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);
    }
}
```