

Bank Account Class

```
public class BankAccount {
    private String owner;
    private double balance;

    public String nickname;
    private final int accountNumber;           // final means it can't change

    private static int numAccounts = 0;        // how many accounts have been created
    private static double interestRate = 0.02; // same rate for every account
    public static final double MIN_BALANCE = 0.0;

    public BankAccount(String owner, double startingBalance) {
        this.owner = owner;
        this.balance = startingBalance;
        this.nickname = "";
        numAccounts++;                          // update the shared counter
        this.accountNumber = numAccounts;        // use it to give each account a unique number
    }

    public BankAccount(String owner) {
        this.owner = owner;
        this.balance = 0;
        this.nickname = "";
        numAccounts++;
        this.accountNumber = numAccounts;        // use it to give each account a unique number
    }

    public String getOwner() {
        return owner;
    }

    public void setOwner(String newOwner) {
        owner = newOwner;
    }

    public double getBalance() {
        return balance;
    }

    public int getAccountNumber() {
        return accountNumber;
    }
}
```

```

public void deposit(double amount) {
    if (amount > 0) {
        balance += amount;
    }
}

public boolean withdraw(double amount) {
    if (amount > 0 && balance - amount >= MIN_BALANCE) {
        balance -= amount;
        return true;
    }
    return false;
}

public boolean transferTo(BankAccount other, double amount) {
    if (withdraw(amount))                // calling another method of this object
    {
        other.deposit(amount);
        return true;
    }
    return false;
}

public void addInterest() {
    balance += computeInterest();
}

private double computeInterest() {
    return balance * interestRate;      // instance method reading a static field
}

public static int getNumAccounts() {
    return numAccounts;
}

public static void setInterestRate(double rate) {
    interestRate = rate;                // changes the rate for EVERY account
}

public boolean equals(BankAccount other) {
    return this.accountNumber == other.accountNumber;
}

public String toString() {
    return "Account #" + accountNumber + " (" + owner + "): $" + String.format("%.2f", balance);
}

```

```

static void main(String[] args) {
    BankAccount a = new BankAccount("Ada", 100.0);
    BankAccount b = new BankAccount("Grace");           // uses the other constructor

    System.out.println(a);                             // toString is called automatically
    System.out.println(b);
    System.out.println("Accounts created: " + BankAccount.getNumAccounts());

    a.transferTo(b, 40.0);
    System.out.println("After transfer:");
    System.out.println(a);
    System.out.println(b);

    System.out.println("Withdraw $500 from b? " + b.withdraw(500.0));

    BankAccount.setInterestRate(0.10);                 // affects both accounts
    a.addInterest();
    b.addInterest();
    System.out.println("After 10% interest:");
    System.out.println(a);
    System.out.println(b);

    a.nickname = "rainy day fund";                     // public field: no getter needed
    System.out.println("a's nickname: " + a.nickname);
}
}

```