Theoretical Analysis of Multiply

let 
$$C(n)$$
 be the number of calcutations needed to do the function multiply for the array of  $n$  elements

 $C(1) = I \times I' + b_t \text{ Product}(1) \times I' = I + (I \times 4 \times I) \times I$ 

do the function multiply for the wife 
$$C(1) = I \times I' + dot Product(1) \times I' = I + (I \times 4 \times 1) \times I$$

$$= 5$$

$$C(2) = I \times 2^{2} + dot Product(2) \times 2^{2} = 4 + (I \cdot 4 \times 2) \times 2^{2}$$

$$= 36$$

$$C(2) = I \times 2^{2} + dot Product(2) \times 2 = 4 + (1 + (2) \times 2)$$

$$= 36$$

$$C(3) = I \times 3^{2} + dot Product(3) \times 3^{2} = 9 + (I \times 4 \times 3) \times 3^{2}$$

$$= 117$$

$$C(h) = h^2 + (4h) \times h^2 = h^2 + 4h^3 \Rightarrow 0 (h^3)$$