

LIVE Analysis

- Local sets
 - **UEVar(n)**: variables used in **n** before any re-definition in **n**
 - **VarKill(n)**: variables defined in **n**
- MOP set
 - **Live(n)**: variables live **at the end** of block **n**
 - **v** is in **Live(n)** iff there is a path from the end of **n** to a user of **v** along which **v** is not redefined.
 - used by a compiler to find un-initialized uses
- Comparison with AVAIL
 - live is a property of variables
 - availability is a property of expressions
 - live variables are used in some succeeding path
 - available expressions are defined in all preceding paths

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Local info for Live

- **UEVar(n)**: variables used in **n** before any re-definition in **n**
- **VarKill(n)**: variables defined in **n**

for $i \leftarrow 1$ to number of operations

assume op_i is " $x \leftarrow y \text{ op } z$ "

if $i \in \text{Leader}$ then

$b \leftarrow$ block number for i

$\text{UEVAR}(b) \leftarrow \emptyset$

$\text{VARKILL}(b) \leftarrow \emptyset$

if $y \notin \text{VARKILL}(b)$ then

$\text{UEVAR}(b) \leftarrow \text{UEVAR}(b) \cup \{y\}$

if $z \notin \text{VARKILL}(b)$ then

$\text{UEVAR}(b) \leftarrow \text{UEVAR}(b) \cup \{z\}$

$\text{VARKILL}(b) \leftarrow \text{VARKILL}(b) \cup \{x\}$

Gathering Initial Information

A:

$$\begin{array}{l} a = b + c \\ d = a \end{array}$$

B:

$$\begin{array}{l} d = a \\ a = b + c \end{array}$$

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source: EAC figure 8.8