

## PDC Assignment 2

Q13a

```
# pragma omp parallel for reduction(+:s)
for (int i=0 ; i<n*100 ; i++){
    s += a[i];
}
```

(b) The previous technique can also be used as there are no dependency changes.

```
# pragma omp parallel for reduction(+:s)
for (int i=0 ; i<100*n ; i++){
    s += a[i];
    b[i] = a ;
}
```

Q#14

```
# pragma omp parallel for
for (i=0 ; i<100*n ; i++){
    for (j=0 ; j<n ; j++){
        a[i] += b[i][j];
    }
}
```

```
# pragma omp critical
{
    c = foo(c);
}
```

.....

(i) AN to AN

Diagram illustrating a network topology with four nodes (0, 1, 2, 3) arranged in a square. The source node is labeled 'S' and the destination node is labeled 'D'. The edges are labeled with coordinates:  $(1,3)$ ,  $(2,5)$ , and  $(3,7)$ . The path shown is from node 0 to node 1, then to node 2, and finally to node 3.

store (1,3)

$$[(2,5), (3,7)]$$

store(2,5)

$$[(0,2), (1,4), (2,6), (3,8)]$$
 $(0, 2) \uparrow$ 
$$[0, 2], [3, 8]$$

store(1,4)

$$[(2, 1), (0, 2), (3, 6)]$$
~~store[2,6]~~

~~(0,11) (1,13)~~  
~~stone (0,11)~~

 $(1, 13) \rightarrow$ 

(1, 13)

stop(1,13)

$$\begin{pmatrix} 0, 11 \\ 1, 13 \end{pmatrix}$$

Store(2, 15)

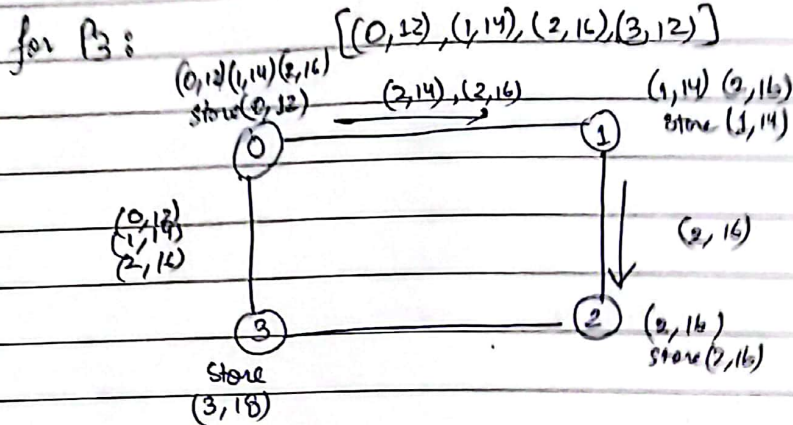
$(1, 13), (0, 11), (3, 17)$

$$(0, 11), (1, 13), (3, 17)$$

Stone (3, 17)

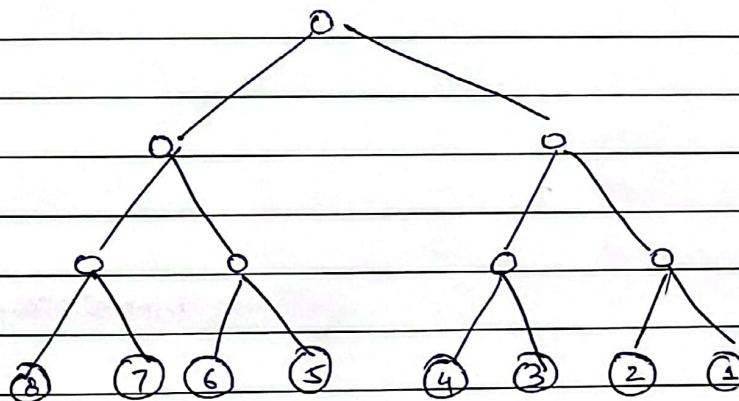


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Q.3

Prefix sum is a technique where we a bunch of numbers and each element represents the sum of the numbers up to that number itself.



0	(8)	→	(8,7)	[8]	LN
1	(7)	→	(7,8)	[15]	HN
2	(6)	→	(6,5)	[6]	LN
3	(5)	→	(5,4)	[11]	HN
4	(4)	→	(4,3)	[4]	LN
5	(3)	→	(3,2)	[7]	HN
6	(2)	→	(2,1)	[2]	LN
7	(1)	→	(1,0)	[3]	HN

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### Level 1

0	(8,7) →	(8,7,6,5)	[8]	LN
1	(7,8) →	(7,8,5,6)	[15]	LN
2	(6,5) →	(6,5,8,7)	[21]	HN
3	(5,6) →	(5,6,7,8)	[26]	HN
4	(4,3) →	(4,3,2,1)	[4]	LN
5	(3,4) →	(3,4,1,2)	[7]	LN
6	(2,1) →	(2,1,4,3)	[9]	HN
7	(1,2) →	(1,2,3,4)	[10]	HN

### Level 2

0	(8,7,6,5) →	(8,7,6,5,4,3,2,1)	[8]	LN
1	(7,8,5,6) →	(7,8,5,6,3,4,1,2)	[15]	LN
2	(6,5,8,7) →	(6,5,8,7,2,1,4,3)	[21]	LN
3	(5,6,7,8) →	(5,6,7,8,1,2,3,4)	[26]	LN
4	(4,3,2,1) →	(4,3,2,1,8,7,6,5)	[30]	HN
5	(3,4,1,2) →	(3,4,1,2,7,8,5,6)	[33]	HN
6	(2,1,4,3) →	(2,1,4,3,6,5,8,7)	[35]	HN
7	(1,2,3,4) →	(1,2,3,4,5,6,7,8)	[36]	HN