

Application Note: AN10069

How to use the select statement with a replicator

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to use the select statement with a replicator.

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 use the select statement with a replicator

A replicator can be used within a select statement. It is most useful at the top-level select statement where multiple calls to a select function are required.

In this example, 4 bits are expected to be read from each of the defined in ports. XS1_PORT_1A and XS1_PORT_1B will form byte[0] and XS1_PORT_1C and XS1_PORT_1D will form byte[1].

The select function `in_bit` performs the input operation for one of the two ports as defined by the parameters `p0` and `p1`

```
select in_bit(in port p0, in port p1, char & byte)
{
  case p0 :> int p0_data :
    if (p0_data == 1)
      byte = (byte << 1) | 1;
    break;
  case p1 :> int p1_data :
    if (p1_data == 1)
      byte = (byte << 1) | 0;
    break;
}
```

The top level select statement uses the replicator (`int j = 0; j < NUM_BYTES; ++j`) to make multiple calls to the select function `in_bit`. Ports XS1_PORT_1A or XS1_PORT_1B are input in the first iteration of the replicator. Ports XS1_PORT_1C or XS1_PORT_1D are input on the second iteration.

```
select
{
  case (int j = 0; j < NUM_BYTES; ++j)
    in_bit(port_input1[j], port_input2[j], byte[j]);
}
```

Using the replicator simplifies the code, making it much easier to read. The number of iterations need not be constant but the iterator must not be modified outside of the replicator.