Southampton Solent University
Maritime &Technology Faculty

Understanding C programs. Correcting the LEDS.C file.

Purpose of this Activity

To learn and practice C programming.

Learning Outcome

- To be able to understand, modify and compile C programs.
- To be able to execute applications on the RPi and check application output for correctness.

Task 1

Follow the lecture and on-board exercises of analysing the leds.c code.
Find the application execution entry point in the given code file: `main( void )`
Note down what the individual lines of code do.

Task 2

Correct the leds.c program. In the 'older' RPi version 1, the output port for LED 5 was set to GPIO pin 21. As we are using the 'new' RPi version 2, this needs to change to GPIO pin 27.

1. Open the leds file with nano: **nano leds.c**
2. Change the lines for the pins:

   `"#define L5 (1<<21)"`

   to this → `"#define L5 (1<<27)"`

   `"INP_GPIO(21);  OUT_GPIO(21);"`

   to this → `"INP_GPIO(27);  OUT_GPIO(27);"`
3. Save changes: "CTRL + X" gets you out of nano (don't forget to hit yes to save and then enter)
4. Recompile: **make all**
5. Run the example: **sudo ./leds**

In the uncorrected version, LED 5 will not light up properly or sometimes just flicker.
In the corrected version, LED 5 will work in sequence with the other LEDs.

Task 3

Modify the LED patterns defined in the leds.c code. Save your code as leds_mod.c and compile and link with **make leds_mod**