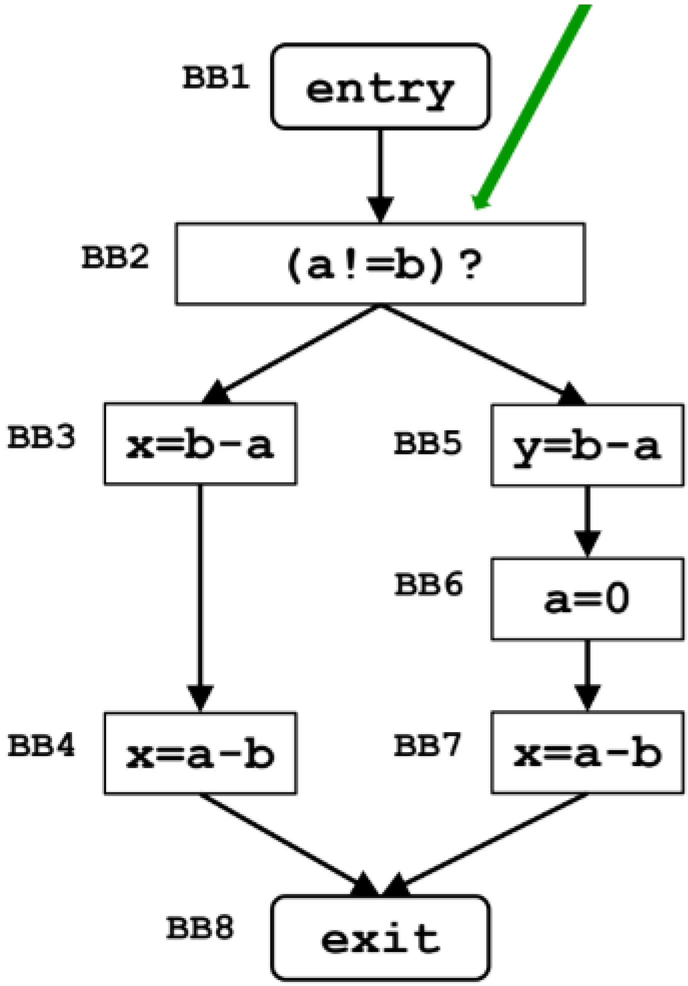
	Very Busy Expressions
Domain	(sets of expressions)
Direction	backward: IN[b] = fb(OUT[B]) OUT[b] = $\bigwedge$ IN[succ(b)]
Transfer function	fb(x) = gen[B] $\cup$ (OUT[B] - kill[B])
Meet Operation ($\wedge$)	$\cap$
Boundary Condition	IN[entry] = 0
Initial interior points	IN[b] = U

Tabella :

	Gen()	**Kill()**
BB1	**none**	**none**
BB2	**none**	**none**
BB3	**b-a**	**none**
BB4	**a-b**	**none**
BB5	**b-a**	**none**
BB6	**0**	**a**
BB7	**a-b**	**none**
BB8	**none**	**none**



OUT [BB8] =none
IN[BB*]=none

OUT [BB7] = none
IN [BB7] = a-b

OUT [BB6] = a-b
IN [BB6] = none

OUT[BB5]=none
IN[BB5]=b-a

OUT [BB4] = none
IN [BB4] = a-b

OUT [BB3] = a-b

IN [BB3] = {a-b,b-a}

OUT[BB2]= {a-b,b-a} ^ {b-a} = b-a
IN[BB2] = b-a

OUT[BB1] = b-a
IN [BB1] = b-a

The evaluation of b-a is done in both path, before the change of operators.

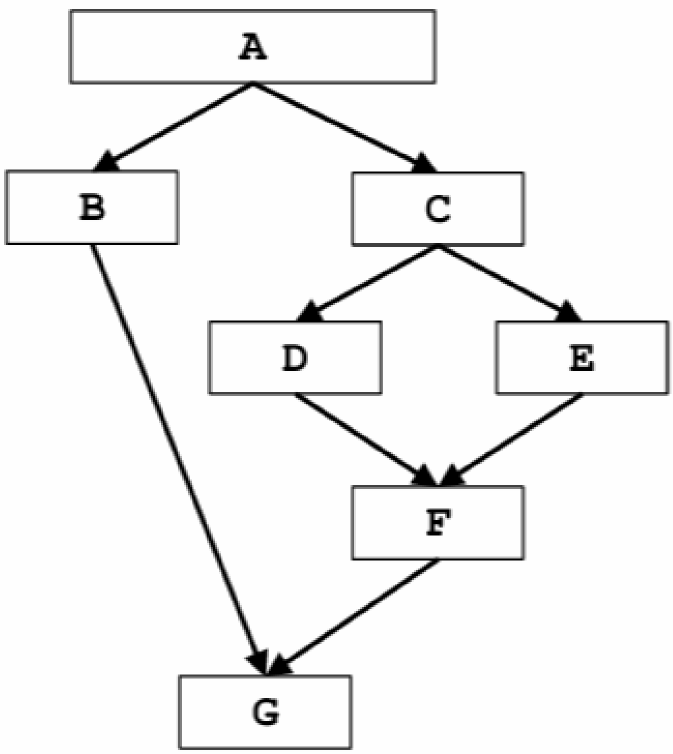
##

Dominator Analysis

	Dominator Analysis
Domain	Sets of nodes
Direction	forward: out[b] = fb(in[b]) in[b] = ^ out[pred(b)]
Transfer function	fb(x)= DEF(b) U (⋀ OUT[pred(b)])
Meet Operation (⋀)	∩
Boundary Condition	out[entry] = 0
Initial interior points	out[b] = 0

Blocco	IN[B]	OUT[B] (= DOM[B])
A	0	A
B	A	{A, B}

C	A	{A, C}
D	{A, C}	{A, C, D}
E	{A, C}	{A, C, E}
F	{A, C, D} ⋀ {A, C, E} = = {A, C}	F U {A, C} = {A, C, F}
G	{A, B} ⋀ {A, C, F} = A	{A, G}



DOM[F] = {A,C,F}

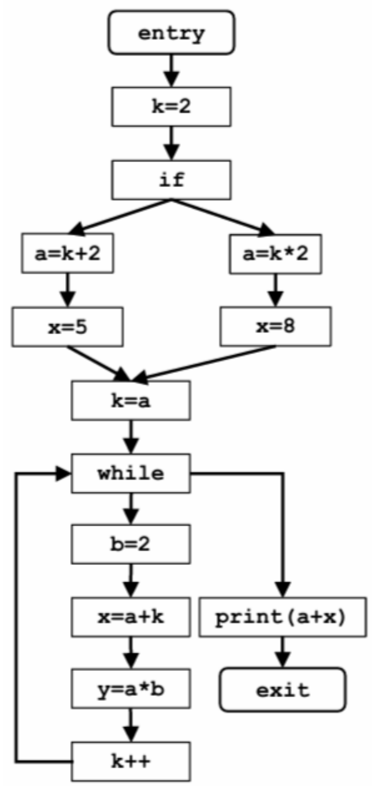
DOM[A] = { A }
DOM[B] = { A, B }
DOM[C] = { A, C }
DOM[D] = { A, C, D }

DOM[E] = { A, C, E }
DOM[F] = { A, C, F }
DOM[G] = { A, G }

##

Constant propagation

	Constant propagation
Domain	Sets of Variables
Direction	forward : OUT[b] = fb(IN[B]) In[b] = ⋀ OUT[pred(b)]
Transfer function	fb[B] = (DEF[B] - (^OUT[B])) ∪ ((^OUT[B]) - DEF(B))
Meet Operation (∧)	∩
Boundary Condition	OUT [entry] = 0
Initial interior points	OUT [b] = 0



	Iterazione1		Iterazione 2	
	IN(B)	OUT(B)		
BB1 (k=2)	0	k=2	- -	- -
BB2 (a=k+2)	k=2	k=2, a=2+2=4	- -	- -

BB3 (x=5)	k=2, a=4	k=2, x=5, a=4	- -	- -
BB4 (a=k*2)	k=2	k=2, a=2*2=4	- -	- -
BB5 (x=8)	k=2, a=4	k=2, x=8, a=4	- -	- -
BB6 (k=a)	k=2, a=4, x=8	a=4, x=8	- -	- -
BB7 (b=2)	a=4, x=8	a=4, b=2, x=8	a=4	a=4, b=2
BB8 (x=a+k)	a=4, b=2, x=8	a=4, b=2	a=4, b=2	a=4, b=2
BB9 (y=a*b)	a=4, b=2	a=4, b=2, y=4*2=8	a=4, b=2	a=4, b=2,y=8
BB10 (k++)	a=4, b=2,y=8	a=4, b=2, y=8	a=4, b=2, y=8	a=4, b=2, y=8

Then continuously go on, will always remain a=4, b=2, y=8 as constant