than or equal to a given string.

**Example Input**

4

apple banana cherry kiwi

cherry

**Example Output**

[kiwi]

**#Solution**

import java.util.LinkedList;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

LinkedList<String> list = new LinkedList<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

String str = scanner.next();

list.add(str);

}

String removeString = scanner.next();

list.removeIf(str -> str.compareTo(removeString) <= 0);

System.out.println(list);

}

}

Q.9. Write a Java program that takes input from the user to create a HashSet of strings and then finds and prints the number of strings in the HashSet that start with a given prefix.

**Example Input**

5

apple

banana

apricot

orange

grape

ap

**Example Output**

2

**#Solution**

import java.util.HashSet;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

HashSet<String> set = new HashSet<>();

int size = scanner.nextInt();

for (int i = 0; i < size; i++) {

String str = scanner.next();

set.add(str);

}

String prefix = scanner.next();

int count = 0;

for (String str : set) {

if (str.startsWith(prefix)) {

count++;

}

}

System.out.println(count);

}

}

Q.10. You have a list of numbers and you want to sort them in ascending order. Write a Java program to sort a list of numbers using the List interface and user input.

**Example Input**

5

4

2

7

1

5

**Example Output**

[1, 2, 4, 5, 7]

**#Solution**

import java.util.ArrayList;

import java.util.Collections;

import java.util.List;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int n = scanner.nextInt();

List<Integer> numbers = new ArrayList<>();

for (int i = 0; i < n; i++) {

int num = scanner.nextInt();

numbers.add(num);

}

Collections.sort(numbers);

System.out.println(numbers);

}

}

Q.11. You have a map of names and their ages, and you want to find the name of the oldest person. Write a Java program to find the oldest person from a map of names and ages using the Map interface and user input.

**Example Input**

5

John 25

Emma 32

Michael 41

Sophia 29

David 37

**Example Output**

Michael 41

**#Solution**

import java.util.HashMap;

import java.util.Map;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int n = scanner.nextInt();

Map<String, Integer> ages = new HashMap<>();

for (int i = 0; i < n; i++) {

String name = scanner.next();

int age = scanner.nextInt();

ages.put(name, age);

}

int maxAge = Integer.MIN\_VALUE;

String oldestPerson = "";

for (Map.Entry<String, Integer> entry : ages.entrySet()) {

if (entry.getValue() > maxAge) {

maxAge = entry.getValue();

oldestPerson = entry.getKey();

}

}

System.out.println(oldestPerson+" "+maxAge);

}

}

Q.12. You have a list of strings and you want to remove all duplicate strings from the list. Write a Java program to remove duplicates from a list of strings using the List interface and user input.

**Example Input**

5

apple

banana

apple

orange

banana

**Example Output**

[apple, banana, orange]

**#Solution**

import java.util.ArrayList;

import java.util.List;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int n = scanner.nextInt();

List<String> strings = new ArrayList<>();

for (int i = 0; i < n; i++) {

String str = scanner.next();

strings.add(str);

}

List<String> uniqueStrings = new ArrayList<>();

for (String str : strings) {

if (!uniqueStrings.contains(str)) {

uniqueStrings.add(str);

}

}

System.out.println(uniqueStrings);

}

}