

Application Note: AN10040

# How to use nullable types

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to use nullable types.

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## 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 nullable types

Resource types (e.g. ports, timers etc) and reference types can be made *nullable*. This means that their value could be a normal value or could be the special value `null`. The `?` type operator creates a nullable type.

For example the following function has a nullable port argument:

```
void f(port ?p)
{
    if (!isnull(p)) {
        printf("Outputting to port\n");
        p <: 0;
    }
}
```

The `isnull` function tests whether a variable of nullable type is null or not.

Functions taking nullable arguments can either be passed a value or the `null` value:

```
void g() {
    f(null);
    f(p);
}
```