

	Very Busy Expressions	Dominator Analysis	Constant Propagation
Domain	Sets of expressions	Sets of basic blocks	Sets of basic blocks
Direction	backward: $\text{in}[b] = f_b(\text{out}[b])$ $\text{out}[b] = \bigwedge$ $\text{in}[\text{succ}(b)]$	forward: $\text{out}[b] = f_b(\text{in}[b])$ $\text{in}[b] = \bigwedge$ $\text{out}[\text{pred}(b)]$	forward: $\text{out}[b] = f_b(\text{in}[b])$ $\text{in}[b] = \bigwedge$ $\text{out}[\text{pred}(b)]$
Transfer Function	$f_b(x) = \text{Use}_b \cup (x - \text{Def}_b)$	$f_b(x) = \text{in}[x] \cup x$	$f_b(x) = \text{Gen}_b(x - \text{Kill}_b)$
Meet Operation (\bigwedge)	\cap	\cap	\cap
Boundary Condition	$\text{in}[\text{exit}] = \emptyset$	$\text{out}[\text{entry}] = \emptyset$	$\text{out}[\text{entry}] = \emptyset$
Initial interior points	$\text{in}[B] = U$	$\text{out}[b] = U$	$\text{out}[b] = u$

Very Busy Expressions:

	ITERAZIONE 1	
	IN[B]	OUT[B]
BB1	{b-a}	{b-a}
BB2	{b-a}	{b-a}
BB3	{a-b, b-a}	{a-b}
BB4	{a-b}	\emptyset
BB5	{b-a}	\emptyset
BB6	\emptyset	{a-b}
BB7	{a-b}	\emptyset
BB8	\emptyset	\emptyset

Dominator Analysis:

	ITERAZIONE 1	
	IN[B]	OUT[B]
BB-A	\emptyset	{A}

BB-B	{A}	{A,B}
BB-C	{A}	{A,C}
BB-D	{A,C}	{A,C,D}
BB-E	{A,C}	{A,C,E}
BB-F	{A,C}	{A,C,F}
BB-G	{A}	{A,G}

Constant Propagation:

	ITERAZIONE 1	
	IN[B]	OUT[B]
BB1	\emptyset	$\langle k, 2 \rangle$
BB2	$\langle k, 2 \rangle$	$\langle k, 2 \rangle$
BB3	$\langle k, 2 \rangle$	$\langle a, 4 \rangle \langle k, 2 \rangle$
BB4	$\langle a, 4 \rangle \langle k, 2 \rangle$	$\langle a, 4 \rangle \langle k, 2 \rangle \langle x, 5 \rangle$
BB5	$\langle k, 2 \rangle$	$\langle a, 4 \rangle \langle k, 2 \rangle$
BB6	$\langle a, 4 \rangle \langle k, 2 \rangle$	$\langle a, 4 \rangle \langle k, 2 \rangle \langle x, 8 \rangle$
BB7	$\langle a, 4 \rangle \langle k, 2 \rangle$	$\langle a, 4 \rangle \langle k, 4 \rangle$
BB8	$\langle a, 4 \rangle \langle k, 4 \rangle$	$\langle a, 4 \rangle \langle k, 4 \rangle$
BB9	$\langle a, 4 \rangle \langle k, 4 \rangle$	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle$
BB10	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle$	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle \langle x, 8 \rangle$
BB11	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle \langle x, 8 \rangle$	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle \langle x, 8 \rangle \langle y, 8 \rangle$
BB12	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle \langle x, 8 \rangle \langle y, 8 \rangle$	$\langle a, 4 \rangle \langle b, 2 \rangle \langle k, 4 \rangle \langle x, 8 \rangle \langle y, 8 \rangle$
BB13	$\langle a, 4 \rangle \langle k, 4 \rangle$	$\langle a, 4 \rangle \langle k, 4 \rangle$