Aneeket Nangia
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WA - III

Written Assignment - III

Q1

a)

$M_b(\langle expr \rangle, s)\ \Delta =$
case <expr> of
<boolean_val> ⇒
then <expr>

<bool_expr> ⇒
if (<left_expr> == undef || <right_expr> == undef)
then error

if (<oprt> == "||") then
$M_b$ (<left_expr>, s) || $M_b$ (<right_expr>, s)

else if (<oprt> == "&&") then
$M_b$ (<left_expr>, s) && $M_b$ (<right_expr>)

Not <left_expr> ⇒ if ($M_b$(<left_expr>, s) == undef)
then error
else ! $M_b$ (<left_expr>, s)

b) <stmt_list> = <stmt> | <stmt> <stmt_list>

$M_{st}$ (<stmt_list>, s) Δ =

<stmt> ⇒ if ($M_{sl}$ (<stmt>, s) == undef)
then error
else $M_{sl}$ (<stmt>, s)

<stmt> <stmt_list> ⇒ if ($M_{sl}$ (<stmt>, s) == undef)
then error
else if
($M_{sl}$ (<stmt_list>, $M_s$ (<stmt>, s))
== undef
then error

else
$M_{sl}$ (<stmt_list>, $M_{sl}$ (<stmt>, s))

Q2 i) $b = (c+10)/3 \quad \{b > 6\}$

$\Rightarrow \frac{(c+10)}{3} > 6$

$\Rightarrow c + 10 > 18$

$\Rightarrow c > 8$

So the weakest precondition is $c > 8$

ii) $x = 2*y + x - 1 \quad \{x > 11\}$

$\Rightarrow 2*y + x - 1 > 11$

$\Rightarrow 2*y + x > 12$