```
package com.itbulls.learnit.javacore.oop.classes;

import java.math.BigDecimal;
import java.math.RoundingMode;
import java.util.Arrays;

public class Cart {

	private static final int DEFAULT_CART_CAPACITY = 10;
	private static final int MONEY_SCALE = 2;
	private static final double DEFAULT_TAX_RATE = 0.15;
	private static final String DEFAULT_TAX_TYPE = "incomeTax";
	private static final double DEAFULT_DISCOUNT_RATE = 0;
	private static final String DEFAULT_DISCOUNT_NAME = "zeroDiscount";

	private static int cartCounter;

	private int id;
	private int userId;
	private BigDecimal totalNetPrice;			// without taxes
	private BigDecimal totalGrossPrice;		// with taxes
	private BigDecimal totalTax;
	private Tax tax;
	private Product[] products;
	private int indexToAddNewProduct;
	private Discount discount;

	static {
		System.out.println("Cart.class is uploaded into JVM");
	}
```

```
{
        cartCounter++;
        userId = 1;
        tax = new Tax(DEFAULT_TAX_TYPE, DEFAULT_TAX_RATE);
        discount = new Discount(DEFAULT_DISCOUNT_NAME, DEAFULT_DISCOUNT_RATE);
}

public Cart() {
}

public Cart(int id, int userId) {
        this.id = id;
        this.userId = userId;
}

public void addProduct(Product product) {
        if (product == null) {
                return;
        }
        if (products == null) {
                products = new Product[DEFAULT_CART_CAPACITY];
        }
        if (products.length < indexToAddNewProduct + 1) {
                products = Arrays.copyOf(products, products.length << 1);
        }
        products[indexToAddNewProduct++] = product;
        calculateTotalNetPrice();
        calculateTotalGrossPrice();
}

private BigDecimal calculateTotalNetPrice() {
```

```
                this.totalNetPrice = BigDecimal.valueOf(Arrays.stream(this.products)
                                .mapToDouble(product -> product != null ?
product.getPrice().doubleValue() : 0)
                                .sum()).setScale(MONEY_SCALE, RoundingMode.HALF_UP);
                return this.totalNetPrice;
        }

        private BigDecimal calculateTotalGrossPrice() {
                if (this.totalNetPrice.doubleValue() < 0) {
                        calculateTotalNetPrice();
                }
                BigDecimal orderDiscount = this.totalNetPrice
                                .multiply(BigDecimal.valueOf(discount.getDiscountRate()))
                                .setScale(MONEY_SCALE, RoundingMode.HALF_UP);
                this.totalTax = this.totalNetPrice.multiply(BigDecimal.valueOf(tax.getTaxRate()))
                                .setScale(MONEY_SCALE, RoundingMode.HALF_UP);
                this.totalGrossPrice = this.totalNetPrice.add(this.totalTax).subtract(orderDiscount);
                return this.totalGrossPrice;
        }

        public int getId() {
                return id;
        }

        public void setId(int id) {
                if (id < 0) {
                        return;
                }
                this.id = id;
        }
```

```
	public int getUserId() {
		return userId;
	}

	public void setUserId(int userId) {
		this.userId = userId;
	}

//	public Product[] getProducts() {
//		return products;
//	}

	public Product[] getProducts() {
		return Arrays.copyOf(products, products.length);
	}

	public int getIndexOfLastProductAdded() {
		return indexToAddNewProduct;
	}

	public static int getCartCounter() {
		return cartCounter;
	}

	public BigDecimal getTotalNetPrice() {
		return totalNetPrice;
	}

	public BigDecimal getTotalGrossPrice() {
		return totalGrossPrice;
	}
```

```
	public BigDecimal getTotalTax() {
		return totalTax;
	}

	public Discount getDiscount() {
		return discount;
	}

	public void setDiscount(Discount discount) {
		this.discount = discount;
	}

	public void setTax(Tax tax) {
		this.tax = tax;
	}

	@Override
	public String toString() {
		return "Cart [id=" + id + ", userId=" + userId + ", totalNetPrice="
				+ totalNetPrice + ", totalGrossPrice=" + totalGrossPrice + ",
totalTax="
				+ totalTax + ", products=" + Arrays.toString(products)
				+ ", indexOfLastProductAdded=" + indexToAddNewProduct + "]";
	}

	public class Discount {
		private String discountName;
		private double discountRate;

		public Discount(String discountName, double discountRate) {
```

```
            this.discountName = discountName;
            this.discountRate = discountRate;
        }

        public String getDiscountName() {
            return discountName;
        }

        public void setDiscountName(String discountName) {
            this.discountName = discountName;
        }

        public double getDiscountRate() {
            return discountRate;
        }

        public void setDiscountRate(double discountRate) {
            this.discountRate = discountRate;
        }
    }

    public static class Tax {
        private String taxType;
        private double taxRate;

        public Tax(String taxType, double taxRate) {
            this.taxType = taxType;
            this.taxRate = taxRate;
        }

        public String getTaxType() {
```

```
                return taxType;
        }
        public void setTaxType(String taxType) {
                this.taxType = taxType;
        }
        public double getTaxRate() {
                return taxRate;
        }
        public void setTaxRate(double taxRate) {
                this.taxRate = taxRate;
        }



    }

}
```