

I pledge my honor that I have abided by the Stevens Honor System.

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1. To generate the binary numbers in order using binary reflected Gray codes, when you copy L_1 to L_2 , you wouldn't reverse L_1 . you would just append L_1 in regular order.

2.

<u>n</u>	<u>m</u>	
72	93	
36	186	
18	372	
9	744	+744
4	1488	
2	2976	
1	5952	+5952

$$744 + 5952 = 6696$$

- 3a. Quicksort performs its worst case running time for arrays that are already sorted or in reverse order.

b. $\Theta(n^2)$

4.

$$C = 22 \times 10^4 + 759 \times 10^2 + 160$$

$$= 2496060$$

$$C_2 = 22 \times 11 = 242$$

$$C_0 = 05 \times 32 = 160$$

$$C_1 = (22 + 05) \times (11 + 32) - (C_2 + C_0) = 27 \times 43 - (242 + 160) = 1161 - 402 = 759$$

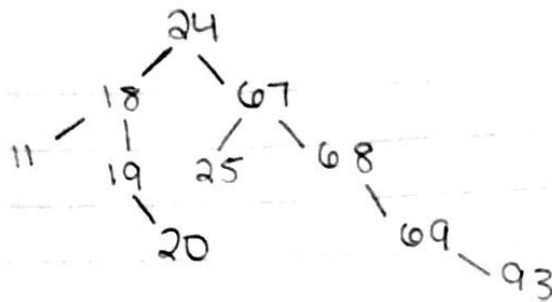
$22 \times 11 = 242$	$05 \times 32 = 160$
$C_2 = 2 \times 1 = 2$	$C_2 = 0 \times 3 = 0$
$C_0 = 2 \times 1 = 2$	$C_0 = 5 \times 2 = 10$
$C_1 = (2 + 2) \times (1 + 1) - (2 + 2) = 4$	$C_1 = (0 + 5) \times (3 + 2) - (0 + 10) = 15$
$C = 2 \times 10^2 + 4 \times 10 + 2$	$C = 0 \times 10^2 + 15 \times 10 + 10$

$$27 \times 43 = 1161$$

$$C = 8 \times 10^2 + 34 \times 10 + 21$$

$$C_2 = 2 \times 4 = 8, C_0 = 7 \times 3 = 21, C_1 = (2 + 7) \times (4 + 3) - (8 + 21) = 34$$

5.



- 6a. 10, 8, 5, 3, 5, 2, 1, 7, 1, 6
 b. 3, 5, 5, 8, 1, 2, 10, 1, 7, 6
 c. 3, 5, 5, 1, 2, 8, 1, 6, 7, 10
 d. 5
 e. 5
 f. 4
 g. 3
 h. 6

- 7a. $\Theta(\sqrt{n})$
 b. $\Theta(\sqrt{n} \log_4 n)$
 c. $\Theta(n)$
 d. $\Theta(n^2)$
 e. $\Theta(n^3)$

- 8a. $T(n) = 6T(\frac{n}{3}) + \Theta(n^{3/2})$
 b. $\Theta(n^{\log_3 6})$