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public class RB {
    /**
     * Helper Class for separating the potential elements of a command more easily
     */
    private class Command {
        // possible parameters of a command
        // the command itself
        String command = "";
        // for & endfor : register or jump to line
        int param1 = -1;
        // for : state of iterator
        int param2 = -1;
        public Command(String[] command){
            this.command = command[0];
            // if one parameter given, else if two parameters given
            if(command.length == 2){
                this.param1 = Integer.parseInt(command[1]);
            } else if(command.length == 3){
                this.param1 = Integer.parseInt(command[1]);
                this.param2 = Integer.parseInt(command[2]);
            }
        }
    }
    /**
     * Validator for true RB commands
     * @return: boolean : true for RB commands, false for everything else, like loop commands
     */
    public boolean isTrueRBCommand(){
        switch(command){
            case "move" : case "turnLeft" : case "turnRight" : case "pickUp" : return true;
            default: return false;
        }
    }
    /**
     * Getter for parameter 1
     */
    public int p1(){
        return this.param1;
    }
    /**
     * Getter for parameter 2
     */
    public int p2(){
        return this.param2;
    }
    /**
     * Getter for command
     */
    public String c(){
        return this.command;
    }
}
// program cache
private String[] programmspeicher;
// limit of commands
private int anzahlKommandos;
// current state
private int programmposition;
// loop register
private int[] register;

/**
 * most rudimental constructor for RB. All initial variables are set without any parameters given
 */
public RB(){
    programmspeicher = null;
    anzahlKommandos = 0;
    programmposition = 0;
    register = null;
}

/**
 * most complex constructor for RB. Program and maximum of commands can be set by calling this constructor
 */
public RB(String[] program, int kommandos){
    anzahlKommandos = kommandos;
    this.programmHochladen(program);
}

/**
 * more complex constructor for RB. Program can be set by calling this constructor
 */
public RB(int kommandos){
    programmspeicher = null;
    anzahlKommandos = kommandos;
    programmposition = 0;
    register = null;
}

/**
 * programmHochladen
 * @param String[] : a String array of program lines
 * @return int : the number of true RB commands found in the given program, necessary greater or equal to 0
 * if return is smaller than 0, the function found an error in the program given.
 */
public int programmHochladen(String[] programm){
    // Initialise register
    this.register = new int[2];
    // Initialise program state index
    this.programmposition = 0;
    // Initialise counter for RB commands
    int bewegungsbefehle = 0;
    // for each loop through program array
    for(String zeile : programm){
        // split each line into its words, e.g. "for 0 2" -> {"for", "0", "2"};
        Command command = new Command(zeile.split(" "));
        // decide on first word / command
        switch(command.c()){
            // true RB command:
            case "move" : case "turnLeft" : case "turnRight" : case "pickUp" :
                bewegungsbefehle++;
        }
    }
}

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        // break and return error code when counter reaches max amount of commands
        if(bewegungsbefehle > this.anzahlKommandos){
            return -2;
        }
        break;
    // loop head detected
    case "for" :
        // Check for parameters to be 2 individual numbers and int values, if not, break and throw a syntax error
        if(!Integer.class.isInstance(command.pl()) || !Integer.class.isInstance(command.p2())){
            return -1;
        }
        break;
    // end of loop keyword detected
    case "endfor" :
        // check for parameters to be one int value
        if(!Integer.class.isInstance(command.pl())){
            return -1;
        }
        break;
    // everything else is also not defined and throws a syntax error
    default : return -1;
}
}
// set program cache to the given program
programmspeicher = programm;
// return count of true RB commands
return bewegungsbefehle;
}
/**
 * Worker service for RB to complete a level
 * @return String : current true RB command or 'end' command
 */
public String schritt(){
    // initial command
    Command command = this.currentCommand();
    // loop while command is not true RB command : not really necessary, due to loop break on command found but a primitive loop condition
    while(!command.isTrueRBCommand()){
        // if end of program reached, return "end" directly from here
        if(programmposition >= programmspeicher.length){
            return "end";
        }
        else {
            // get current command
            command = this.currentCommand();
            // loop break on true RB command - as defined
            if(command.isTrueRBCommand()){
                break;
            }
            // endfor found : jump back to loop head given by parameter 1
            if(command.c().equals("endfor")){
                programmposition = command.pl();
            }
            else if (command.c().equals("for")){
                // for found :
                // save position of loop in program (later used)
                int loopPosition = programmposition;
                // current state of loop saved in register
                int registereintrag = register[command.pl()];
                // if loop not finished by condition
                if(command.p2() > registereintrag){
                    // step into loop
                    programmposition++;
                    // increase the loop's iterator
                    register[command.pl()] = registereintrag + 1;
                }
                else {
                    // loop finished!
                    // find endfor fitting to finished loop and step to it. use loopPosition to determine the origin of endfor
                    while(!(currentCommand().c().equals("endfor")) || !(command.pl() == loopPosition)){
                        programmposition++;
                    }
                    // step to element after endfor
                    programmposition++;
                    // reset register entry for loop
                    register[command.pl()] = 0;
                }
            }
        }
    }
    // Increase position by 1 to the next element to be executed
    programmposition++;
    // return command found
    return command.c();
}
/**
 * Getter for maximum potential commands RB can take
 */
public void anzahlKommandos(int kommandos){
    this.anzahlKommandos = kommandos;
}
/**
 * Getter for the Command at the current state of the program
 */
private Command currentCommand(){
    return new Command(programmspeicher[programmposition].split(" "));
}
}

```