

```
package theatriko1;

import lejos.hardware.BrickFinder;

import lejos.hardware.lcd.GraphicsLCD;

import lejos.utility.Delay;

import lejos.hardware.Sound;

//libraries ir

import lejos.hardware.Button;

import lejos.hardware.motor.Motor;

import lejos.hardware.port.SensorPort;

import lejos.hardware.sensor.EV3IRSensor;

import lejos.robotics.RangeFinderAdapter;

import lejos.robotics.navigation.DifferentialPilot;

import lejos.robotics.objectdetection.Feature;

import lejos.robotics.objectdetection.FeatureDetector;

import lejos.robotics.objectdetection.FeatureListener;

import lejos.robotics.objectdetection.RangeFeatureDetector;

public class theatriko1 {

    static final float MAX_DISTANCE = 50f;

    static final int DETECTOR_DELAY = 500;

    static final int duration =100;

    private static String[] melody = {"P", "E5", "E5", "E5",

                                     "E5", "D5", "C5", "B4",

                                     "D5", "C5", "B4",
```

```
"A4",  
"P", "E5", "E5", "E5",  
"E5", "D5", "C5", "B4",  
"D5", "C5", "B4",  
"A4",  
"B4", "C5", "D5", "E5",  
"D5", "D5",  
"G5", "F5", "E5", "D5",  
"C5", "B4",  
"D5", "D5",  
"C5", "B4", "A4",  
"G4", "A4", "B4", "C5",  
"A4", "A4"};
```

```
private static int[] diark = {240,80,80,80,  
120,120,120,120,  
240,120,120,  
480,  
240,80,80,80,  
120,120,120,120,  
240,120,120,  
480,  
120,120,120,120,  
400,80,  
120,120,120,120,
```

```
240,240,  
240,240,  
240,120,120,  
120,120,120,120,  
240,240};
```

```
private static String[] melodysnow = {"P","G4","G4",  
    "G5","G5","F5","E5","D5",  
    "C5","G4","G4","G4",  
    "D5","C5","D5","C5",  
    "B4","G4","A4",  
    "A5","A5","G5","F5","E5",  
    "D5","B5","B6",  
    "G5","G5","F5","E5","E5","D5",  
    "C5"};
```

```
private static int[] diarksnow = {240,120,120,  
    60,60,120,120,120,  
    120,240,60,60,  
    180,60,180,60,  
    120,240,120,  
    60,60,120,120,120,  
    360,60,60,  
    120,60,60,120,60,60,  
    360};
```

```

private static String[] notes = { "P", "C4", "C#3", "Db3", "D3", "D#3", "Eb3",
    "E3", "F3", "F#3", "Gb3", "G3", "G#3", "Ab3", "A3", "A#3", "Bb3",
    "B3", "C4", "C#4", "Db4", "D4", "D#4", "Eb4", "E4", "F4", "F#4",
    "Gb4", "G4", "G#4", "Ab4", "A4", "A#4", "Bb4", "B4", "C5", "C#5",
    "Db5", "D5", "D#5", "Eb5", "E5", "F5", "F#5", "Gb5", "G5", "G#5",
    "Ab5", "A5", "A#5", "Bb5", "B5", "C6" };

private static float[] frequency = {0.0f, 130.81f, 138.59f, 138.59f, 146.83f, 155.56f, 155.56f,
    164.81f, 174.61f, 185.0f, 185.0f, 196.0f, 207.65f, 207.65f, 220.0f, 233.08f, 233.08f,
    246.94f, 261.63f, 277.18f, 277.18f, 293.66f, 311.13f, 311.13f, 329.63f, 349.23f, 369.99f,
    369.99f, 392.0f, 415.3f, 415.3f, 440.0f, 466.16f, 466.16f, 493.88f, 523.25f, 554.37f,
    554.37f, 587.33f, 622.25f, 622.25f, 659.26f, 698.46f, 739.99f, 739.99f, 783.99f, 830.61f,
    830.61f, 880.0f, 932.33f, 932.33f, 987.77f, 1046.5f };

private static int scene ;

private static int fores ;

static boolean isInScene = false;

public static void main(String[] args) {

    // TODO Auto-generated method stub

    final DifferentialPilot robot = new DifferentialPilot(4.0,18.0,Motor.B, Motor.C);

    EV3IRSensor ir = new EV3IRSensor(SensorPort.S2);

    RangeFeatureDetector detector = new RangeFeatureDetector(new
RangeFinderAdapter(ir.getDistanceMode()), MAX_DISTANCE, DETECTOR_DELAY);

    robot.setRotateSpeed(10.0);

    detector.enableDetection(true);

    //robot.forward();

    // TODO Auto-generated method stub

    final GraphicsLCD g = BrickFinder.getDefault().getGraphicsLCD();

```

```
g.drawString("Theatriko 2017", 0, 0, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);

    //Delay.msDelay(5000);

    //Sound.twoBeeps ();

/* Sound.playTone(0, 100);

Delay.msDelay(500);

Sound.playTone(261, 200);

Delay.msDelay(100);

Sound.playTone(261, 200);

Delay.msDelay(100);

Sound.playTone(261, 200);

Delay.msDelay(100);

*/
```

```
//Delay.msDelay(5000);

    Sound.setVolume(100);
```

```
scene=1;
```

```
fores=1;
```

```
detector.addListener(new FeatureListener() {

    public void featureDetected(Feature feature, FeatureDetector detector) {

        if(!isInScene){
```

```

        isInScene = true;

        return;
    }

    detector.enableDetection(false);

    if (scene==1){

        isInScene = true;

        // first carol

        g.drawString("scene 1", 0, 20, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);

        robot.forward();

        for (int i = 0; i < melody.length; i++) {

            String note=melody[i];

            if (note.equals("P")){Sound.pause(240);}

            for (int j = 0; j < notes.length; j++) {

                if(note.equals(notes[j])&& ! note.equals("P")) {

                    Sound.playTone((int)frequency[j], diark[i]);

                    //Sound.playNote(Sound.PIANO, (int)frequency[j], diark[i]);

                    //Sound.playNote(Sound.FLUTE, (int)frequency[j], diark[i]);

                    //Sound.playNote(Sound.XYLOPHONE, (int)frequency[j], diark[i]);

                    Sound.pause(duration);

                }

            }

        }
    }
}

```

```
    }  
    scene=2;  
    isInScene = false;  
    detector.enableDetection(true);  
    return;  
  
}  
  
if (scene == 2){  
    // κινηγητό του ρομποτ από τη μάγισσα  
    isInScene = true;  
    g.drawString("scene 2 run rob run", 0, 40, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);  
    if (fores<4){  
        Sound.playTone(1300, 80);  
        Sound.playTone(450, 120);  
        robot.travel(-30);  
  
        robot.rotate(60);  
        fores = fores +1;  
        detector.enableDetection(true);  
        robot.forward();  
    }  
    else {  
        robot.rotate(180);  
        scene =6;  
  
        detector.enableDetection(true);  
    }  
}
```

```
isInScene = false;

detector.enableDetection(true);

return;

}

if (scene == 3){

    // katsikaki

    isInScene = true;

    g.drawString("scene 3 katsikaki", 0, 60, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);

    for (int i = 0; i < 7; i++) {

        robot.travel(-5);

        robot.travel(5);

    }

    scene=4;

    isInScene = false;

    detector.enableDetection(true);

    return;

}

if (scene == 4){

    // cow mou mou

    isInScene = true;

    g.drawString("scene 4 cow mou-mou", 0, 80, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);

    Sound.playTone(196, 540);
```



```

Sound.playTone(246, 1040);

scene=5;

//detector.enableDetection(true);

isInScene = false;

detector.enableDetection(true);

return;

}

if (scene == 5){

// Let it snow

g.drawString("scene 5 Let it snow", 0, 100, GraphicsLCD.VCENTER | GraphicsLCD.LEFT);

//robot.forward();

robot.arcBackward(50.0f);

for (int i = 0; i < melodysnow.length; i++) {

    if (i==(int)melodysnow.length/2){

        robot.arcForward(50.0f);

    }

    String note=melodysnow[i];

    if (note.equals("P")){Sound.pause(240);}

    for (int j = 0; j < notes.length; j++) {

        if(note.equals(notes[j])&& ! note.equals("P")) {

            Sound.playTone((int)frequency[j], diarksnow[i]);

```

```
        //Sound.playNote(Sound.PIANO, (int)frequency[j], diarksnow[i]);
        //Sound.playNote(Sound.FLUTE, (int)frequency[j], diarksnow[i]);
        //Sound.playNote(Sound.XYLOPHONE, (int)frequency[j], diarksnow[i]);
        Sound.pause(duration);
    }
}
}
robot.stop();
scene=6;
isInScene = false;
detector.enableDetection(true);

}
```

```
//Sound.playTone(196, 540);
//Sound.playTone(246, 1040);
//Sound.playTone(293, 240);
//Sound.playTone(392, 240);
//Sound.playTone(392, 240);
//Sound.playTone(240, 120);
//robot.travel(-30);
```

```
//robot.rotate(90);
//detector.enableDetection(true);
//robot.forward();
```

```
//Sound.playTone(1300, 80);  
// Sound.playTone(450, 120);  
  
}  
});  
  
while(Button.ESCAPE.isUp()) Thread.yield();  
  
ir.close();  
}  
  
}
```