Application Note: AN10073

How to set a watchpoint

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to set a watchpoint.

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 set a watchpoint

Data watchpoints are used to allow XGDB to halt the execution of a the program when a condition placed on a data object by the user evaluates to true. For example, compile the following code ensuring that debug is enabled (-g):

```
#include <print.h>

int main() {
  int i, j = 0;
  for (i = 0; i < 5; ++i) {
    printintln(i);
  }
  return 0;
}
```

2 To set a watchpoint from xTIMEcomposer Studio

Create a new debug configuration via *Run->debug Configurations->xCORE Applications*. Set a breakpoint at the start of *main* then start debugging. Execution will now break when *main* is reached. In the variables view, right-click on the entry for the loop count *i* and choose *Add Watchpoint (C/C++)*. In the dialog enter *i == 3*, then continue execution. The debugger will now break when the value of the loop index variable *i* evaluates to 3. This can be confirmed by hovering over the variable in the editor.

3 To set a watchpoint from the command line

On the command line, watchpoints are set using the *watch* command. For example, start XGDB, connect to the simulator and set a breakpoint on main. When run, execution will break at the start of main. You can now set a watchpoint on the variable *i*:

```
> xgdb a.xe
...etc...
(gdb) connect -s
0xffffc04e in ?? ()
(gdb) b main
Breakpoint 1 at 0x100b0: file setting_a_watchpoint.xc, line 12.
(gdb) run
...etc...
Breakpoint 1, main () at setting_a_watchpoint.xc:12
12    int i, j = 0;
(gdb) watch i == 3
Hardware watchpoint 2: i == 3
(gdb) continue
0
1
2
Hardware watchpoint 2: i == 3

Old value = 0
New value = 1
0x000100c4 in main () at setting_a_watchpoint.xc:13
13    for (i = 0; i < 5; ++i) {
(gdb) print i
$1 = 3
```