

# Value Conversion in IL1 after Lambda Hoisting

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Given the closure-conversion and then hoisted restricted language IL1 detailed below

$$\begin{aligned} v &::= n \mid x \mid \mathbf{halt} \\ e &::= v \mid v_0 + v_1 \mid (v_0, \dots, v_n) \mid \pi_n v \\ c &::= \mathbf{let} \, x = e \mathbf{in} \, c \mid v_0 \, v_1 \, v_2 \mid v_0 \, v_1 \end{aligned}$$

we want to “lift” numbers and halt into expressions (as Val used in bindings only) and leave only variables as values, so in effect our language will now look like

$$\begin{aligned} v &::= x \\ e &::= v \mid \mathbf{val}(n) \mid \mathbf{val}(\mathbf{halt})v_0 + v_1 \mid (v_0, \dots, v_n) \mid \pi_n v \\ c &::= \mathbf{let} \, x = e \mathbf{in} \, c \mid v_0 \, v_1 \, v_2 \mid v_0 \, v_1 \end{aligned}$$

We want to define a set of “lowering” translation  $\mathcal{LV}[\![v]\!]$ ,  $\mathcal{LE}[\![e]\!]$ ,  $\mathcal{LC}[\![c]\!]$  with