



BNF Status

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14 November 2003



BNF – syntax description

- Formal specification of SV syntax
- Annex A is now 30+ pages
- Descended from the IEEE 1364 BNFs of 1995 and 2001 (“V2K”)
- Developed for SV 3.0 by Stefen Boyd
- Developed for SV 3.1 by Stefen Boyd and Dan Jacobi

SV 3.1A BNF development

- Verilog
 - Track and incorporate all V2K errata fixes by IEEE 1364 Verilog standard working group
- SV 3.1
 - Find/fix remaining bugs in SV 3.1 BNF
- SV 3.1A
 - Specify new BNF for SV 3.1A language extensions
 - Integrate with SV 3.1 BNF

Verilog $\subseteq$ SystemVerilog

- SV must be a superset of V2K
- BNF is the only text shared among the V2K LRM and the SV LRM
- BNF needs to be backward compatible with V2K in *two* ways:
 - SV syntax must be superset of V2K syntax
 - SV BNF (the textual description itself) should be approximate superset of V2K BNF

Semantic checks vs. syntax

- V2K BNF is nice in some ways, but it also has some structural problems
- Too many semantic constraints are imposed via syntactic descriptions.

An Example – Function Statement

```
loop_statement ::=  
    forever statement  
| repeat ( expression ) statement_or_null  
| while ( expression ) statement_or_null  
| for ( variable_decl_or_assignment ; expression ; variable_assignment )  
    statement_or_null  
| do statement while ( expression )
```

```
function_loop_statement ::=  
    forever function_statement  
| repeat ( expression ) function_statement_or_null  
| while ( expression ) function_statement_or_null  
| for ( variable_decl_or_assignment ; expression ; variable_assignment )  
    function_statement_or_null  
| do function_statement while ( expression )
```

Shared IEEE/Accellera solution

In A.6.2, REMOVE function_statement_item.

In A.6.2, REMOVE function_blocking_assignment.

In A.6.3, REMOVE function_seq_block.

In A.6.6, REMOVE function_conditional_statement.

In A.6.6, REMOVE function_if_else_if_statement.

In A.6.7, REMOVE function_case_statement.

In A.6.7, REMOVE function_case_item.

In A.6.8, REMOVE function_loop_statement.

Plus fine-tuning of the V2K LRM text and a footnote for extra clarity.

Remaining 3.1A BNF issues

- Some BNF proposals still waiting for committee approval
- Any language extensions still in committee are subject to change – so is their BNF
- Assertions BNF still needs a proposal to fix some known bugs
- There are more bugs in there, we just haven't found them all yet