Project:

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**Step1: Setting up the Project**

Ensure you have a package named inventory and your Product class ready.

**Step2: Creating Subclasses for DVD and CD**

You will create subclasses of Product to represent DVDs and CDs with specific attributes.

**Product Class:**

java

Copy code

package inventory;

public class Product {

private String name;

private double price;

private int quantityInStock;

private int itemNumber;

private String productStatus;

public Product(String name, double price, int quantityInStock, int itemNumber, String productStatus) {

this.name = name;

this.price = price;

this.quantityInStock = quantityInStock;

this.itemNumber = itemNumber;

this.productStatus = productStatus;

}

// Getters and Setters for the fields

public double calculateStockValue() {

return price \* quantityInStock;

}

@Override

public String toString() {

return "Item Number: " + itemNumber + "\n" +

"Name: " + name + "\n" +

"Quantity in stock: " + quantityInStock + "\n" +

"Price: " + price + "\n" +

"Stock Value: " + calculateStockValue() + "\n" +

"Product Status: " + productStatus;

}

}

**DVD Class:**

java

Copy code

package inventory;

public class DVD extends Product {

private int length;

private int ageRating;

private String filmStudio;

public DVD(String name, double price, int quantityInStock, int itemNumber, String productStatus,

int length, int ageRating, String filmStudio) {

super(name, price, quantityInStock, itemNumber, productStatus);

this.length = length;

this.ageRating = ageRating;

this.filmStudio = filmStudio;

}

// Getters and Setters for length, ageRating, and filmStudio

@Override

public double calculateStockValue() {

return super.calculateStockValue() \* 1.05; // adding 5% restocking fee

}

@Override

public String toString() {

return super.toString() + "\n" +

"Movie Length: " + length + "\n" +

"Age Rating: " + ageRating + "\n" +

"Film Studio: " + filmStudio;

}

}

**CD Class:**

java

Copy code

package inventory;

public class CD extends Product {

private String artist;

private int numberOfSongs;

private String label;

public CD(String name, double price, int quantityInStock, int itemNumber, String productStatus,

String artist, int numberOfSongs, String label) {

super(name, price, quantityInStock, itemNumber, productStatus);

this.artist = artist;

this.numberOfSongs = numberOfSongs;

this.label = label;

}

// Getters and Setters for artist, numberOfSongs, and label

@Override

public String toString() {

return super.toString() + "\n" +

"Artist: " + artist + "\n" +

"Songs on Album: " + numberOfSongs + "\n" +

"Record Label: " + label;

}

}

**Step3: Updating ProductTester**

Modify your ProductTester class to handle the new CD and DVD objects.

ProductTester Class:

java

Copy code

package inventory;

import java.util.Scanner;

public class ProductTester {

private static Product[] products = new Product[100]; // assuming a max of 100 products

private static int productCount = 0;

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

addInventory(scanner);

for (Product product : products) {

if (product != null) {

System.out.println(product);

}

}

scanner.close();

}

public static void addInventory(Scanner scanner) {

int stockChoice = -1;

while (stockChoice < 1 || stockChoice > 2) {

System.out.println("1: CD");

System.out.println("2: DVD");

System.out.print("Please enter the product type: ");

stockChoice = scanner.nextInt();

if (stockChoice < 1 || stockChoice > 2) {

System.out.println("Only numbers 1 or 2 allowed!");

}

}

if (stockChoice == 1) {

addCDToInventory(scanner, productCount);

} else if (stockChoice == 2) {

addDVDToInventory(scanner, productCount);

}

productCount++;

}

public static void addCDToInventory(Scanner scanner, int i) {

System.out.print("Please enter the CD name: ");

scanner.nextLine(); // clear buffer

String name = scanner.nextLine();

System.out.print("Please enter the artist name: ");

String artist = scanner.nextLine();

System.out.print("Please enter the record label name: ");

String label = scanner.nextLine();

System.out.print("Please enter the number of songs: ");

int numberOfSongs = scanner.nextInt();

System.out.print("Please enter the quantity of stock for this product: ");

int quantityInStock = scanner.nextInt();

System.out.print("Please enter the price for this product: ");

double price = scanner.nextDouble();

System.out.print("Please enter the item number: ");

int itemNumber = scanner.nextInt();

products[i] = new CD(name, price, quantityInStock, itemNumber, "Active", artist, numberOfSongs, label);

}

public static void addDVDToInventory(Scanner scanner, int i) {

System.out.print("Please enter the DVD name: ");

scanner.nextLine(); // clear buffer

String name = scanner.nextLine();

System.out.print("Please enter the film studio name: ");

String filmStudio = scanner.nextLine();

System.out.print("Please enter the age rating: ");

int ageRating = scanner.nextInt();

System.out.print("Please enter the length in minutes: ");

int length = scanner.nextInt();

System.out.print("Please enter the quantity of stock for this product: ");

int quantityInStock = scanner.nextInt();

System.out.print("Please enter the price for this product: ");

double price = scanner.nextDouble();

System.out.print("Please enter the item number: ");

int itemNumber = scanner.nextInt()

products[i] = new DVD(name, price, quantityInStock, itemNumber, "Active", length, ageRating, filmStudio);

}

}

**Step4: Preventing Adding Stock to Discontinued Products**

Update the addToInventory method in Product class to include a check for the product status.

Product Class Update:

java

Copy code

public void addToInventory(int quantity) {

if ("Discontinued".equals(productStatus)) {

System.out.println("Cannot add stock to a discontinued product line.");

} else {

quantityInStock += quantity;

}

}

INPUT:

Adding a CD:

A screen shot of a computer

Description automatically generated

Adding a DVD:

A screen shot of a computer

Description automatically generated

OUTPUT:

A screenshot of a computer

Description automatically generated