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1 import java.util.concurrent.Semaphore;
2 import java.util.concurrent.TimeUnit;
3
4 public class a13 extends Thread {
5     Semaphore toilet;
6     Semaphore breakfast;
7     Semaphore food;
8     Semaphore drinks;
9     Semaphore driveToSchool;
10    Semaphore clearTable;
11    String name;
12    public a13(String nafen, Semaphore toil, Semaphore breakfast, Semaphore food,
13        Semaphore drink, Semaphore drive, Semaphore table){
14        this.name = nafen;
15        this.toilet = toil;
16        this.food = food;
17        this.drinks = drink;
18        this.driveToSchool = drive;
19        this.clearTable = table;
20        this.breakfast = breakfast;
21    }
22
23    @Override
24    public void run(){
25        if(name == "child"){
26            try {
27                toilet.acquire();
28                useToilet(this.name);
29                toilet.release();
30
31                breakfast.acquire(2);
32                haveBreakfast(this.name);
33                driveToSchool.release(3);
34                //System.out.println("end of child");
35            } catch (InterruptedException e) {
36                System.out.println(e);
37            }
38
39        }
40        else if(name == "mother"){
41            try {
42                toilet.acquire();
43                useToilet(this.name);
44                toilet.release();
45
46                drinks.acquire();
47                prepareFood(this.name);
48                System.out.println("Breakfast is ready!");
49
50                breakfast.release(4);
51                driveToSchool.acquire(4);
52                takeAndDriveToSchool(this.name);
53                //System.out.println("end of mother");
54            }
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        } catch (InterruptedException e) {
            System.out.println(e);
        }

    }
    else if(name == "father"){
        try {
            toilet.acquire();
            useToilet(this.name);
            toilet.release();

            prepareDrink(this.name);
            drinks.release();
            driveToSchool.acquire(2);
            clearTable(this.name);

            //System.out.println("end of father");
        } catch (InterruptedException e) {
            System.out.println(e);
        }
    }
}

public static void main(String[] args) {
    Semaphore toilet = new Semaphore(1);
    Semaphore food = new Semaphore(0);
    Semaphore drinks = new Semaphore(0);
    Semaphore breakfast = new Semaphore(0);
    Semaphore drive = new Semaphore(0);
    Semaphore table = new Semaphore(1);

    a13 child1 = new a13("child", toilet, breakfast, food, drinks, drive, table);
    a13 child2 = new a13("child", toilet, breakfast, food, drinks, drive, table);
    a13 father = new a13("father", toilet, breakfast, food, drinks, drive, table);
    a13 mother = new a13("mother", toilet, breakfast, food, drinks, drive, table);
    child2.start(); child1.start(); father.start(); mother.start();

    //System.out.println("in thread: " + Thread.currentThread().getName());
    try {
        child1.join(); child2.join(); father.join(); mother.join();

    } catch (InterruptedException e) {
        System.out.println(e);
    }
}

public void useToilet(String threadName){
    System.out.println(threadName + " is using the toilet!");
    // try {
    //     TimeUnit.SECONDS.sleep(1);
    // } catch (InterruptedException e) {
    //     System.out.println(e);
    // }
}

public void prepareFood(String threadName){

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        System.out.println(threadName + " is preparing food!");
        // try {
        //     TimeUnit.SECONDS.sleep(1);
        // } catch (InterruptedException e) {
        //     System.out.println(e);
        // }
    }
    public void prepareDrink(String threadName){
        System.out.println(threadName + " is preparing drinks!");
        // try {
        //     TimeUnit.SECONDS.sleep(1);
        // } catch (InterruptedException e) {
        //     System.out.println(e);
        // }
    }
    public void haveBreakfast(String threadName){
        System.out.println(threadName + " is having breakfast!");
        // try {
        //     TimeUnit.SECONDS.sleep(1);
        // } catch (InterruptedException e) {
        //     System.out.println(e);
        // }
    }
    public void takeAndDriveToSchool(String threadName){
        System.out.println(threadName + " is taking and driving the children to school!");
        // try {
        //     TimeUnit.SECONDS.sleep(1);
        // } catch (InterruptedException e) {
        //     System.out.println(e);
        // }
    }
    public void clearTable(String threadName){
        System.out.println(threadName + " is clearing the table!");
        // try {
        //     TimeUnit.SECONDS.sleep(1);
        // } catch (InterruptedException e) {
        //     System.out.println(e);
        // }
    }
}

```