

Wireless Sensor Networks Exercise 1

Before starting

- http://vecchio.iet.unipi.it/vecchio/didattica/maps/slides/
 - Password: studente
- TinyOS environment
 - Install TinyOS on your notebook/PC
 - Xubuntos VM
- Installing TinyOS
 - Windows: it requires Cygwin
 - Linux: rpm or deb based
 - http://docs.tinyos.net/tinywiki/index.php/Getting_started
- Xubuntos
 - Xubuntu Linux with pre-installed TinyOS
 - C:\vecchio in Lab PCs
 - Username: xubuntos Password: tinyos

Dicate Alice

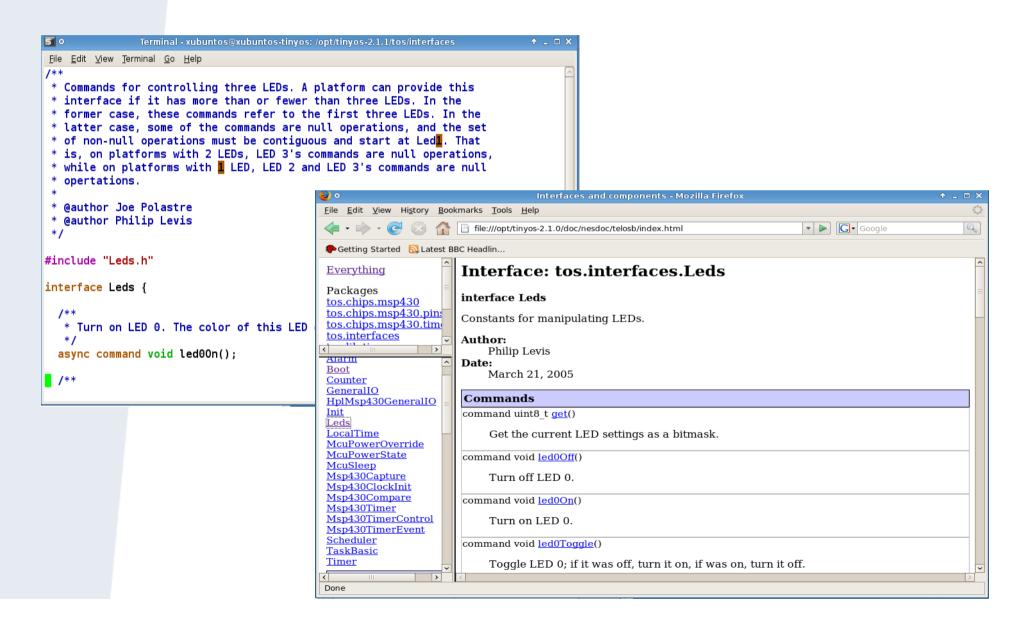
Before starting

- /opt/tinyos-2.x
 - apps
 - tos
 - support
 - doc
- To compile:
 - cd into app (e.g. Blink) directory
 - make <platform>
 - Our platform is telosb
- To compile and (re)install: make <platform> (re)install
- To produce documentation: make platform docs
- Before installing: motelist
 - Use VM menu to attach to guest OS



Before starting

Description of API (html documentation or source code in tos)





Some nesC info

Integer types (size of int is platform dependent)

	8 bits	16 bits	32 bits	64 bits
signed	int8_t	int16_t	int32_t	int64_t
unisgned	uint8_t	uint16_t	uint32_t	uint64_t

- error_t: possible values SUCCESS, FAIL
- Variables can be defined outside functions

```
implementation
{
  uint8_t mycounter = 0;

  event void AnInterface.anEvent()
  {
    mycounter++;
  }
```



Interface Leds

interface Leds {

```
async command void led0On();
async command void led0Off();
async command void led0Toggle();
async command void led1On();
async command void led1Off();
async command void led1Toggle();
async command void led2On();
async command void led2Off();
async command void led2Toggle();
async command uint8 t get();
async command void set(uint8 t val);
```



Interface Timer

```
interface Timercrecision_tag>
{
  command void startPeriodic(uint32_t dt);
  command void startOneShot(uint32_t dt);
  command void stop();
  event void fired();
  ...
}
```

- Precision tag: specifies timer resolution
 - TMilli
 - TMicro
 - T32khz



- Each sensor node is equipped with three leds: 0, 1, and 2.
- Write an application that ciclically turns the three leds on/off according to the following scheme:
 - $0 12 \rightarrow 0 12 \rightarrow \dots$
 - where denotes the led that is turned on (while the others are off).
- Wait 0.2 second between a configuration and the next one.
- Make a copy of the Blink directory and modify it.