

Question4:

Part1:

The asymptotic time complexity of the program is $O(\log n)$ as i is being multiplied by 2 in each iteration.

Part2:

a) The outer loop is running n times. The function in the inner loop is running n times as it depends on i and j . So the inner loop overall is running n^2 times.

So overall time complexity of this program is:

Upper bound: $O(n^3)$

Lower bound: $O(n^3)$

b) This code converts 1d array to 2d array by calculating some sort of a prefix sum and stores it in W as an upper triangular matrix