Exercise 1 -- Flash an LED

This exercise assumes you have installed the Ada toolchain per the instructions in:

http://git.munts.com/ada-remoteio-tutorial/Setup.pdf

This means the toolchain should be accessible at **`C:\PROGRA~1\GNAT`** for Windows or at **`/usr/local/gnat/`** for Linux and MacOS X.

Plug the development board assembly (Raspberry Pi Zero or BeagleBone Green) from the hardware kit into a USB port on your computer. Your computer should automatically configure a USB raw HID device, possibly requiring you to deal with one or more pop-ups.

Following are instructions for Windows, and Linux/MacOS X. For each operating system there are two sets of instructions: One for using the command line and another for using the **`gps`** IDE for GNAT.

Depending on which GNAT toolchain you have installed and how you installed it, you may be able to start **`gps`** from your operating system start menu and then open a project by browsing to **`ada-remoteio-tutorial/`** within **`gps`** and picking one of the **`.gpr`** project files (e.g. **`test_led.gpr`** for this exercise).

It is advisable to use **`gps`** for all of the exercises, if possible, because it allows you to easily examine all of the component source files.

Microsoft Windows

Using the DOS Command Line

1. Open a DOS command window by running **`cmd.exe`** and run the following commands:

```
cd ada-remoteio-tutorial
compile.cmd test_led
test_led
```

The LED on the LPC1114 I/O processor board should begin blinking.

2. When you are done observing the LED, stop the program with **`CONTROL-C`** and then run the following command to remove the working files and return **`ada-remoteio-tutorial/`** to the pristine state:

```
clean.cmd
```

Using the GPS IDE (Optional)

1. Open a DOS command window by running **`cmd.exe`** and run the following commands:

```
cd ada-remoteio-tutorial
copydll.cmd
C:\PROGRA~1\GNAT\bin\gps -P test_led.gpr
```

2. Press **`F4`** to build **`test_led`**.

3. Press **`SHIFT-F2`** to run **`test_led`**.

The LED on the LPC1114 I/O processor board should begin blinking.

*Note: You must run **`copydll.cmd`** before starting **`gps`** from the Windows start menu.*

Linux and MacOS X

Using the Command Line Shell

1. Open a terminal window to get a command shell and run the following commands:

```
cd ada-remoteio-tutorial
make test_led
./test_led
```

The LED on the LPC1114 I/O processor board should begin blinking.

2. When you are done observing the LED, stop the program with **CONTROL-C** and then run the following command to remove the working files and return **ada-remoteio-tutorial/** to the pristine state:

```
make clean
```

Using the GPS IDE (Optional)

1. Open a terminal window to get a command shell and run the following commands:

```
cd ada-remoteio-tutorial
/usr/local/gnat/bin/gps -P test_led.gpr
```

2. Press **F4** to build **test_led**.

3. Press **SHIFT-F2** to run **test_led**.

The LED on the LPC1114 I/O processor board should begin blinking.