Zadání

U každého úkolu zakreslete paměť a napište, co vypíše program.

Úkol 1

```
class CounterGame {
    int value;

    void inc(int d) { value += d; }
    void dec(int d) { value -= d; }

    public static void main(String[] args) {
        CounterGame a = new CounterGame();
        CounterGame b = new CounterGame();
        a.value = 1;
        b.value = 5;

        CounterGame c = a;
        b.inc(2);
        a.dec(1);
        c.inc(3);
        c = b;
        a = b;
        b.inc(4);
        c.dec(2);

        System.out.println(a.value);
        System.out.println(b.value);
        System.out.println(c.value);
    }
}
```

Úkol 2

```java
class Parcel {
    int weight;

    void pack(int w)   { weight += w; }
    void unpack(int w) { weight -= w; }
    void moveTo(Parcel other, int w) {
        this.weight -= w;
        other.weight += w;
    }

    public static void main(String[] args) {
        Parcel p1 = new Parcel();
        Parcel p2 = new Parcel();
        p1.weight = 10;
        p2.weight = 3;

        Parcel p3 = p2;
        p1.pack(5);
        p2.unpack(1);
        p1.moveTo(p2, 4);
        p3.moveTo(p1, 2);
        p3 = p1;
        p2.pack(7);
        p3.unpack(3);

        System.out.println(p1.weight);
        System.out.println(p2.weight);
        System.out.println(p3.weight);
    }
}
```

Úkol 3

```
class ScoreBoard {
    int score;

    void add(int s)    { score += s; }
    void penalty(int s){ score -= s; }
    void copyFrom(ScoreBoard other) { this.score = other.score; }

    public static void main(String[] args) {
        ScoreBoard s1 = new ScoreBoard();
        ScoreBoard s2 = new ScoreBoard();
        s1.score = 12;
        s2.score = 20;

        ScoreBoard s3 = s1;
        s1.add(5);
        s2.penalty(4);
        s3.copyFrom(s2);
        s3 = s2;
        s2.add(9);
        s1.penalty(3);
        s2.copyFrom(s1);

        System.out.println(s1.score);
        System.out.println(s2.score);
        System.out.println(s3.score);
    }
}
```

Úkol 4

```java
public class BankAccount {
    private double balance;
    public static void main(String[] args) {
        BankAccount a = new BankAccount();
        a.balance = 1000;
        BankAccount b = new BankAccount();
        b.balance = 2000;
        BankAccount c = a;
        a.deposit(500);
        b.withdraw(1000);
        c.transfer(b, 500);
        b = c;
        a.balance = b.balance;
        c.deposit(1000);
        b.transfer(c, 500);
        System.out.println(a.balance);
        System.out.println(b.balance);
        System.out.println(c.balance);
    }
    public void deposit(double amount) {
        balance += amount;
    }
    public void withdraw(double amount) {
        balance -= amount;
    }
    public void transfer(BankAccount other, double amount) {
        this.withdraw(amount);
        other.deposit(amount);
    }
}
```

Úkol 5

```
class Cup {
    int ml;

    void fill(int amount)  { ml += amount; }
    void sip(int amount)   { ml -= amount; }
    void pourTo(Cup other, int amount) {
        this.ml -= amount;
        other.ml += amount;
    }

    public static void main(String[] args) {
        Cup a = new Cup();
        Cup b = new Cup();
        Cup c = new Cup();

        a.ml = 100;
        b.ml = 50;
        c = a;

        a.sip(20);
        b.fill(30);
        c.pourTo(b, 10);
        c = b;
        b.pourTo(a, 40);
        a.fill(5);
        c.sip(15);

        System.out.println(a.ml);
        System.out.println(b.ml);
        System.out.println(c.ml);
    }
}
```