

Syntax Structure	Middle Extraction
Constant. $S ::= \text{Con}$	$K(S) = \text{Type}(\text{Con}) \parallel K(\text{Null}) = \text{Null}$
	E.g. : $K(123) = \text{Integer}$
Variable. $S ::= \text{Var}$	$K(S) = \text{Type}(\text{Var}) \# \text{var}$
	E.g. : $K(\text{mStateService}) = \text{Service} \# \text{var}$
Identification. $S ::= T$ $\text{id1}[=x_1], \dots, [\text{id}_n[=x_n]]$	$K(S) = T \# \text{var} K(x_1) [\dots T \# \text{var} K(x_n)]$
	E.g. : $K(\text{View } v = \text{Null}) = \text{View} \# \text{var Null}$
New Objects. $S ::= [x.] \text{new } C(x_1, x_2, \dots, x_n)$	$K(S) = [K(x) \# \text{pre}] \text{ new } C K(x_1) \# \text{par} \dots K(x_n) \# \text{par}$
	E.g. : $K(\text{new Intent}(\text{getApplicationContext}(), \text{SettingsActivity.class})) = \text{new Intent Context} \# \text{par Activity} \# \text{par}$
Method Calls. $S ::= x.C(x_1, x_2, \dots, x_n)$	$K(S) = K(x) K(C.\text{ret}) \# \text{ret } C K(x_1) \# \text{par} \dots K(x_n) \# \text{par}$
	E.g. : $K(\text{startActivity}(\text{mIntent})) = \text{void} \# \text{ret startActivity Intent} \# \text{par}$
Attribute Access. $S ::= x.p$	$K(S) = K(x) \# \text{pre } K(x.p)$
	E.g. : $K(\text{TorchSwitch.TORCH\_STATE\_CHANGED}) = \text{BroadcastReceiver} \# \text{pre String}$
Method Implementation. $S ::= T$ $C(T_1 x_1, T_2 x_2, \dots, T_n x_n) \{ \}$	$K(S) = T C T_1 \# \text{par} \dots T_n \# \text{par}$
	E.g. : $K(\text{void onCreate}(\text{Bundle savedInstanceState}) \{ \}) = \text{void onCreate Bundle} \# \text{par}$
Component Implementation. $S ::= \text{class } x [\text{extends } C] [\text{implements } C_1, C_2, \dots, C_n]$	$K(S) = \text{class} \# \text{var} [\text{extends } C] [\text{implements } C_1, C_2, \dots, C_n]$
	E.g. : $K(\text{class TorchSwitch extends BroadcastReceiver}) = \text{class} \# \text{var extends BroadcastReceiver}$