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= T T M S

classmate
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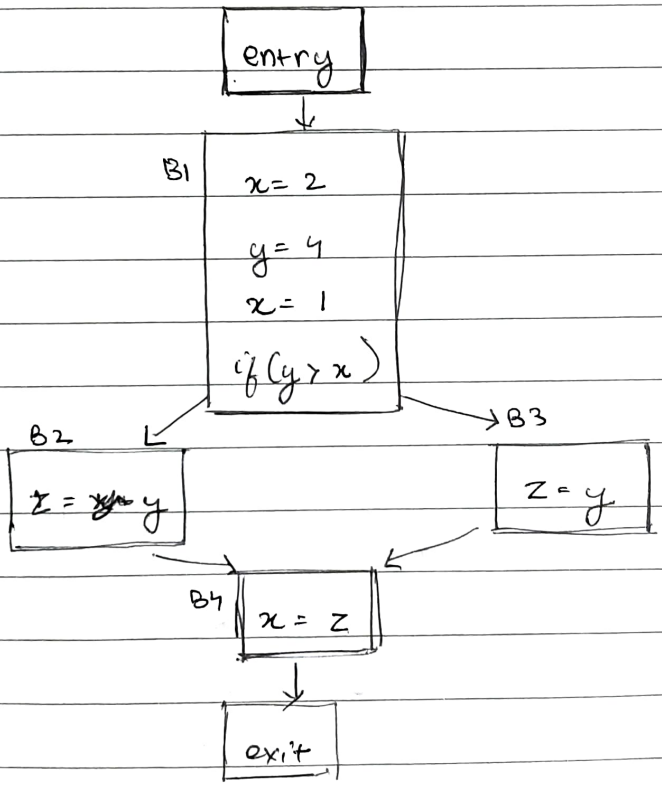
CODE OPTIMIZATION

LIVE VARIABLES

liveness information. $p \rightarrow I \rightarrow p'$

$LIVE(p) = +(I, LIVE(p'))$

compiler algorithm application visual in editor did not see could be interesting to see.
also execution flow



B1		B2		B3		B4	
IN	OUT	IN	OUT	IN	OUT	IN	OUT
{}	{}	{y}	{}	{y}	{}	{z}	{}
{}	{y}	{y}	{z}	{y}	{z}	{z}	{}
{}	{y}	{y}	{z}	{y}	{z}	{z}	{}

(reverse) topological sorted order

no. of iterations depends on order in which basic block processesed.

for loops.

monotonically increase to algorithm converges.

AVAILABLE EXPRESSION ANALYSIS

a = b+c AVAIL(P) AVAIL(P')

AVAIL(P') = AVAIL(P) - KILL(P) {e has 'a' as an ∪ {b+c}

~~AVAIL(P')~~

OUT(N(B) = ∩ OUT(B))

AVAIL(P') = (AVAIL(P) ∪ {b+c}) - {e | e has 'a' as op}

POINTS TO ANALYSIS | ALIAS ANALYSIS.

forward data flow analysis problem.
dive van — backward.

OUT(B) = (IN(B) ∪ {GEN(B)}) - KILL(B) ✗

↓

downwardly exposed expressions.

$OUT(B) = (IN(B) - KILL(B)) \cup GEN(B)$

$IN(B) = \cap OUT(B)$

fall in the category of ~~bit~~ vector dataflow analysis prob

Start with overestimate ...

entry

$x = a + b$

$y = a * b$

$y > x$ exit