

**Application Note: AN10045** 

## How to periodically perform an action using a timer

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to periodically perform an action using a timer.

## 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 periodically perform an action using a timer

Timers can be used to periodically perform an action. First input the current time from the timer:

```
t :> time;
```

The following loop uses the timerafter predicate to print a message once a second 100 times:

```
for (int i = 0; i < 100; i++) {
  t when timerafter(time) :> void;
  time += XS1_TIMER_MHZ * 1000 * 1000;
  printstr("This message is printed once a second\n");
}
```

If you want to periodically perform an action while also responding to other events, you can use a loop containing a select statement:

```
for (int i = 0; i < 100; i++) {
    select {
    case t when timerafter(time) :> void:
        time += XS1_TIMER_MHZ * 1000 * 1000;
        printstr("This message is printed once a second\n");
        break;
    // Insert cases to handle other events here...
    }
}
```

Note in the above examples the time input from the timer is discarded in the loop by inputting it to void. To see why this form is the preferred solution, suppose you had instead written the following:

```
for (int i = 0; i < 100; i++) {
   t when timerafter(time) :> time;
   time += XS1_TIMER_MHZ * 1000 * 1000;
   printstr("This message is printed once a second\n");
}
```

Because the processor completes the input shortly after the time specified is reached, the input in the loop may actually increment the value of time by a small amount. This amount may be compounded over multiple loop iterations, leading to drift over time.



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