NCR ATLEOS

SORU 1

Master theorem

$T(n) = a \cdot T\left(\frac{n}{b}\right) + f(n)$ $\quad f(n) = \Theta(n^d \log^k n)$

$a < b^d$ $\Theta(n^d)$ $\quad a = b^d$ $\Theta(n^d \log n)$ $\quad a > b^d$ $\Theta(n^{\log_b a})$

a/ $T(n) = 9T(n/4) + n^2$

$a = 9 \quad b = 4 \quad d = 2$

$9 < 4^2 \Rightarrow \Theta(n^d) \Rightarrow \underline{\Theta(n^2)}$

b/ $T(n) = 3T(n/3) + \log(n)$

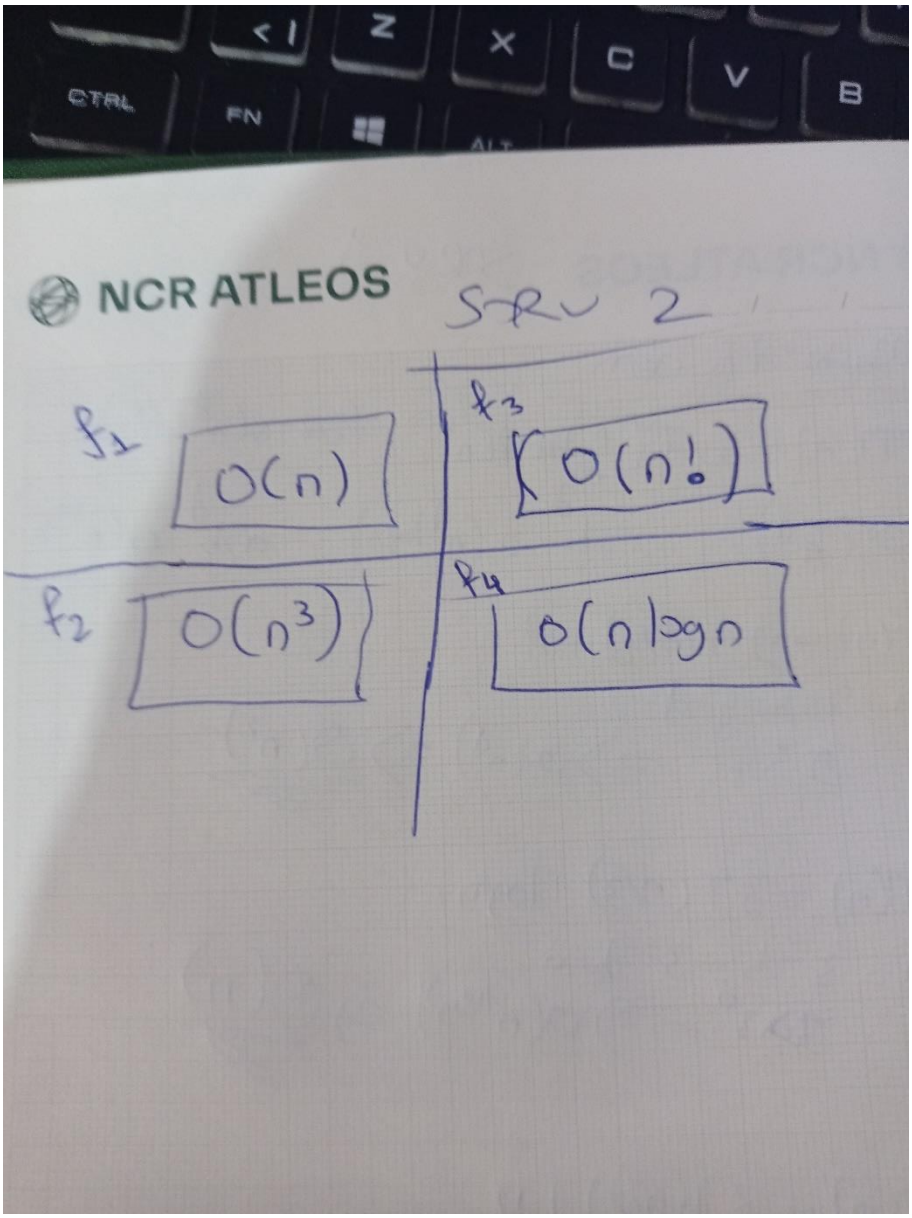
$a = 3 \quad b = 3 \quad d = 0$

$3 = 3^0 \Rightarrow \Theta(n^{\log_3 3}) \Rightarrow \underline{\Theta(n)}$

c/ $T(n) = 3T(n/2) + n$

$a = 3 \quad b = 2 \quad d = 1$

$3 > 2^1 \Rightarrow \Theta(n^{\log_b a}) \Rightarrow \Theta(n^{\log_2 3}) \Rightarrow \underline{\Theta(n^{1.58})}$


NCR ATLEOS
SRV 2
f_1
O(n)
f_3
O(n!)
f_2
$O(n^3)$
f_4
O(n log n

NCR ATLEOS

Soru 3

	f(n)	g(n)
O	n^2	n^3
Ω	$n \lg n$	n
Θ	1	$3+\sin n$
Ω	3^n	2^n
Θ	4^{n+4}	2^{2n+2}
O	$n \lg n$	$n^{105/100}$
O	$\lg \sqrt{n}$	$\lg n^3$
O	$n!$	$(n+1)!$

$f(n) = \Theta(g(n)) \Rightarrow$ aynı büyüme derecesi ise

$f(n) = O(g(n)) \Rightarrow f(n)$ daha yavaş ise

$f(n) = \Omega(g(n)) \Rightarrow f(n)$ daha hızlı ise

NCR ATLEOS

Soru 6

$T(n) = T(n-2) + 2n$

$T(n-2) = T(n-4) + 2n-4$

$T(n-4) = T(n-6) + 2n-8$

$T(n-6) = T(n-8) + 2n-12$

$T(n-8) = T(n-10) + 2n-16$

$T(n) = T(n-10) + 10n - 40$

$T(n) = T(n-8) + 8n - 24$

kural = $T(n) = T(n-i) + i \cdot n - i \cdot \left(\frac{i}{2} - 1\right)$

$i = n \Rightarrow T(n) = T(0) + n^2 - \frac{n^2}{2} + n$

$T(n) = T(0) + \frac{n^2}{2} + n$

$T(0) = 0$ ise

$T(n) = \frac{n^2}{2} + n$