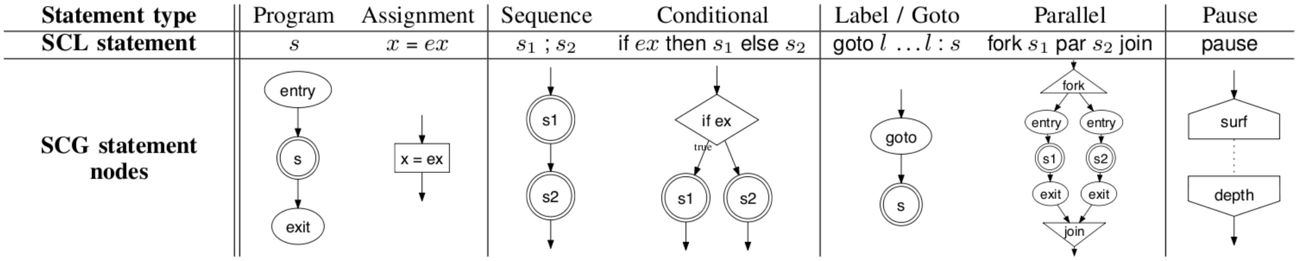
SC Language & Graph

- The SC Language (SCL) and its graphical representation (SCG)
- The SCL Meta-model

The SC Language (SCL) and its graphical representation (SCG)

As mentioned in the introduction SCL is a minimal language. It consists of seven statements.



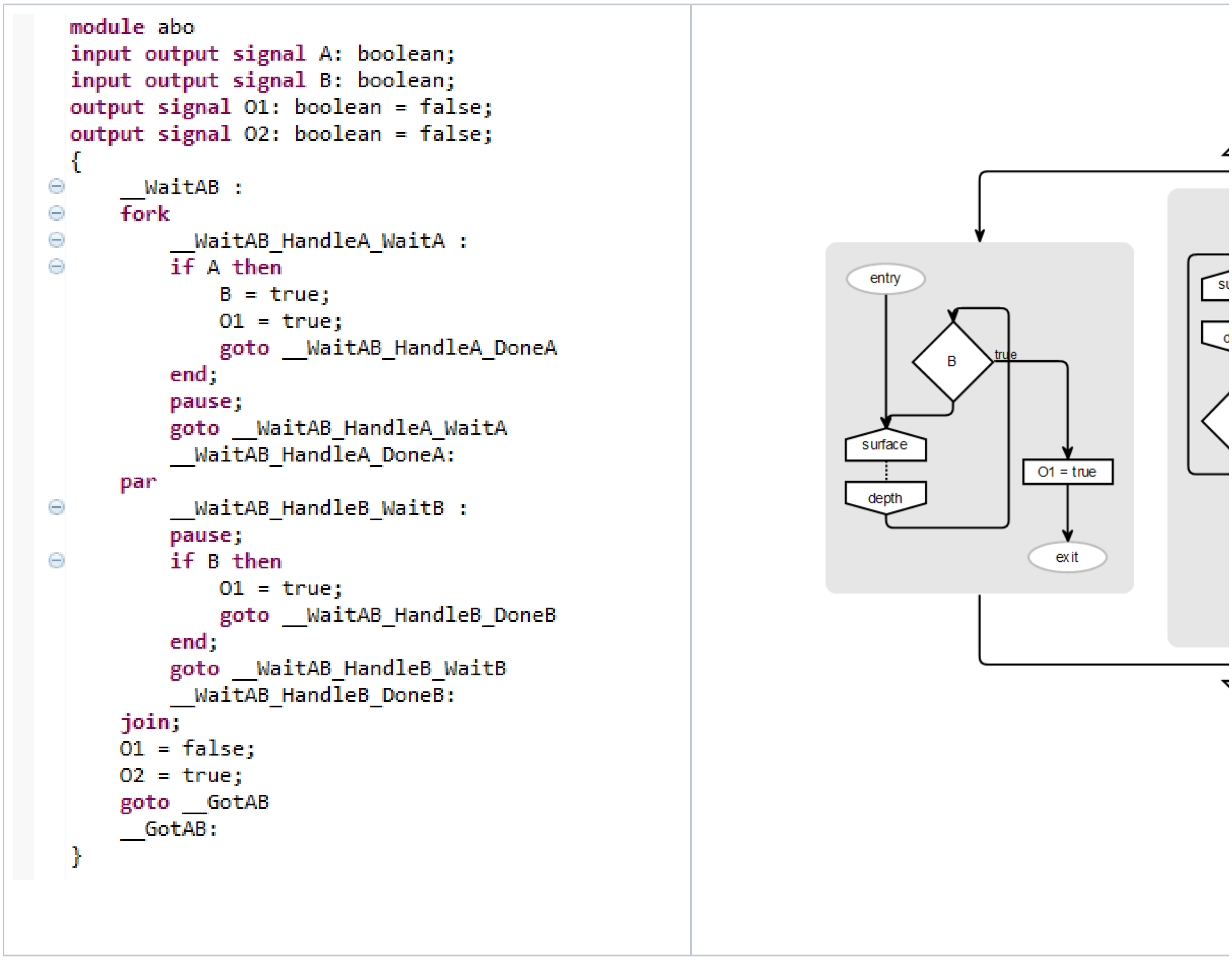
Statement type	Program	Assignment	Sequence	Conditional	Label / Goto	Parallel	Pause
SCL statement	s	$x = ex$	s_1 ; s_2	if ex then s_1 else s_2	goto l $\dots l : s$	fork s_1 par s_2 join	pause
SCG statement nodes							

The SCG is a labelled graph *G* = *(S, E)*, whereas

- the nodes S correspond to the statements of the program
- and the edges E reflect the sequential execution ordering

ABO example:

ABO SCL	ABO SCG



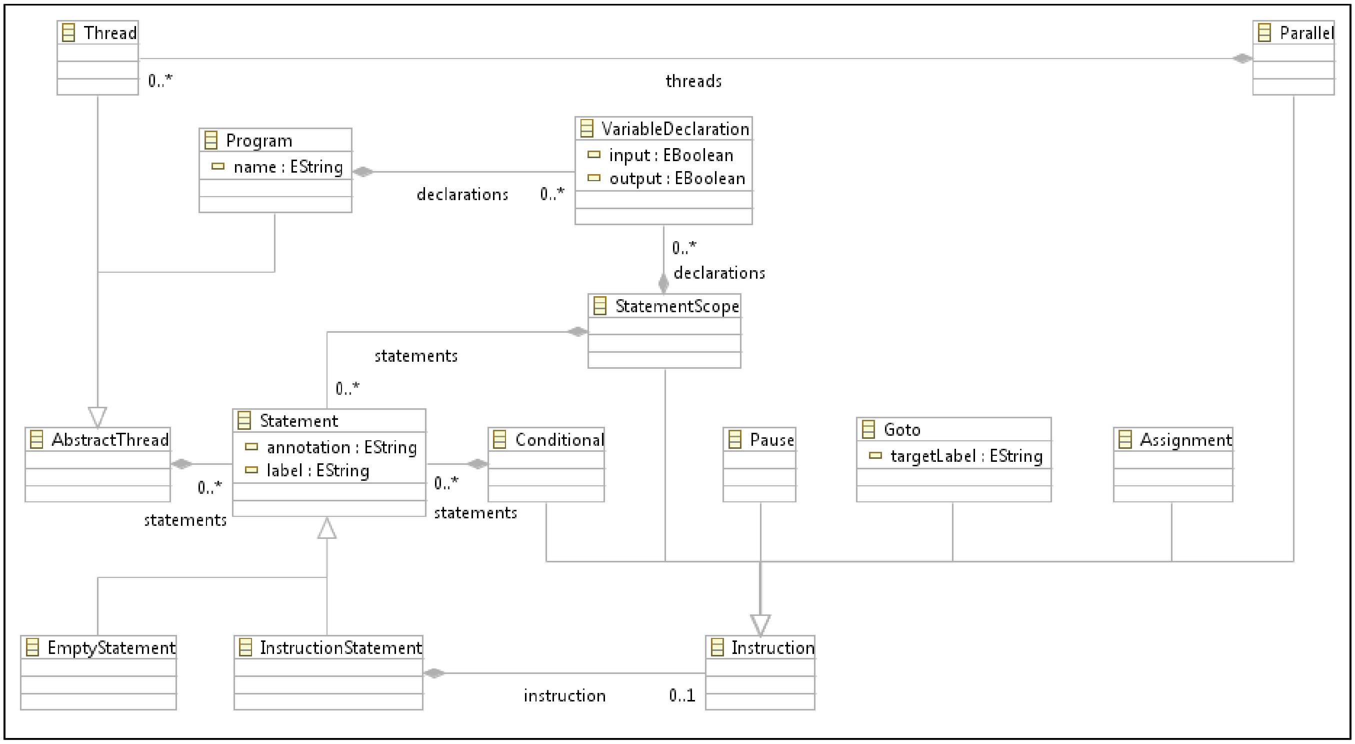
```
module abo
input output signal A: boolean;
input output signal B: boolean;
output signal O1: boolean = false;
output signal O2: boolean = false;
{
    __WaitAB :
    fork
        __WaitAB_HandleA_WaitA :
        if A then
            B = true;
            O1 = true;
            goto __WaitAB_HandleA_DoneA
        end;
        pause;
        goto __WaitAB_HandleA_WaitA
        __WaitAB_HandleA_DoneA:
    par
        __WaitAB_HandleB_WaitB :
        pause;
        if B then
            O1 = true;
            goto __WaitAB_HandleB_DoneB
        end;
        goto __WaitAB_HandleB_WaitB
        __WaitAB_HandleB_DoneB:
    join;
    O1 = false;
    O2 = true;
    goto __GotAB
    __GotAB:
}
```

The SCL Meta-model

Deprecated since 0.12

This article is deprecated. The described features are no longer available in current releases.

The SC language is implemented in the plugin de.cau.cs.kieler.scl and created via xtext. The xtext grammar file is de.cau.cs.kieler.scl.SCL.xtext.



- Every SCL program is contained in a **Program**
- A **Program** and concurrent threads of a parallel statement a **AbstractThreads**
- **AbstractThreads** contain a list of **Statements**
- A **Statement** can either be a **InstructionStatement** and contains a single instruction or an **EmptyStatement**
- **EmptyStatements** do not contain an instruction, but can hold a label or an annotation
- An instruction is a **Conditional**, a **Pause**, a **Goto**, an **Assignment**, a **Parallel** or a new **StatementScope**