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public interface Finance {

    public double calculateBudget();
    public void display();

}

public abstract class Ministry implements Finance{

    private String name;
    protected int nbEmployee;

    public Ministry(String name, int nbEmployee) {
        this.name = name;
        this.nbEmployee = nbEmployee;
    }

    public Ministry(Ministry m){
        this.name = m.name;
        this.nbEmployee = m.nbEmployee;
    }

    public String getName() {
        return name;
    }

    public int getNbEmployee() {
        return nbEmployee;
    }

    public void display(){
        System.out.println("Name: " + name);
        System.out.println("nbEmployee: " + nbEmployee);
    }

}

public class Executive extends Ministry{

    private double expenses;

    public Executive(String name, int nbEmployee, double expenses) {
        super(name, nbEmployee);
        this.expenses = expenses;
    }

    public Executive(Executive e){
        super(e);
        this.expenses = e.expenses;
    }

    public double getExpenses() {
        return expenses;
    }

}

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    public double calculateBudget(){
        return expenses + nbEmployee * 1.5;
    }

    @Override
    public void display(){
        super.display();
        System.out.println("Expenses: " + expenses);
    }
}

public class Administrative extends Ministry{

    private double balance;

    public Administrative(String name, int nbEmployee, double balance) {
        super(name, nbEmployee);
        this.balance = balance;
    }

    public Administrative(Administrative a){
        super(a);
        this.balance = a.balance;
    }

    public double getBalance() {
        return balance;
    }

    public double calculateBudget(){
        return nbEmployee * 10000 - balance;
    }

    @Override
    public void display(){
        super.display();
        System.out.println("Balance: " + balance);
    }
}

public class Other extends Ministry{

    public Other(String name, int nbEmployee) {
        super(name, nbEmployee);
    }

    public Other(Other o){
        super(o);
    }

    public double calculateBudget(){
        return nbEmployee * 10000;
    }
}

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public class Government {

    private String name;
    private Ministry arMins[];
    private int nbMins;

    public Government(String name, int size) {
        this.name = name;
        arMins = new Ministry[size];
        nbMins = 0;
    }

    public void addMinistry(Ministry m){
        if(nbMins >= arMins.length) System.out.println("The array is full");
        else{
            if(m instanceof Executive)
                arMins[nbMins++] = new Executive((Executive) m);
            else if(m instanceof Administrative)
                arMins[nbMins++] = new Administrative((Administrative) m);
            else if(m instanceof Other)
                arMins[nbMins++] = new Other((Other) m);
            System.out.println("Ministry was added successfully");
        }
    }

    public double averageOfBudget(){
        double sum = 0;
        for(int i = 0; i < nbMins; i++)
            sum += arMins[i].calculateBudget();
        return sum / nbMins;
    }

    public int countExecutives(double e){
        int count = 0;
        for(int i = 0; i < nbMins; i++)
            if(arMins[i] instanceof Executive &&
                ((Executive)arMins[i]).getExpenses() > e)
                count++;
        return count;
    }

    public int getExecutives(double e, Executive ae[]){
        int count = 0;
        for(int i = 0; i < nbMins; i++){
            if(arMins[i] instanceof Executive &&
                ((Executive)arMins[i]).getExpenses() > e &&
                ((Executive)arMins[i]).calculateBudget() > averageOfBudget())
                ae[count++] = (Executive) arMins[i];
        }
        return count;
    }
}

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