

# 2006

1a

Program 1: 0

Program 2: 2

1b

Program 1: 0

Program 2: 2

Grammar Rule	Semantic Rule
<b>C)</b> $procedure \rightarrow$ $\text{proc } id \ (param) \ stmt$	$insert(id.name, param.kind)$
$param \rightarrow type \ id$	$param.kind = value$
$param \rightarrow \text{ref} \ type \ id$	$param.kind = ref$
$param \rightarrow \text{result} \ type \ id$	$param.kind = result$
$call \rightarrow id \ (exp)$	$call.ok =$ $\text{if } (lookupkind(id.name) = ref \text{ or}$ $lookupkind(id.name) = result)$ $\text{then } (exp.kind = var)$ $\text{else } true$
$exp_1 \rightarrow id \ [exp_2]$	$exp_1.kind = var$
$exp \rightarrow id$	$exp.kind = var$
$exp_1 \rightarrow exp_2 \ aritop \ exp_3$	$exp_1.kind = value$