Lab 08: Java Generics, Comparable interface, Collection Framework

1. Write a Java program to create a generic method that takes two arrays of the same type and checks if they have the same elements in the same order.
2. Write a Java program to create a generic method that takes a list of numbers and returns the sum of all the even and odd numbers.
3. Write a Java program to create a generic method that takes a list of any type and a target element. It returns the index of the first occurrence of the target element in the list. Return -1 if the target element cannot be found.
4. Write a Java program to create a generic method that takes a list of any type and returns it as a new list with the elements in reverse order.
5. Write a Java program to create a generic method that takes two lists of the same type and merges them into a single list. This method alternates the elements of each list.
6. Write a Java program to create a generic method that takes a list of any type and a predicate. It returns an array list containing only elements that satisfy the predicate.
7. Write a Java program to create a generic method that takes a map of any type and prints each key-value pair.
8. Write a Java program to create a generic method that takes two sets of the same type and returns their union as a new set.
9. Write a Java program to create a generic method that finds the intersection of two sets of any type and returns it as a new set.
10. Write a Java program to create a generic method that counts the frequency of each element in a list and stores the result in a HashMap.
11. Write a Java program to create a generic method that takes a HashMap<K, V> and returns a list of all keys whose values match a given value.
12. Write a Java program to create a generic method that takes a list of elements that implement Comparable<T> and returns the maximum element.
13. Write a Java program to create a generic method that sorts a list of elements that implement the Comparable interface.

14. Write a Java program to create a generic method that compares two lists of elements that implement Comparable and returns a list of elements that are greater in the first list compared to the corresponding element in the second list.
15. Write a Java program to create a generic method that removes all duplicate elements from a list using a Set.
16. Write a Java program that uses the Collections class to shuffle a generic list and returns the shuffled list.
17. Write a Java program that uses the Collections class to rotate a list of generic type elements by a given distance.
18. Write a Java program that uses the Collections class to copy elements from one generic list to another of the same size.
19. Write a Java program that uses the Collections class to find both the minimum and maximum elements in a list of elements that implement Comparable.
20. Write a Java program that uses the Collections class to fill a list with a specified generic value.