Q1.

import java.util.\*;

class Driver {

    int id;

    String name;

    double rating;

    int tripsCompleted;

    public Driver(int id, String name, double rating, int tripsCompleted) {

        this.id = id;

        this.name = name;

        this.rating = rating;

        this.tripsCompleted = tripsCompleted;

    }

    @Override

    public String toString() {

        return "ID: " + id + ", Name: " + name + ", Rating: " + rating + ", Trips: " + tripsCompleted;

    }

}

public class SmartCabFleet {

    public static void main(String[] args) {

        List<Driver> drivers = new ArrayList<>();

        drivers.add(new Driver(101, "Amit", 4.9, 250));

        drivers.add(new Driver(102, "Riya", 4.8, 310));

        drivers.add(new Driver(103, "Karan", 4.9, 300));

        drivers.add(new Driver(104, "Neha", 4.7, 280));

        drivers.add(new Driver(105, "Rahul", 4.9, 200));

        Collections.sort(drivers, (d1, d2) -> {

            if (Double.compare(d2.rating, d1.rating) == 0) { // same rating

                return Integer.compare(d2.tripsCompleted, d1.tripsCompleted); // sort by trips desc

            } else {

                return Double.compare(d2.rating, d1.rating); // sort by rating desc

            }

        });

        Map<Integer, Driver> driverMap = new LinkedHashMap<>();

        for (Driver d : drivers) {

            driverMap.put(d.id, d);

        }

        System.out.println("Top 3 Drivers:");

        int count = 0;

        for (Map.Entry<Integer, Driver> entry : driverMap.entrySet()) {

            System.out.println(entry.getValue());

            count++;

            if (count == 3) break;

        }

    }

}

Q2.

import java.util.\*;

public class LibraryInventorySystem {

private HashMap<String, TreeSet<String>> library = new HashMap<>();

public LibraryInventorySystem() {

library.put("Science", new TreeSet<>(Arrays.asList("Physics", "Chemistry", "Biology")));

library.put("Technology", new TreeSet<>(Arrays.asList("AI", "Networking", "Cloud Computing")));

library.put("Fiction", new TreeSet<>(Arrays.asList("Harry Potter", "Sherlock Holmes", "Alice in Wonderland")));

}

public void displayAllBooks() {

System.out.println("Library Inventory:");

Iterator<Map.Entry<String, TreeSet<String>>> categoryIterator = library.entrySet().iterator();

while (categoryIterator.hasNext()) {

Map.Entry<String, TreeSet<String>> entry = categoryIterator.next();

String category = entry.getKey();

TreeSet<String> books = entry.getValue();

System.out.println("\nCategory: " + category);

Iterator<String> bookIterator = books.iterator();

while (bookIterator.hasNext()) {

System.out.println(" - " + bookIterator.next());

}

}

}

public void removeBooksStartingWith(char letter) {

System.out.println("\nRemoving all books starting with '" + letter + "'...");

for (Map.Entry<String, TreeSet<String>> entry : library.entrySet()) {

Iterator<String> bookIterator = entry.getValue().iterator();

while (bookIterator.hasNext()) {

String book = bookIterator.next();

if (book.toLowerCase().startsWith(String.valueOf(letter).toLowerCase())) {

bookIterator.remove(); // Safe removal using Iterator

}

}

}

}

public static void main(String[] args) {

LibraryInventorySystem lib = new LibraryInventorySystem();

System.out.println("Before Removal:");

lib.displayAllBooks();

// Remove all books starting with 'A'

lib.removeBooksStartingWith('A');

System.out.println("\nAfter Removal:");

lib.displayAllBooks();

}

}