

```

import java.awt.event.KeyEvent;
import javax.swing.JOptionPane;
import processing.serial.*;

Serial port = null;

// select and modify the appropriate line for your operating system
// leave as null to use interactive port (press 'p' in the program)
String portname = null;
//String portname = Serial.list()[0]; // Mac OS X
//String portname = "/dev/ttyUSB0"; // Linux
//String portname = "COM6"; // Windows

boolean streaming = false;
float speed = 0.001;
String[] gcode;
int i = 0;

void openSerialPort()
{
    if (portname == null) return;
    if (port != null) port.stop();

    port = new Serial(this, portname, 9600);

    port.bufferUntil('\n');
}

void selectSerialPort()
{
    String result = (String) JOptionPane.showInputDialog(frame,
        "Select the serial port that corresponds to your Arduino board.",
        "Select serial port",
        JOptionPane.QUESTION_MESSAGE,
        null,
        Serial.list(),
        0);

    if (result != null) {
        portname = result;
        openSerialPort();
    }
}

void setup()
{
    size(500, 250);
    openSerialPort();
}

void draw()
{
    background(0);
    fill(255);
    int y = 24, dy = 12;
    text("INSTRUCTIONS", 12, y); y += dy;
    text("p: select serial port", 12, y); y += dy;
    text("1: set speed to 0.001 inches (1 mil) per jog", 12, y); y += dy;
    text("2: set speed to 0.010 inches (10 mil) per jog", 12, y); y += dy;
    text("3: set speed to 0.100 inches (100 mil) per jog", 12, y); y += dy;
    text("arrow keys: jog in x-y plane", 12, y); y += dy;
    text("page up & page down: jog in z axis", 12, y); y += dy;
    text("$: display grbl settings", 12, y); y += dy;
}

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text("h: go home", 12, y); y += dy;
text("0: zero machine (set home to the current location)", 12, y); y += dy;
text("g: stream a g-code file", 12, y); y += dy;
text("x: stop streaming g-code (this is NOT immediate)", 12, y); y += dy;
y = height - dy;
text("current jog speed: " + speed + " inches per step", 12, y); y -= dy;
text("current serial port: " + portname, 12, y); y -= dy;
}

void keyPressed()
{
    if (key == '1') speed = 0.001;
    if (key == '2') speed = 0.01;
    if (key == '3') speed = 0.1;

    if (!streaming) {
        if (keyCode == LEFT) port.write("G91\nG20\nG00 X-" + speed + " Y0.000 Z0.000\n");
        if (keyCode == RIGHT) port.write("G91\nG20\nG00 X" + speed + " Y0.000 Z0.000\n");
        if (keyCode == UP) port.write("G91\nG20\nG00 X0.000 Y" + speed + " Z0.000\n");
        if (keyCode == DOWN) port.write("G91\nG20\nG00 X0.000 Y-" + speed + " Z0.000\n");
        if (keyCode == KeyEvent.VK_PAGE_UP) port.write("G91\nG20\nG00 X0.000 Y0.000 Z" +
speed + "\n");
        if (keyCode == KeyEvent.VK_PAGE_DOWN) port.write("G91\nG20\nG00 X0.000 Y0.000 Z-" +
speed + "\n");
        if (key == 'h') port.write("G90\nG20\nG00 X0.000 Y0.000 Z0.000\n");
        if (key == 'v') port.write("$0=75\n$1=74\n$2=75\n");
        //if (key == 'v') port.write("$0=100\n$1=74\n$2=75\n");
        if (key == 's') port.write("$3=10\n");
        if (key == 'e') port.write("$16=1\n");
        if (key == 'd') port.write("$16=0\n");
        if (key == '0') openSerialPort();
        if (key == 'p') selectSerialPort();
        if (key == '$') port.write("$$\n");
    }

    if (!streaming && key == 'g') {
        gcode = null; i = 0;
        File file = null;
        println("Loading file...");
        selectInput("Select a file to process:", "fileSelected", file);
    }

    if (key == 'x') streaming = false;
}

void fileSelected(File selection) {
    if (selection == null) {
        println("Window was closed or the user hit cancel.");
    } else {
        println("User selected " + selection.getAbsolutePath());
        gcode = loadStrings(selection.getAbsolutePath());
        if (gcode == null) return;
        streaming = true;
        stream();
    }
}

void stream()
{
    if (!streaming) return;

    while (true) {
        if (i == gcode.length) {

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        streaming = false;
        return;
    }

    if (gcode[i].trim().length() == 0) i++;
    else break;
}

println(gcode[i]);
port.write(gcode[i] + '\n');
i++;
}

void serialEvent(Serial p)
{
    String s = p.readStringUntil('\n');
    println(s.trim());

    if (s.trim().startsWith("ok")) stream();
    if (s.trim().startsWith("error")) stream(); // XXX: really?
}
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