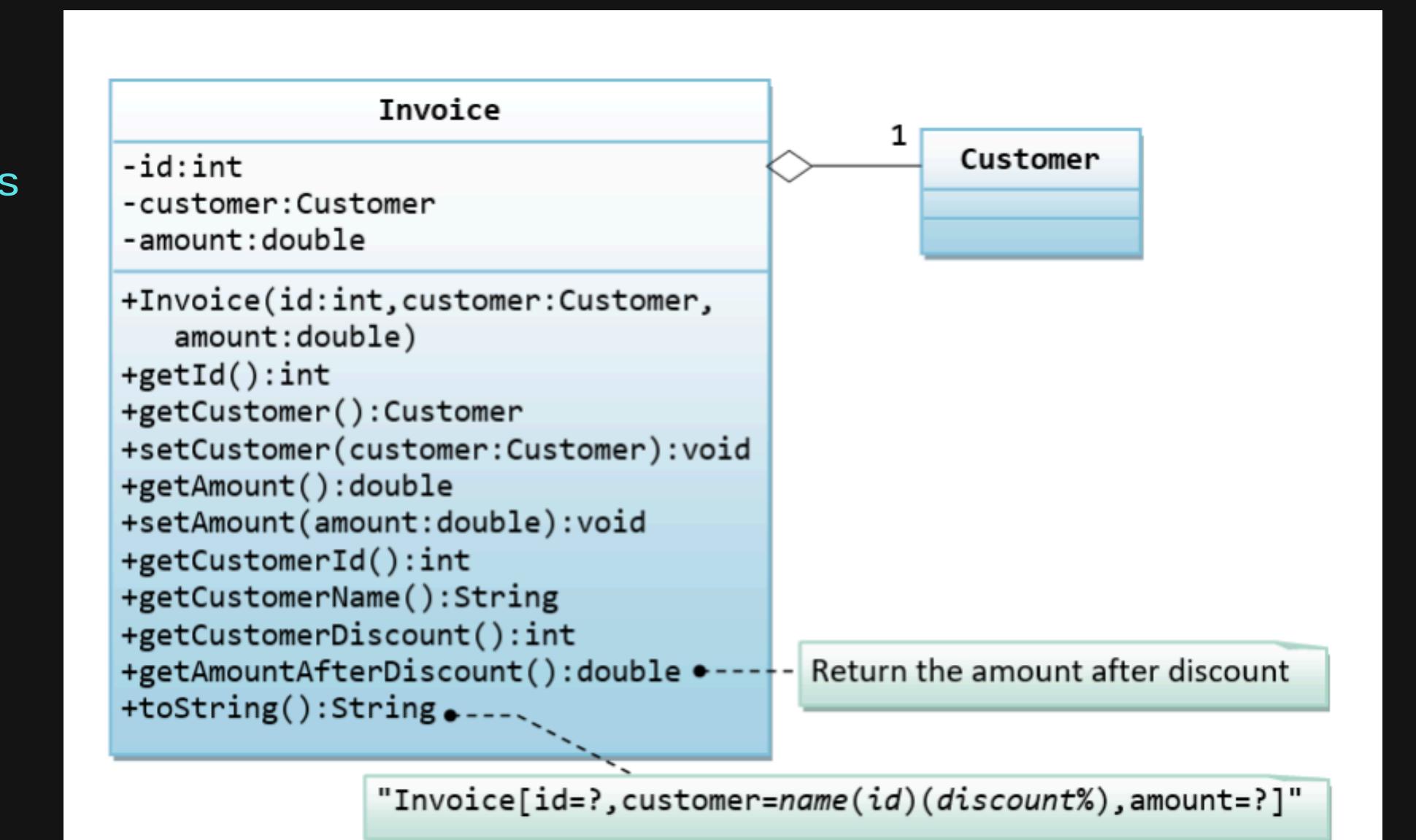
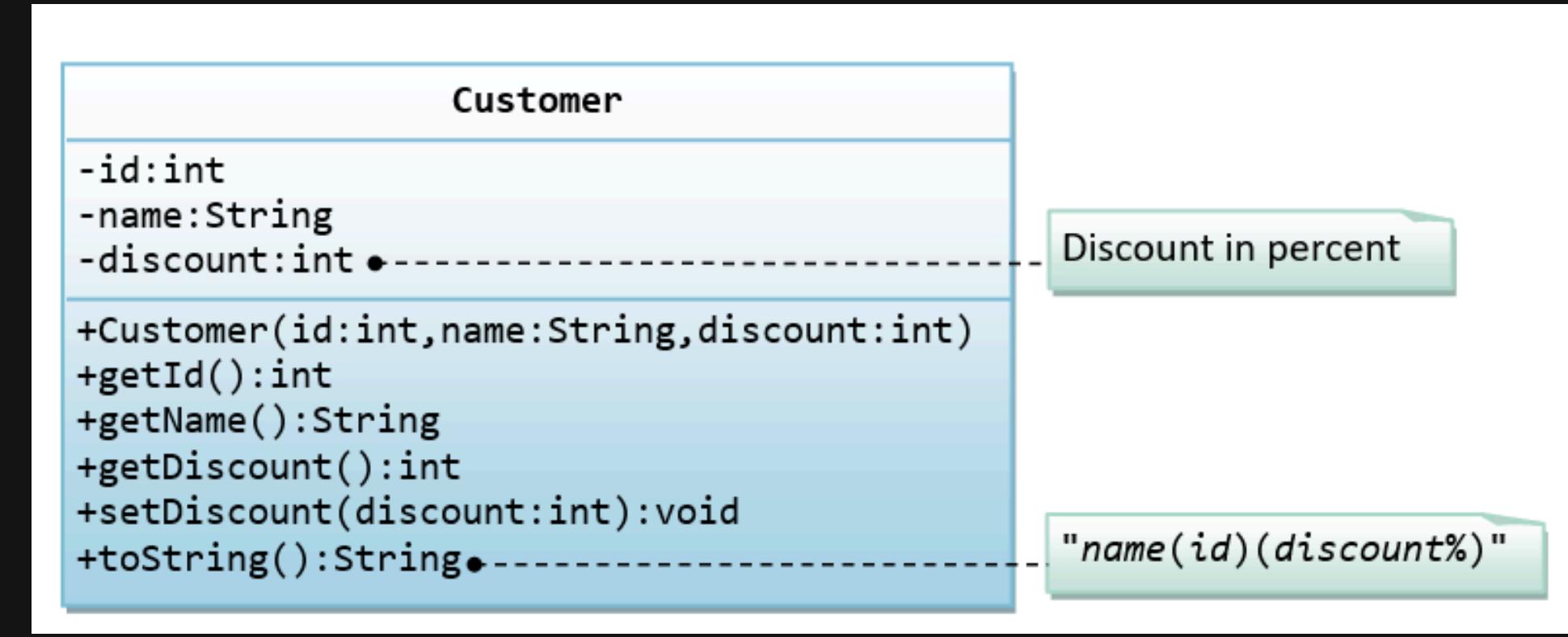
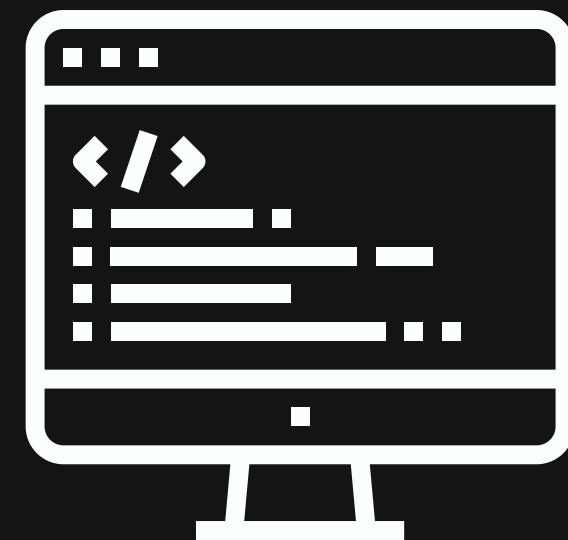
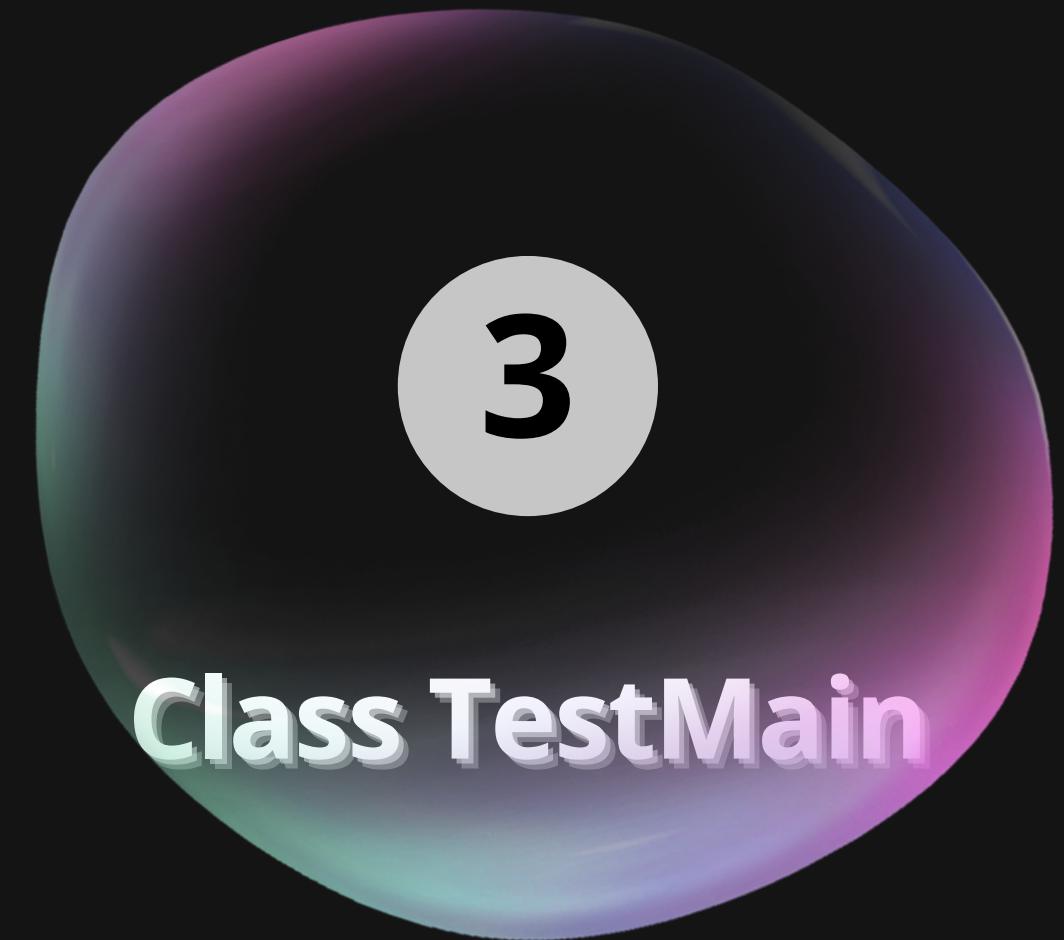
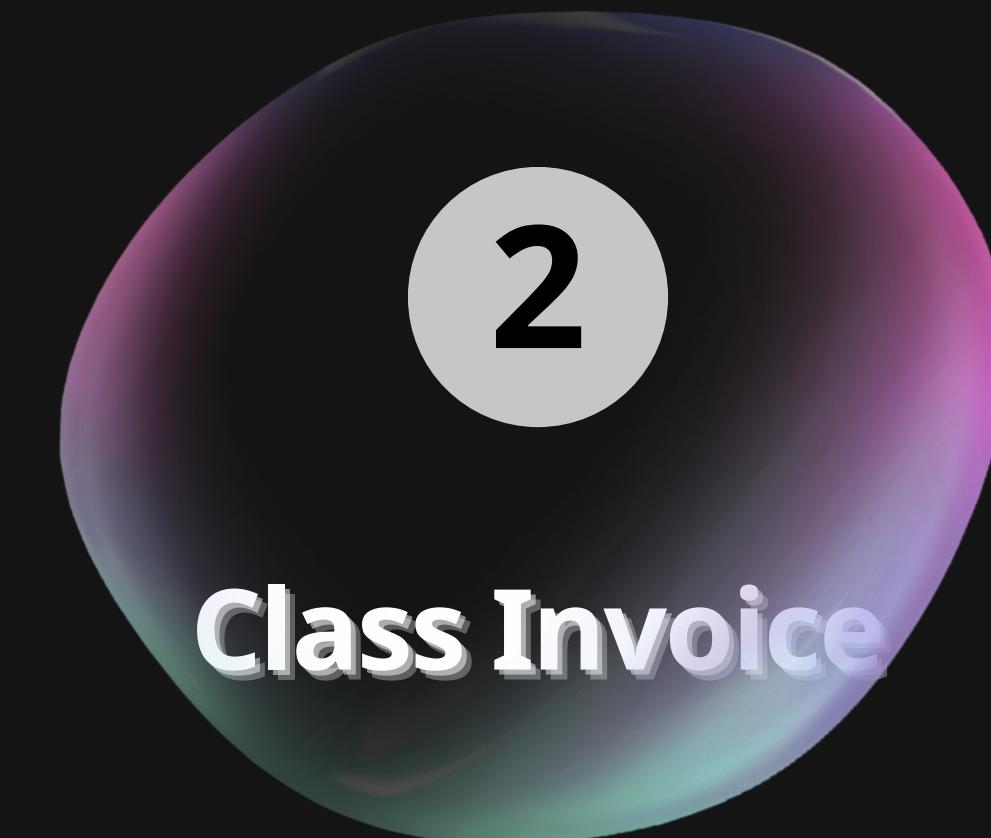


PROJECT

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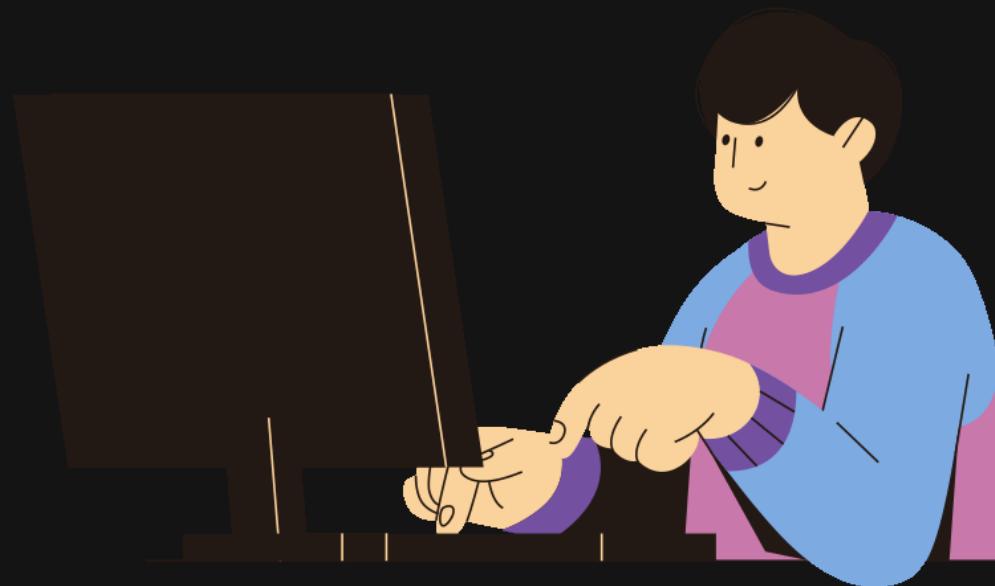
A class called **Customer**, which models a customer in a transaction, is designed as shown in the class diagram. A class called **Invoice**, which models an invoice for a particular customer and composes an instance of **Customer** as its instance variable, is also shown. Write the **Customer** and **Invoice** classes.





3rd class Customer

- **private int id**
- **private String name**
- **private int discount**
- **public Custmer**
- **public int getId**
- **public String getName**
- **public int getDiscount**
- **public void getDiscount**
- **Override toString method**



```
class Customer {  
  
    // private instance variable, not accessible from outside this class  
    private int id; // store Customer ID  
    private String name; // store Customer name  
    private int discount; // store Discount percentage for the customer  
  
    // Constructor to initialize Customer object with ID, name, and discount  
    public Customer(int id, String name, int discount) {  
        this.id = id;  
        this.name = name;  
        this.discount = discount;  
    }  
  
    // Getter method for retrieving customer ID  
    public int getId() {  
        return id;  
    }  
  
    // Getter method for retrieving customer name  
    public String getName() {  
        return name;  
    }  
  
    // Getter method for retrieving customer discount percentage  
    public int getDiscount() {  
        return discount;  
    }  
  
    // Setter method for updating customer discount percentage  
    public void setDiscount(int discount) {  
        this.discount = discount;  
    }  
  
    // Override toString method to provide a string representation of the  
    // Customer object  
    @Override  
    public String toString() {  
        return name + "(" + id + ")" + discount + "%";  
    }  
}
```

```
class Invoice {  
    private int id; // Invoice ID  
    private Customer customer; // Customer associated with the invoice  
    private double amount; // Invoice amount  
  
    // Constructor to initialize Invoice object with ID, customer, and amount  
    public Invoice(int id, Customer customer, double amount) {  
  
        this.id = id;  
        this.customer = customer;  
        this.amount = amount;  
    }  
  
    // Getter method for retrieving invoice ID  
    public int getId() {  
        return id;  
    }  
  
    // Getter method for retrieving associated customer  
    public Customer getCustomer() {  
        return customer;  
    }  
  
    // Setter method for updating associated customer  
    public void setCustomer(Customer customer) {  
        this.customer = customer;  
    }  
  
    // Getter method for retrieving invoice amount  
    public double getAmount() {  
        return amount;  
    }  
  
    // Setter method for updating invoice amount  
    public void setAmount(double amount) {  
        this.amount = amount;  
    }  
  
    // Getter method for retrieving customer ID associated with the invoice  
    public int getCustomerId() {  
        return customer.getId();  
    }  
}
```

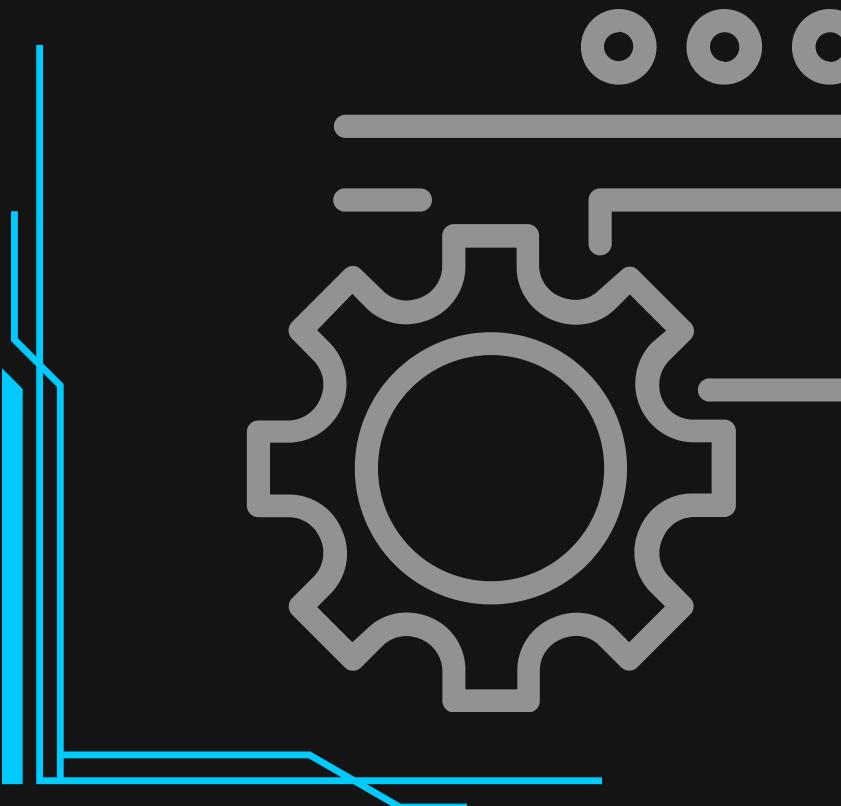


class Invoice

- **private int id**
- **private Customer customer**
- **private double amount**
- **public Invoice(int id, Customer customer, double amount)**
- **public int getId()**
- **public Customer getCustomer()**
- **public void setCustomer(Customer customer)**
- **public double getAmount()**
- **public void setAmount(double amount)**
- **public int getCustomerId()**

class Invoice

- **public String getCustomerName()**
- **public int getCustomerDiscount()**
- **public double getAmountAfterDiscount()**
- **public String toString()**



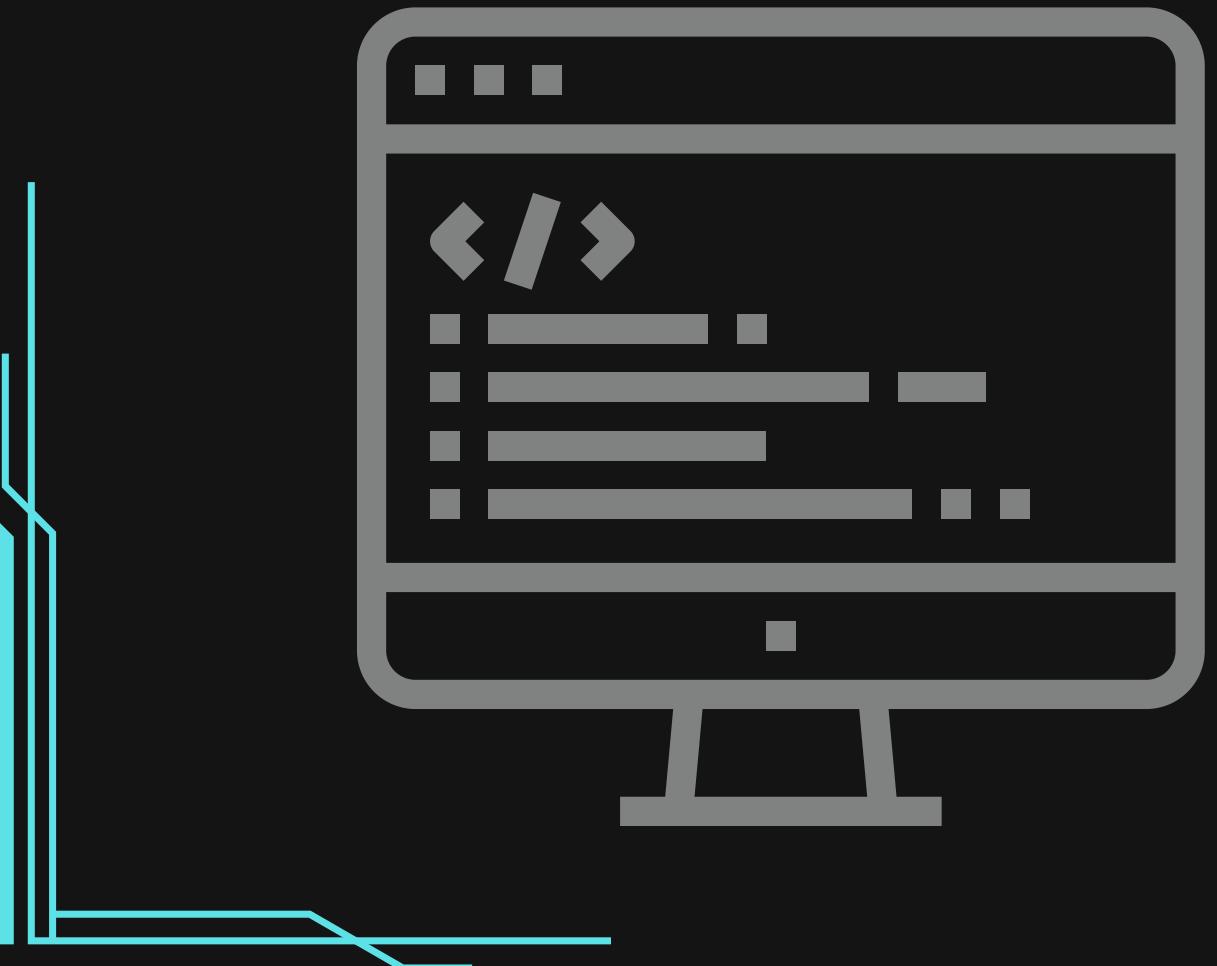
```
// Getter method for retrieving customer name associated with the invoice
public String getCustomerName() {
    return customer.getName();
}

// Getter method for retrieving customer discount percentage associated
// with the invoice
public int getCustomerDiscount() {
    return customer.getDiscount();
}

// Getter method for calculating the invoice amount after applying customer
// discount
public double getAmountAfterDiscount() {
    return amount - (amount * customer.getDiscount() / 100);
}

// Override toString method to provide a string representation of the
// Invoice object
@Override
public String toString() {
    return "Invoice[id=" + id + ",customer=" + customer.getName() + "(" +
customer.getId() + ")" + customer.getDiscount() + "%],amount=" +
String.format("%.1f", amount) + "]";
}
```

class TestMain



```
public class TestMain {  
    public static void main(String[] args) {  
        // Test Customer class  
        Customer c1 = new Customer(88, "Tan Ah Teck", 10);  
        System.out.println(c1); // Customer's toString()  
  
        c1.setDiscount(8);  
        System.out.println(c1);  
        System.out.println("id is: " + c1.getId());  
        System.out.println("name is: " + c1.getName());  
        System.out.println("discount is: " + c1.getDiscount());  
  
        // Test Invoice class  
        Invoice inv1 = new Invoice(101, c1, 888.8);  
        System.out.println(inv1);  
  
        inv1.setAmount(999.9);  
        System.out.println(inv1);  
        System.out.println("id is: " + inv1.getId());  
        System.out.println("customer is: " + inv1.getCustomer()); // Customer's toString()  
        System.out.println("amount is: " + inv1.getAmount());  
        System.out.println("customer's id is: " + inv1.getCustomerId());  
        System.out.println("customer's name is: " + inv1.getCustomerName());  
        System.out.println("customer's discount is: " +  
        inv1.getCustomerDiscount());  
        System.out.printf("amount after discount is: %.2f\n",  
        inv1.getAmountAfterDiscount());  
    }  
}
```

```
Tan Ah Teck(88)(10%)  
Tan Ah Teck(88)(8%)  
id is: 88  
name is: Tan Ah Teck  
discount is: 8  
Invoice[id=101,customer=Tan Ah Teck(88)(8%),amount=888.8]  
Invoice[id=101,customer=Tan Ah Teck(88)(8%),amount=999.9]  
id is: 101  
customer is: Tan Ah Teck(88)(8%)  
amount is: 999.9  
customer's id is: 88  
customer's name is: Tan Ah Teck  
customer's discount is: 8  
amount after discount is: 919.91
```