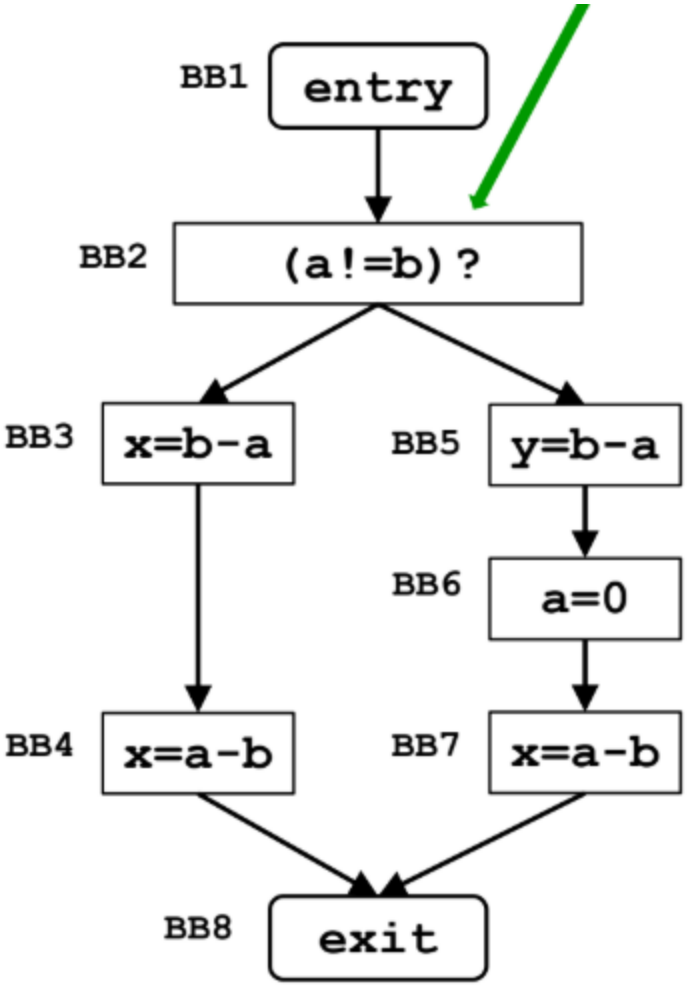
	Very Busy Expressions
Domain	b-a; a-b (sets of expressions)
Direction	forward : OUT[b] = fb(IN[B]) In[b] = ⋀ OUT[pred(b)]
Transfer function	fb(x) = GEN[B] ∪ (IN[B] - KILL[B])
Meet Operation (∧)	∩
Boundary Condition	OUT [entry] = 0
Initial interior points	OUT [b] = 0

Tabella :

	Gen()	**Kill()**
BB2	**0**	**0**
BB3	**3**	**4,7**
BB4	**4**	**3**
BB5	**5**	**0**
BB6	**6**	**0**
BB7	**7**	**4**



Primo giro :

OUT [BB1] =0

IN [BB2] = 0
OUT [BB2] = 0

IN [BB3] = 0
OUT [BB3] = b-a U 0 = { b-a }

IN [BB4] = OUT [BB3] = { b-a }
OUT [BB4] = a-b U { b-a } = { a-b, b-a }

IN [BB5] = 0
OUT [BB5] = b-a U 0 = { b-a }

IN [BB6] = { b-a }
OUT [BB6] = 0 U ({ b-a } - kill { b-a }) = 0

IN [BB7] = 0
OUT [BB7] = { a-b } U 0 = { a-b }

IN [BB8] = OUT [BB4] = { a-b, b-a } ⋀ OUT [BB7] = { a-b }
OUT [BB8] = 0 U { a-b } = { a-b }

→ solo 'a-b' è very busy, perchè 'a' di 'b-a' è stato cambiato (con a = 0, nel secondo branch)

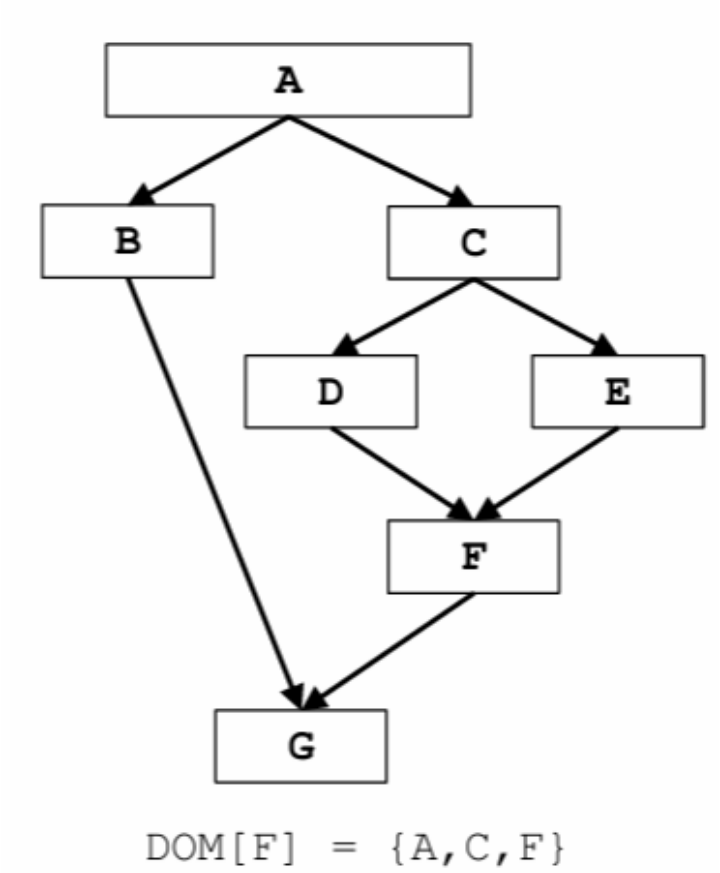
##

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}



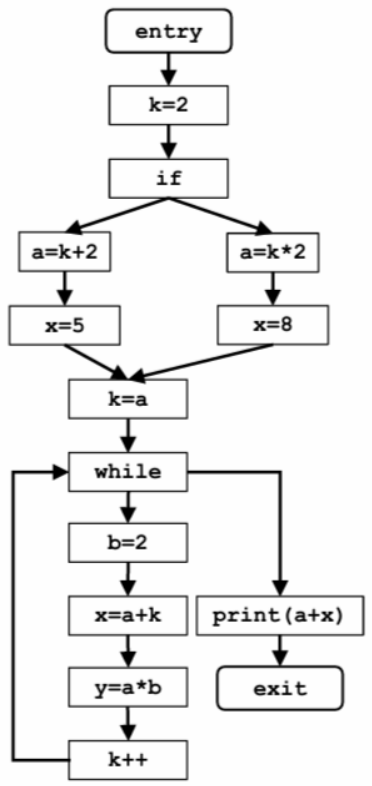
DOM[A] = { A }
DOM[B] = { A, B }

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	OUT[B] = Use[B] ∪ ((^IN[B]) - KILL[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 = 5, x = 8}	k=4, a=4, {x = 5, x = 8}	- -	- -
BB7 (b=2)	k=4, a=4, {x = 5, x = 8}	k=4, a=4, b=2, {x = 5, x = 8}	k=5, a=4, b=2, x=8, y=8	k=5, a=4, b=2, x=8, y=8
BB8 (x=a+k)	k=4, a=4, b=2,{x = 5, x = 8}	k=4, a=4, b=2, x=8	k=5, a=4, b=2, x=8, y=8	k=5, a=4, b=2, x=4+5=9, y=8
BB9 (y=a*b)	k=4, a=4, b=2, x=8	k=4, a=4, b=2, x=8 y=4*2=8	k=5, a=4, b=2, x=9, y=8	k=5, a=4, b=2, x=9, y=8
BB10 (k++)	k=4, a=4, b=2, x=8, y=8	k=5, a=4, b=2, x=8, y=8	k=5, a=4, b=2, x=9, y=8	k=5+1=6, a=4, b=2, x=9, y=8