

Memory resources

Monday, July 11, 2022

9:03 AM

Shape Analysis :

possible "shapes" that heap-allocated structure can take :

⇒ example :

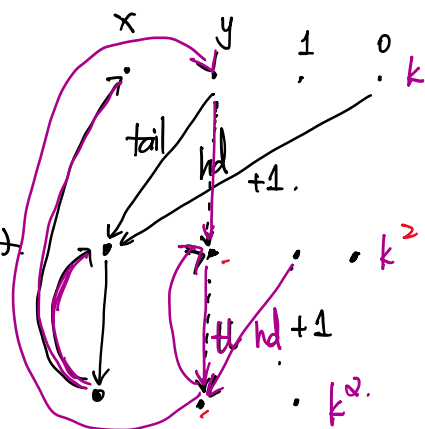
while k :

$x = \text{cons}(0, y)$

→ while k :

$y = \text{cons}(1, y)$

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⇒ $\text{card}(x) = k^3$ or $k + k^2$.

actually
 $\text{card}(x) = k^3$.

⇒ by reduce to single-target path problem:

longest weighted x -target path is:

$y^0 \xrightarrow{+1} y^1 \xrightarrow{+0} y^2 \xrightarrow{+1} x^2 \xrightarrow{+0} x^3$ $\propto k^2$.
 $k^2 \quad k^2 \quad k \quad k^2 \quad k^2$
 $\{ k^2 + k^2 + k \}$

⇒ by longest finite walk



longest y -target walk: $\propto k^2$.

long x -target walk: $y^{k^2} \rightarrow x$.
 $\Rightarrow k^2 + 1$.