

## Generating Constraints (1/2)

```
intconst:                 $[[i\text{ntconst}]] = \text{int}$   
 $E_1 \text{ op } E_2$ :           $[[E_1]] = [[E_2]] = [[E_1 \text{ op } E_2]] = \text{int}$   
 $E_1 == E_2$ :              $[[E_1]] = [[E_2]] \wedge [[E_1 == E_2]] = \text{int}$   
input:                   $[[\text{input}]] = \text{int}$   
 $id = E$ :                  $[[id]] = [[E]]$   
output  $E$ :               $[[E]] = \text{int}$   
if ( $E$ ) { $S$ }:            $[[E]] = \text{int}$   
if ( $E$ ) { $S_1$ } else { $S_2$ }:  $[[E]] = \text{int}$   
while ( $E$ ) { $S$ }:         $[[E]] = \text{int}$ 
```

## Generating Constraints (2/2)

```
id( $id_1, \dots, id_n$ ) { ... return  $E$ ; }:  
     $[[id]] = ([[id_1]], \dots, [[id_n]]) \rightarrow [[E]]$   
( $E$ ) ( $E_1, \dots, E_n$ ):  
     $[[E]] = ([[E_1]], \dots, [[E_n]]) \rightarrow [[(E) (E_1, \dots, E_n)]]$   
 $\&id$ :                 $[[\&id]] = \&[[id]]$   
malloc:               $[[\text{malloc}]] = \&\alpha$   
null:                  $[[\text{null}]] = \&\alpha$   
 $*E$ :                   $[[E]] = \&[[*E]]$   
 $*id = E$ :              $[[id]] = \&[[E]]$ 
```