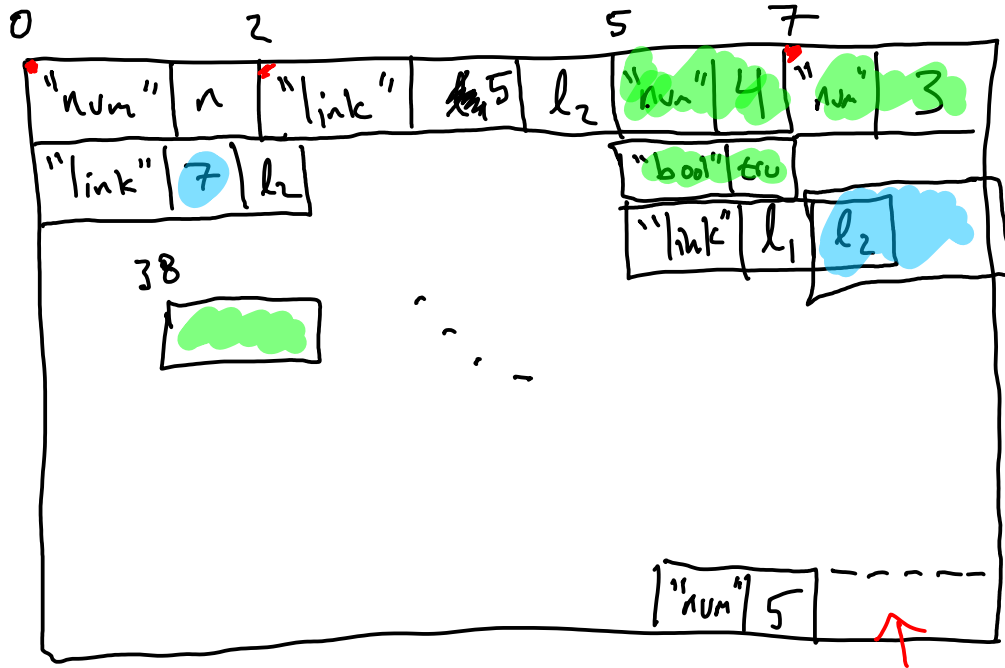


# MEMORY MANAGEMENT.

Free list



alloc :: Value → Loc

update :: Loc, Loc → Void

deref :: Loc → Value

free :: Loc → Void

data Value:

| v-num (n)

| v-link (f :: Loc, s :: Loc)

end

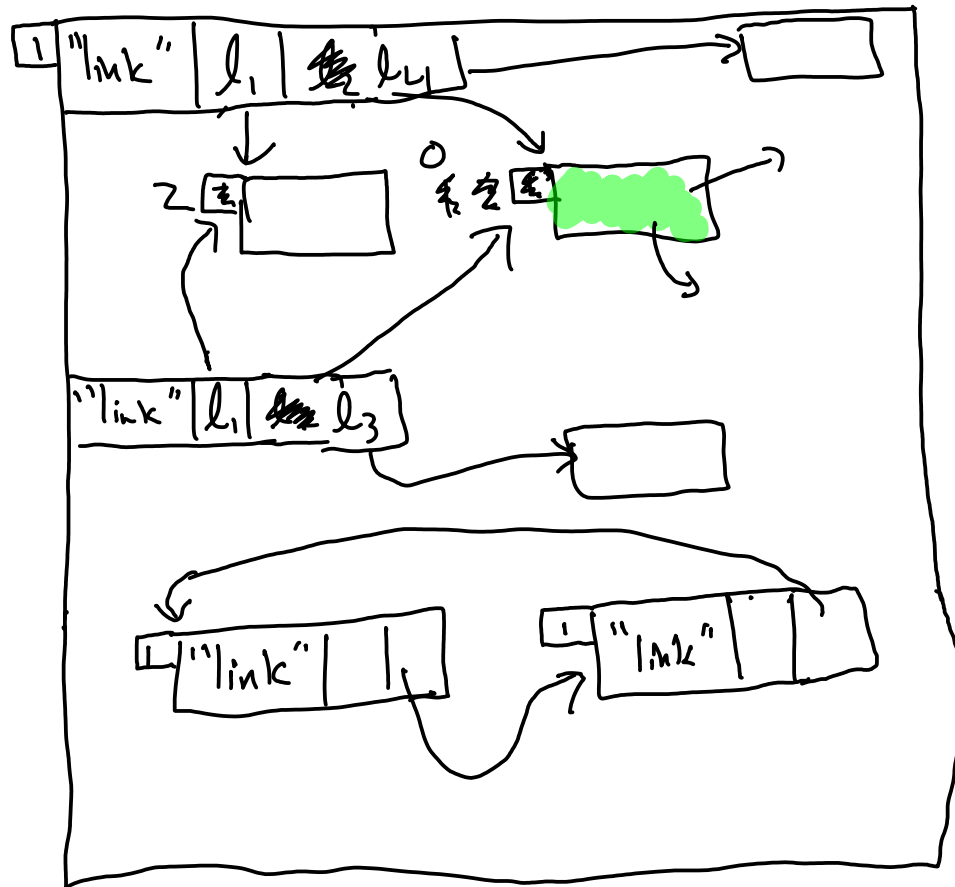
update:

- change var
- change contents of structure

(set - first l  
4)

FREE IS N'T.

# AUTOMATIC MM.

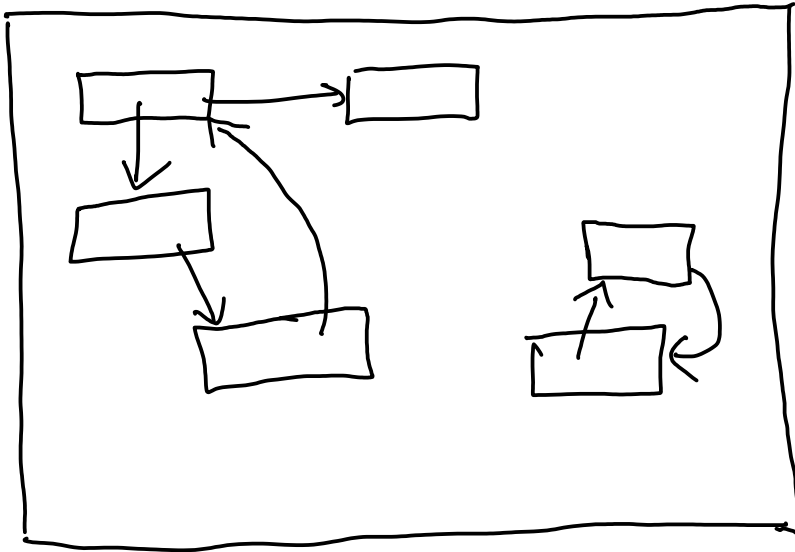


$\text{alloc} :: \text{Value} \rightarrow \text{Loc}$

$\text{update} :: \text{Loc}, \text{Loc} \rightarrow \text{Void}$   
↑  
add reference)

1. Cycles
2. Cascades of frees
3. Fragmentation

Reference Counting



Which parts reachable  
from **remainder of**  
**program's execution?**



AKA the stack









