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**Q1.**

**Source Code:**

import java.util.ArrayList;

import java.util.List;

class Product<T> {

    private String name;

    private T price;

    public Product(String name, T price) {

        this.name = name;

        this.price = price;

    }

    public String getName() {

        return name;

    }

    public T getPrice() {

        return price;

    }

}

class Shopkeeper<T> {

    private List<Product<T>> products;

    public Shopkeeper() {

        products = new ArrayList<>();

    }

    public void addProduct(Product<T> product) {

        products.add(product);

        System.out.println("Product added: " + product.getName());

    }

    public List<Product<T>> getProducts() {

        return products;

    }

}

class Consumer<T> {

    private List<Product<T>> cart;

    public Consumer() {

        cart = new ArrayList<>();

    }

    public void buyProduct(Product<T> product) {

        cart.add(product);

        System.out.println("Product bought: " + product.getName());

    }

    public List<Product<T>> getCart() {

        return cart;

    }

}

public class ShoppingApp {

    public static void main(String[] args) {

        Shopkeeper<Double> shopkeeper = new Shopkeeper<>();

        Product<Double> product1 = new Product<>("Phone", 999.99);

        Product<Double> product2 = new Product<>("Laptop", 1499.99);

        shopkeeper.addProduct(product1);

        shopkeeper.addProduct(product2);

        Consumer<Double> consumer = new Consumer<>();

        consumer.buyProduct(product1);

        consumer.buyProduct(product2);

        List<Product<Double>> cart = consumer.getCart();

        System.out.println("Products in the cart:");

        for (Product<Double> product : cart) {

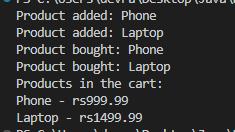
            System.out.println(product.getName() + " - rs" + product.getPrice());

        }

    }

}

**Output:**



**Q2.**

**Source Code:**

import java.util.ArrayList;

import java.util.Collections;

import java.util.Comparator;

import java.util.List;

class Book {

    private String title;

    private String author;

    private int publicationYear;

    public Book(String title, String author, int publicationYear) {

        this.title = title;

        this.author = author;

        this.publicationYear = publicationYear;

    }

    public String getTitle() {

        return title;

    }

    public String getAuthor() {

        return author;

    }

    public int getPublicationYear() {

        return publicationYear;

    }

}

class YearComprator implements Comparator<Book> {

    public int compare(Book b1, Book b2) {

        if (b1.getPublicationYear() == b2.getPublicationYear()) {

            return 0;

        } else if (b1.getPublicationYear() > b2.getPublicationYear()) {

            return 1;

        } else

            return -1;

    }

}

public class BookArrayList {

    public static void main(String[] args) {

        List<Book> bookList = new ArrayList<>();

        bookList.add(new Book("Fundamentals of DOS", "kartik tyagi", 1960));

        bookList.add(new Book("Java", "joseph murino", 1949));

        bookList.add(new Book("Data Mining", "john smith", 1925));

        System.out.println("Books in the list:");

        for (Book book : bookList) {

            System.out.println("Title: " + book.getTitle() + ", Author: " + book.getAuthor() + ", Publication Year: "

                    + book.getPublicationYear());

        }

        Collections.sort(bookList, new YearComprator());

        System.out.println("\nBooks sorted by publication year:");

        for (Book book : bookList) {

            System.out.println("Title: " + book.getTitle() + ", Author: " + book.getAuthor() + ", Publication Year: "

                    + book.getPublicationYear());

        }

    }

}

**Output:**

