

1.

1)

Source	sink	Distance vector	type
a(i)	a(i-1)	1	true
a(i)	a(i-3)	3	True
a(i+2)	a(i)	2	Anti

2) No dependence since the distance of source and sink is larger than the difference between upper and lower bound which is 1.

3) No dependence since $a(3*i)$ always point the memory addresses that are multiple of 3, but $a(3*i-1)$, $a(3*i-2)$, and $a(3*i+2)$ always point the memory address that are not multiple of 3.

4)

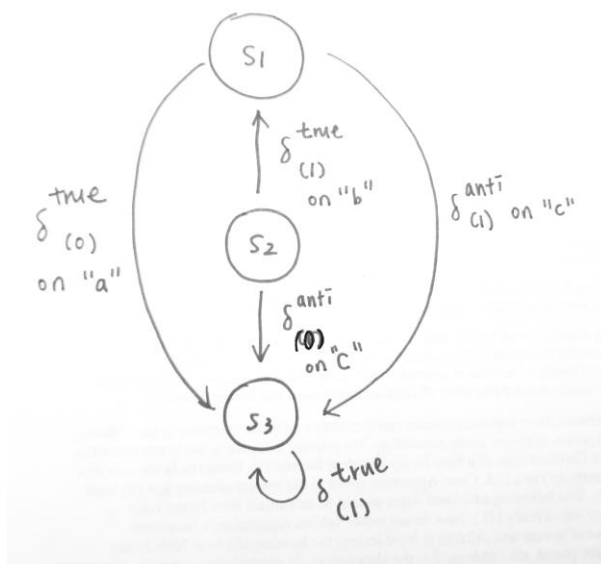
source	sink	Distance vector	Type
a(i)	a(5)	-	True
a(5)	a(i)	-	anti

5)

source	sink	Distance vector	Type
a(10-i)	a(i)	-	True
a(i)	a(10-i)	-	anti

2.

1)



all node are SCC

2)

source	sink	Distance vector	type
a(i)	a(i)	0	true
i=2 S1:a(2)=b(1)+c(3)		i=2 S3: c(2)=c(1)+a(2)	
c(i+1)	c(i)	1	anti
i=2 S1:a(2)=b(1)+c(3)		i=3 S3: c(3) = c(2) +a(3)	
b(i)	b(i-1)	1	true
i=2 S2: b(2)=c(2)+c(2)+7		i=3 S1: a(3) = b(2) +c(4)	
c(i)	c(i)	0	Anti
i=2 S2: b(2)=c(2)+c(2)+7		i=2 S3: c(2)=c(1)+a(2)	
c(i)	c(i-1)	1	True
i=2 S3: c(2)=c(1)+a(2)		i=3 S3: c(3) = c(2) +a(3)	

loop carried dependence – true dep. on S2->S1 & true dep. on S3->S3

vectorization

S2: b(2:99) = c(2:99) + c(2:99) + 7;

S1: a(2:99) = b(1:98) + c(3:100);

for i=2,99

S3: c(i) = c(i-1)+a(i);

endfor;