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	Assimment it
	Assignment i I
0	what do you cenderstand by Asymptotic retation selationship. Defone deforent trymptotic notation with example.
-	relationship. Delone Selbrent trymptotic notation
	with example.
2)	Asymptotic relations notestions are a set
	of mathematical tools used to describe The
	I behaviour of function as their imput sizes
	approaches I amonity. They are often used
	to analyze the time a space templementy of
	algorithme.
	There are B main types of asymtotic motations.
	Big Onotection (o). This noteition of to vides an
	upper sond on the growth sate of a for
	Big Onotestion (o): This noteition of so vides an upper sond on the growth sate of a fin It represents me worst as of an algorithm, which is the manimum amount of time it lould
	which is the marymen amount of time it will
	take to complete tor ere, all sug the
	a 7c of O(n), we meen the marky with the size of
	or TC of O(n), we mean that the algorithm's sunning time goes at most dindurly with the size of its first.
	en: - intsum20
	for (int icligen, itt)
	3 Sunt = 23
	1/m TC is O(n).
(2	Onega nestation (SL): This notation provides a lower
	Onega nextotion (SL): This notation provides a lower bound on the growth sate of a fine I represent the best-case aint of time it could toke to complete
	the pest-cas aint of time it could toke to complete

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	for ex. if we saw that an alass then has a 7 C of Sch)
	for ex if we say that an algorithm has a 7 C of sch)
	Six of of the process of least linearly with the
	Six of the input
	3) Theta notation (0): This notation provides both
1	apper & lower round on the growde valeda
	on It represent the ally-case sunning time of
	algorithm, which is the Perpetto amount of
	Lyme et would tak to complete. For Jenample
	Aire of we say that an algorithm to a time compleredty
	of IO(n) Two neam to that qualgo's running
	I timo grows linearly with the size of its inputs, &
	thosard no facter or slower growth rates.
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	OR CORPORATE SON
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(What Should be the TC of: for WCi21 ton) J 2i=i+2? The TC of the loop is can be determined by
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(What Should be the TC of: for W (i21 ton) J 2i=i+2? The TC of the loop is Can be determined by Counting the no of iterations that it will executed Cfn of the imput size of in!. Here the value of i is being adentited in each iteration.
((What Should be the TC of: for W(i21 tom) I i = i+2 } The TC of the loop is can be determined by counting the no of Herotome and it will executed c for I of the imput size of in! there the value of i is being solerated in each iteration, loop terminaltes when i becomes > n
(What Should be the TC of: for WCi21 ton) I i = i+2? The TC of the loop is can be determined by counting the no of iterations and it will executed cfu of the input size of in! Here the value of i is being adenoted in each iteration, loop terminates when i becomes > n 2x2n exxalagin
(What Should be the TC of: for W(i21 ton) I i=i+2? The TC of the loop is can be determined by counting the no of iterations and it will executed cfn of the input size of 'n'. Here the value of is being solerated in each iteration, loop terminates when i becomes > n 2 × 2 n = 1 × 2 loop(n)
	What Should be the TC of: for W(i21 ton) I i=i+2? The TC of the loop is can be determined by counting the no of iterations and it will executed cfn of the input size of 'n'. Here the value of is being solerated in each iteration, loop terminates when i becomes > n 2 × 2 n = 1 × 2 loop(n)
	What Should be the TC of: for W(iz1 to n) I i = i+2? The TC of the loop is Can be determined by Counting the no of sterations that it will onecuteds Cofu of the imput size of 'n'. Here the value of i is being solaristed in cach steation, loop sterminaltes when i becomes > n 2 × 2 m or x 2 log(n) × log 2 * 2 log(n) i x = log(n) o: log a = a I
	What Should be the TC of: for W(i21 ton) I i=i+2? The TC of the loop is can be determined by counting the no of iterations and it will executed cfn of the input size of 'n'. Here the value of is being solerated in each iteration, loop terminates when i becomes > n 2 × 2 n = 1 × 2 loop(n)

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0	7 (m) = 9 37 (n-1) of n >0. otherwise 13
	T(m) = 937 (n-1) if n>0, otherwise 13 The TC of Recorsive for can be determined by
F	analyzing the most for alle't makes as a fund
	no Input Ising 'n'.
	Each call to TCm) result in 3 calls to T(m-1)
2,	centil n'ocache o at which point the for
3	returns of This fur can be represented as using tree
	T(n)
	The state of the s
	1 (n-1) -(n-1) -(n-1)
A	Tan-7)
2	76-2)
	(m-2) T(m-2) T(m-2) T(m-2) T(m-2) T(m-2) (m-2)
	The short of the dead
	The lotes no of case is 3 m.
	The lates no of asso is 3 ^m . i. 7(n) = \$0(3 ⁿ).
	00 (Cn) 2 \$ O(3 ^r).
0	7601 2 S 07(0-1)-1 00 +11 1 1 2
<u>u</u>	Och ut con and of thereis I s
	The 2 \ 27(n-i)-1 of n >0, otherwise 1 } Onp ut sign, cash \ ((n) south in 2 calls to 7(n-i) until n peaceso, at point it results 1.
	TMI)
32	
	(m-1) 7m-1)
_	
	(m-2) Th-22 Tn-22
+ 10 00	
in light	t 'n' at each lail 2 nocles are created Total for calls is 2°, 7 C = O(2°) & O(1) = O(2°).

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0	wood should be the TO of
	what should be the TC of
	while (st=n) q
	52 544 6
	52 51is Printf("#");
	3
)
	The TC of the given loop to O (Ja)
	The loop iterates until the value of S belong
	greater than n, at cash 9 teration ? is increamented
	1 TO STE LOSTING TO CHI ST MAY NOT MENOTIONE
	80, vived to reach S>n, & st(i+1)>n
	$\frac{32+3-2(n-3)}{n}$
	this can be solved by using quadratic formula.
d	Void function (int 4) {
	ent i. Countzo:
	int i, Count 20; Lor (i=1; i+i <= n; i++)
	2 C Aynt ++ 2
	The loop Herates from 1 =1 to 1 *2 = 2 n. (no loop
	will exercite torale values of i to largest int.
	12 960 Jm.
	50 TC2 O(Jn)
0	vola function (guta) }
	9mt 0, j, k, Counto; for (; 2 m/2; g c 2 m; g+t) }
	for (12 m/2; 122 m) 174) (
	for (jel; jezn; jej ke) { for (x=1; ken; k = k+2)
	(h-1, RE20; h = 242)
	3 7 3

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	Te of O(m2 log(m))
	The for consiste of 3 norloof lands there iterates
	Augustion alos 6:82 the History Takes A.
	The for consists of 3 neiglood loops there to be of the start it end to meriables in the start it only iterated and iterates from 140 m; in paramy
	2 which when long (n) Heration, and some one
	2. which yakes leg 2 (n) iteratione and some goes for the III loop. i.C. log 2 (n).
	100 F. M. 20 (202)
	iv (c z O(m² log(n))
0	function (int n) ?
4	U (n == 1)
>	seturn:
	for (i=1+on) & Sor(i=1 ton) }
	return; for (i=1+on) & Sor(j=1+on) & print(1+1);
	3
	function(n-3);
	1
	The fir is a socursius further is alled with any 2-3
	it conting tose nested loops that iterates our ??;
	the least iterates not mes & the paner or ale
	so min times for both bols. At each many call
	que volvo of m is decremented 3. The fu will be called a total of m/3 times recursively certifical. TC is O (m² (m/3)²).
•	Called a total of m/3 times recursively certi(m=1.
80	10/5 O(n2((n/3)2).
0	void function (got m) 5
	for (921tom) 5
	fox 121 ton, 1=7+i)}
	fox fz 1 fon, j= j+i)} print(~ * 1)}
	3
	}

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	the fr & Cheirage of the select Herales sees
	The for & Consists of the o negled loops that iterates ones.
	Horacter our m/i timb
	of the said will all the said will said will
	log(n) + 0.05 + 0(1/n) $7C = O(n log(n)).$
	$TC = O(n \log n)$
_	
9	to the for mix & com, what is the asymptotic veletionship
	The state of the s
	Value of C & m for relation holds.
	value of C & m for relation holds.
	nx a pound or about y ch.
	nx a bound prabon by ch.
	U
The state of	