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CSE: 122 Homework 2

1 Homework 2

1.1 Problem 1

line #	cost	# of times
1	C_1	1
2	C_2	$n+1$
3	C_3	n

$$T(n) = C_1 + C_2 + n(C_2 + C_3)$$

1.2 Problem 2

line #	cost	# of times
1	C_1	1
2	C_2	$n+1$
3	C_3	$n(n+1)$
4	C_4	n^2

$$T(n) = C_1 + C_2 + n(C_2 + C_3) + n^2(C_3 + C_4)$$

1.3 Problem 3

line #	cost	# of times
1	C_1	1
2	C_2	$n+1$
3	C_3	$n(n^2+1)$
4	C_4	n^3

$$T(n) = C_1 + C_2 + n(C_2 + C_3) + n^3(C_3 + C_4)$$

1.4 Problem 4

line #	cost	# of times
1	C_1	1
2	C_2	$n+1$
3	C_3	$\frac{(n+1)(n+2)}{2} - 1$
4	C_4	$\frac{(n+1)(n+2)}{2}$

$$T(n) = C_1 + C_2(n+1) + C_3(\tfrac{(n+1)(n+2)}{2} - 1) + C_4(\tfrac{(n+1)(n+2)}{2})$$

1.5 Problem 5

line #	cost	# of times
1	C_1	1
2	C_2	$n+1$
3	C_3	$\frac{n(n+1)(2n+1)}{6} + n$
4	C_4	$\frac{n^2(n^4+6n^2+5)}{6}$
5	C_5	$\frac{n^2(n^2+1)(n^2+2)}{6}$

$$T(n) =$$
$$C_1 + C_2(n+1) + C_3(\tfrac{n(n+1)(2n+1)}{6} + n) + C_4(\tfrac{n^2(n^4+6n^2+5)}{6}) + C_5(\tfrac{n^2(n^2+1)(n^2+2)}{6})$$