Application Note: AN10126

How to display the resources used by a program

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to display the resources used by a program.

Required tools and libraries

This application note is based on the following components:

- xTIMEcomposer Tools - Version 14.0.0

Required hardware

Programming how-tos are generally not specific to any particular hardware and can usually run on all XMOS devices. See the contents of the note for full details.

1 How to display the resources used by a program

You can use the xTIMEcomposer tools to show the resources used by a given executable. For example, compile the following code:

```
#include <print.h>

int main() {
  printstr("Hello World!\n");
  return 0;
}
```

2 From within the xTIMEcomposer

Double-click on the resulting binary from within the *Project Explorer*. This will load the binary into both the resource and the tmiing analysis tools, and switch to the most recently used analysis perspective. Click the *Analyze Binary* button in the toolbar. A number of options are now available:

- A graphical view of the resources used by the program (in the *Resources* tab).
- The sizes/locations of functions and global data objects (in the *Function Table* and *Data Table* tabs).
- The I/O pins top ports mappings for the choosen target package.
- The callgraph.

3 From the command line

You can view the resources used by the resulting executable from the command line using *xobjdump*:

```
xobjdump --resources a.xe
```

This will produce the following output:

```
....
tile[0] (node "0", tile 0) stack usage,  upper bound: 208
tile[0] (node "0", tile 0) program size,  upper bound: 1092
tile[0] (node "0", tile 0) free memory,  lower bound: 64236
tile[0] (node "0", tile 0) thread usage,  upper bound: 1
tile[0] (node "0", tile 0) unused threads,  lower bound: 7
tile[0] (node "0", tile 0) timer count,  upper bound: 0
tile[0] (node "0", tile 0) unused timers,  lower bound: 10
tile[0] (node "0", tile 0) channel end usage,  upper bound: 0
tile[0] (node "0", tile 0) unused channel ends,  lower bound: 32
Node "0" routing id =  0x0000
Node "0" PLL configuration register value =  0x00002700
Node "0" reference clock divider register value =  0x00000003
Node "0" system frequency (Hz) =  400000000
```

You can also display the code and data section sizes as follows:

```
xobjdump --size a.xe
```

This will produce the following output:

```
Loadable 1 for tile[0] (node "0", tile 0):

      text      data       bss     total
       680        84        64       828
```

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