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Q4 (i)

As after each iteration  $n = 2^x$  hence time complexity is  $O(\log(n))$

Q4 (iia)

As there are two for loops in outer part of the code the time complexity of that part is  $O(n^2)$ , the function being called inside these loops also has another for loop hence the total time complexity is  $O(n^3)$ .

So the upper bound would be  $O(n^3)$ .

and lower bound would be  $\Omega(n^3)$ .

Q4(iib)

For  $i < j$   $W[i][j]$  counts the sum of  $P[i], P[i+1], \dots, P[j-1], P[j]$

Q4-iic

for (int x = 0; x < n; x++) // n is the size

{

$W[x][x] = P[x]$ ; // copy the initial value into  $W[x][x]$

    for (int y = x+1; y < n; y++)

    {

        Int sum =  $P[y] + W[x][y-1]$ ; //get sum of one value before and current  $P[y]$  value

$W[x][y] = \text{sum}$ ;

    }

}