

## Show medical sensor data (telosb)

### Introduction

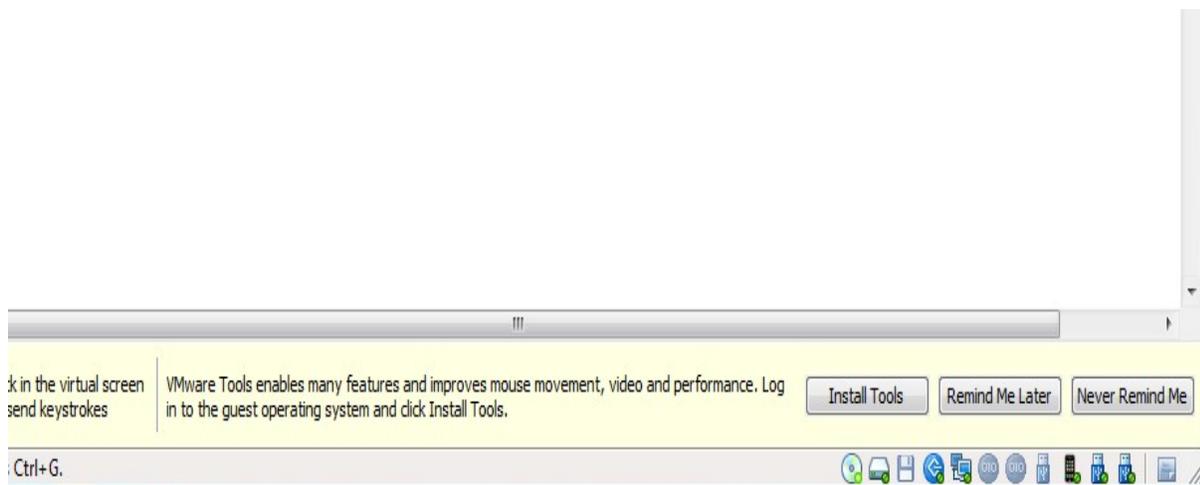
Oscilloscope is an application that let's you visualize sensor readings on the PC. Every node that has Oscilloscope installed periodically samples the default sensor via (`_DemoSensorC`) and broadcasts a message with 10 accumulated readings over the radio. A node running the BaseStation application will forward these messages to the PC using the serial communication. To run Oscilloscope you therefore need at least two nodes: one node attached to your PC running the BaseStation application (BaseStation can be found at `tinycos-2.x/apps/BaseStation` and was introduced in the [previous lesson](#)) and one or more nodes running the Oscilloscope application.

In this lab we use telosb to measure the temperature.

**Notice: Always remove the battery when you program the mote.**

**Always check USBport label make sure it is connected.**

**Ex: see the right corn USB port label.**



### Implementation

## 1)Telosb

a) Install Basestation on one mote:

Enter the folder with Basestation.

ex: Using "cd opt/tinyos- 2.1.0/apps/Basestation"

use "motelist" command find the usb port ex"dev/ttyUSB0"

Install Basestation: Using"make telosb install(or reinstall) 1,/dev/ttyUSB0"

b) install Oscilloscope on other mote

We need to modify some codes before we install this application.

First , we need to open the folder in the directory of "opt/tinyos-2.1.0/apps/Oscilloscope" from the "file system" .

Second, find the file "**OscilloscopeAppc.nc**" and open it with Mousepad.

Find this line:

```
"new TimerMilliC(), new DemoSensorC() as Sensor,"
```

Change "new DemoSensorC()" to "new SensirionSht11C()" (which is the sensor we used)

Find this line:

```
OscilloscopeC.Read -> Sensor;
```

Change "Sensor" to "Sensor.Temperature"

OK , now we can install Oscilloscope!

Enter the folder with Oscilloscope

ex:Using "cd opt/tinyos- 2.1.0/apps/Oscilloscope"

Install Oscilloscope : Using"make telosb install(or reinstall) 2,/dev/ttyUSB0"

### c) Running the Java GUI

First, Using "cd opt/tinyos- 2.1.0/apps/Oscilloscope/java"

Type"make"

Second,

type"export CLASSPATH=./opt/tinyos-2.1.0/support/sdk/java/tinyos.jar"

and

java net.tinyos.sf.SerialForwarder -comm serial@/dev/ttyUSB0:telosb &

(Don't forget space and &)

The last command is "./run"

You will see a window like this:

**Notice :This curve is not for telosb. We use telosb to measure the temperature, so the curve should be very smooth.**

**If you get a line, you can change the Y axis range (right corner)to zoom the curve**

