

# Verifier Core Language BNF Grammar

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$x, y, z$	$\in VAR$	(variables)
$v$	$\in VAL$	(values)
$e$	$\in EXPR$	(expressions)
$s$	$\in STMT$	(statements)
$o$	$\in LOC$	(object Ids)
$f$	$\in FIELDNAME$	(field names)
$m$	$\in METHODNAME$	(method names)
$C, D$	$\in CLASSNAME$	(class names)
$\alpha$	$\in PREDNAME$	(predicate names)
$P$	$::= \overline{cls} \ s$	
$cls$	$::= \text{class } C \text{ extends } D \ \{\overline{field} \ \overline{pred} \ \overline{method}\}$	
$field$	$::= T \ f;$	
$pred$	$::= \text{predicate } \alpha_C(\overline{T} \ x) = \tilde{\phi}$	
$T$	$::= \text{int} \mid \text{bool} \mid C \mid \top$	
$method$	$::= T \ m(\overline{T} \ x) \text{ dynamically contract statically contract } \{s\}$	
$contract$	$::= \text{requires } \tilde{\phi} \text{ ensures } \tilde{\phi}$	
$\oplus$	$::= + \mid - \mid * \mid \setminus \mid \&\& \mid   $	
$\odot$	$::= \neq \mid = \mid < \mid > \mid \leq \mid \geq$	
$s$	$::= \text{skip} \mid s_1 ; s_2 \mid T \ x \mid x := e \mid \text{if } (e) \{s_1\} \text{ else } \{s_2\} \mid \text{while } (e) \text{ invariant}() \ \tilde{\phi} \{s\}$ $\mid x.f := y \mid x := \text{new } C \mid y := z.m(\overline{x}) \mid y := z.m_C(\overline{x}) \mid \text{assert } \phi \mid \text{release } \phi \mid \text{hold } \phi \{s\}$ $\mid \text{fold } A \mid \text{unfold } A$	
$e$	$::= v \mid x \mid e \oplus e \mid e \odot e \mid e.f$	
$x$	$::= \text{result} \mid id \mid \text{old}(id) \mid \text{this}$	
$v$	$::= n \mid o \mid \text{null} \mid \text{true} \mid \text{false}$	
$A$	$::= \alpha(\overline{e}) \mid \alpha_C(\overline{e})$	
$\otimes$	$::= \wedge \mid *$	
$\phi$	$::= e \mid A \mid \text{acc}(e.f) \mid \phi \otimes \phi \mid (\text{if } e \text{ then } \phi \text{ else } \phi) \mid (\text{unfolding } A \text{ in } \phi)$	
$\tilde{\phi}$	$::= \phi \mid ? * \phi$	