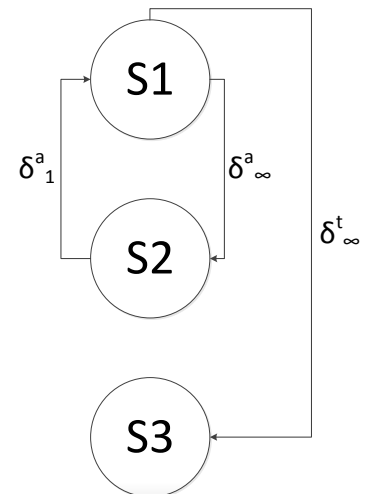


### Question 1

Give the dependence graph for the following loop.

```

    for (i=1; i<n; i++) {
S1:      B(i) = A(i)
S2:      A(i) = A(i) + B(i+1)
S3:      C(i) = 2*B(i)
    }
    
```



Give the distance and direction vectors for the loop-carried dependences in the last question.

Source	Sink	Type	Distance Vectors	Direction Vectors
S2: B(1+i)	S1: B(i)	a	(1)	("<")

Source, sink: Specify the references in the form S3:C(I) or S3: B(i) ...

Type: true, anti, output

Vectors: n-Tuples where n is the depth of the loop nest

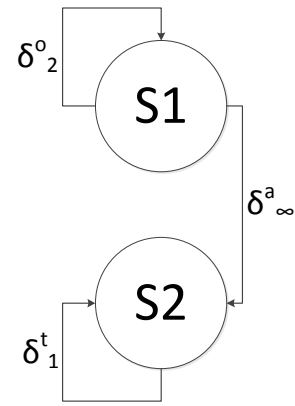
### Question 2

Give the dependence graph for the following loop.

```

    for (i=1; i<n; i++) {
        for (j=1; j<m; j++) {
S1:      A(i)=B(i, j)
S2:      B(i, j) = B(i-1, 2*j)
        }
    }

```



Give the distance and direction vectors for the loop-carried dependences in the last question.

Source	Sink	Type	Distance Vectors	Direction Vectors
S1: A(i)	S1: A(i)	o	(0, *)	("=", "<")
S2: B(i, j)	S2: B(i-1, 2*j)	t	(1, -j)	("<", ">")

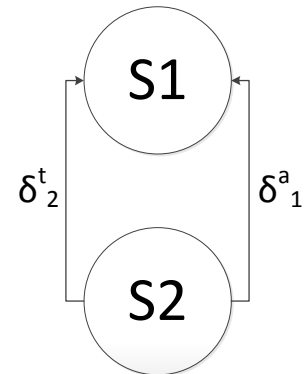
### Question 3

Give the dependence graph for the following loop.

```

    for (i=1; i<n; i++)
        for (j=1; j<m; j++) {
S1:      B(i-1, j)=C(i, j-1)
S2:      C(i, j+1)=2*B(i, j+1)
        }

```



Give the distance and direction vectors for the loop-carried dependences in the last question.

Source	Sink	Type	Distance Vectors	Direction Vectors
S2: B(i, j+1)	S1: B(i-1, j)	a	(1, 1)	("<", "<")
S2: C(i, j)	S1: C(i, j-2)	t	(0, 2)	("=", "<")