

A production may be parameterized by a subscripted suffix of the form “[parameters]”, which may appear after the nonterminal symbol defined by the production. “parameters” may be either a single name or a comma separated list of names. A parameterized production is a short hand for a set of productions defining all combinations of the parameter names appended to the parameterized nonterminal symbol. This means that:

$$\begin{aligned} \textit{StatementList}_{[\textit{Return}]} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$

is a convenient abbreviation for:

$$\begin{aligned} \textit{StatementList} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$
$$\begin{aligned} \textit{StatementListReturn} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$

and that:

$$\begin{aligned} \textit{StatementList}_{[\textit{Return}, \textit{In}]} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$

is a convenient abbreviation for:

$$\begin{aligned} \textit{StatementList} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$
$$\begin{aligned} \textit{StatementListReturn} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$
$$\begin{aligned} \textit{StatementListIn} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$
$$\begin{aligned} \textit{StatementListReturnIn} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement} \end{aligned}$$

References to nonterminals on the right hand side of a production can also be parameterized. For example:

$$\begin{aligned} \textit{StatementList} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatement}_{[\textit{In}]} \end{aligned}$$

is equivalent to saying:

$$\begin{aligned} \textit{StatementList} : \\ \textit{ReturnStatement} \\ \textit{ExpressionStatementIn} \end{aligned}$$

A nonterminal reference may have both a parameter list and an “opt” suffix. For example:

VariableDeclaration :
*BindingIdentifier Initialiser*_{[In]opt}

is a convenient abbreviation for:

VariableDeclaration :
BindingIdentifier
BindingIdentifier InitialiserIn

The prefixing a parameter name with “?” on a right hand side nonterminal reference make that parameter value dependent upon the occurrence of the parameter name on the reference to the current productions symbol. For example:

*VariableDeclaration*_[In] :
*BindingIdentifier Initialiser*_[?In]

is a convenient abbreviation for:

VariableDeclaration :
BindingIdentifier Initialiser

VariableDeclarationIn :
BindingIdentifier InitialiserIn

If a right hand side alternative is prefixed with “[+parameter]” that alternative is only available is the named parameter was used in referencing the production’s nonterminal symbol. If a right hand side alternative is prefixed with “[~parameter]” that alternative is only available is the named parameter was *not* used in referencing the production’s nonterminal symbol. This means that:

*StatementList*_[Return] :
_[+Return] *ReturnStatement*
ExpressionStatement

is an abbreviation for:

StatementList :
ExpressionStatement

StatementListReturn :
ReturnStatement
ExpressionStatement

and that

*StatementList*_[Return] :
_[~Return] *ReturnStatement*
ExpressionStatement

is an abbreviation for:

StatementList :
ReturnStatement
ExpressionStatement

StatementListReturn :
 ExpressionStatement

And here is a sample of the real ES grammar

*PrimaryExpression*_[yield] :
 this
 *IdentifierReference*_[?yield]
 Literal
 *ArrayInitialiser*_[?yield]
 *ObjectLiteral*_[?yield]
 FunctionExpression
 ClassExpression
 GeneratorExpression
 *GeneratorComprehension*_[?yield]
 RegularExpressionLiteral
 *TemplateLiteral*_[?yield]
 *CoverParenthesisedExpressionAndArrowParameterList*_[?yield]

*CoverParenthesisedExpressionAndArrowParameterList*_[yield] :
 (*Expression*_[in, ?yield])
 ()
 (... *BindingIdentifier*_[?yield])
 (*Expression*_[in, ?yield] , ... *BindingIdentifier*_[?yield])

*IdentifierReference*_[yield] :
 Identifier
 [~yield] **yield**

*LexicalDeclaration*_[in, yield] :
 *LetOrConst BindingList*_[?in, ?yield] ;

LetOrConst :
 let
 const

*BindingList*_[in, yield] :
 *LexicalBinding*_[?in, ?yield]
 *BindingList*_[?in, ?yield] , *LexicalBinding*_[?in, ?yield]

*LexicalBinding*_[in, yield] :
 *BindingIdentifier*_[?yield] *Initialiser*_{[?in, ?yield]opt}
 *BindingPattern*_[?yield] *Initialiser*_[?in, ?yield]

*BindingIdentifier*_[default, yield] :
 [~default] **default**
 [~yield] **yield**
 Identifier

