NAME: Austher Vermer Section: I: ROLL No: 12.

Tutorial - 4.

主丁(n)=3T(1/2)+12 => T(n) = aT (n/b)+d(n) 0 > 1,6>1 On comparing az3, bz2, f(n)zh2 C = lay 6 a = lay 23 = 1.584 nc= N1.584 < N2 · · f(m) > nc ·· T(n)z O(n) 3. T(4)=T(4/2)+24 = az1, bz2 f(n) 2 2h C= logo a - log 21 = 0 haz hoz 1 f(n)>nc T(11) = 10 (24) 5. T(n)=16T(h/4)+11 2) az 16, bz4, f(u) 2 h (2 logy 16 z logy (4)2 z) ncrnz f(n) = n2 f(n) (nc T (u) = 0 (un)

IT (M=2T (M2)+ Mlog n

3 a z 2, b z 2, f (m) z Mlog n

C= logy 2 z 1

io N c z N z n

Sinc , M c n

io f (m) < n c

io T (n) z O (m)

2. T(N) = 4T(N/2) + N²

2) 02 1, b>1

02 4, b22, f(N) = N²

Cz legg 4z 2

is 1 c = 1 2 f(n) = 1 2

oi T(h) = 6(n² legz h)

4. T(n) = 2hT(h/2)+hh

2) az2h, bz2, f(n) = hh

Cz leog, 9z loog 2h= n

nc = hh

00 f(n) = nC

00 T(n) = 0 (12 log2h)

6: T(n)=2T (n/2) + h legh 3 a22, b22, f(n)=2n dogh C= legy2 21 in nc 2 n 2 n since, ndegh>n in f(n) h c in T(n) = O(n legyh) 2: T(n) = 2T (n/y) + n 0.51 C2 deg b c2 deg y 2 = 0.5 in nc 2 n 0.5 since, n 0.5 < 6 n 0.51 f(n) > n c in T(n) = O(n 0.51)

2T(11)=05T(4)+1 a 20.5, b22 Since, acc to Master theorem a 21, but how a is 0.5 So ver connect apply master the forem. 11. 4T (M2) + leag 1 3) az 4, bz?, y(un) z logn Cz legy az legy z 2 " in Czn2 of (in) = leagn Since leggh < hr · · f(u) < nc · · T(u)= (u) = 0 (m2) 13. T (n)=3T (n/2)+1 Ad az3, bz2, f(1)zh Cz dogla zlog23 = 1.5849 · n° > n1.5849 as M<115849 0- f(un) 2 116 :T (un) 2 b (un 5849) 15. T(u)=4T(u/2)+ n - az 4, b = 2, Cz legg = leggy 4= 2 · o No No i. CM < M? (Jonany sonstant) 0. f(un) € MC

: T(n) z b(m)

10. T(m) = 16 T (m/4) + m!

30 a 2 16, b 2 4, f (m) = m!

- C 2 loog b a 2 loog 16 2 2

Now, n' = n'

As n!> h2

- T(m) = 0 (m!)

12 T(m) = sqrt (m) T (m/2) + loog n

2 Ja, b 2 2,

- C 2 loog b a 2 loog 2 Ja 2 1 loog n

- 1 loog 2 h loog (m)

- 2 (loog n)

- (loog n)

- (loog n)

14. T(n) = 3T(n/3) + sort (n)

3 a=3, b=3, C= deg b 2 deg 3, 1

As sort (n) < n

i f(n) < n

i T(n) = 0 (n)

16-T(M)=8T (M/4)+n logn

23 az3, bz 4, f(M)=n logn

Cz log b⁴z log 43 z 0.792

i- no.792 (nlogh

i- T(M)=0 (n log n)

J. T (2n) = 3T (2n/3) + 2 3 a 2 3, b 2 3, C2 deg b a 2 deg 3 2 1 y(4n) = 2n/2 i. 1 ~ 2n/2 1 As 11/2 L 1 i. f(4n) < 10 C i. T(1n) = 0 (1n)

19 T (m) = 4T (m/2) + 11/logh 2) 924, 622, f(m) 2 11 logh Cz logg 92 logg 422 mcz na i. n (m) 20(m)

21: T(w) = 7T(n/3) + n°

1 az 7, bz 3, f(n) z n°

C = log b az log 3 221.7712

n° = 1.7712

n 1.7712

n' + 1/2

18. T(n) = 6T(n/3) + n² logn
20 az6, bz3, Cz loggaz logg 6z/6309
n ez n/6309
As n/6309 (n² logn
... T(n) = 0 (n² logn)

20 + (in) 264 T (in/8) - in log in

20 + (in) 264 T (in/8) - in log in

C2 log in 2 log in 4 2 log in (b) in

C22

is in 2 in

is in log in > in

is T (in) 26 (in log in)

22: T(1)2T(1)2T(1)2) + h(2-(0)1)

3 a21, b22, C= legga - legg120

in (2-(0)1) > h6

i. T(1)20(h(2-(0)1))