Alg	porthma	lecture-2
	Homew	

At loopmysical

Proof :-

Time 2, 6 to 10 are not functions or loops only operations, so their complexity is O(1).

For line 5, 61° loop runs from 0 to b, hence it runs (b+1) times.

For line 4, 6 j° loop runs from 6 to n & step b, hence it runs

(n-i) +1 times.

For line 3, (i) loops runs 1 to n, Do it runs 'n' times.
For total number of iterations, we need summetion of all loops' iterations.

For (; le (1° loops, total Herations = (n-iz+1) (k+1)

Summation from 6 is loop, and using identifies

$$=\sum_{i=1}^{\infty}\left(\frac{m-i}{k}+1)(k+1)\right).$$

$$= 0 \left(\frac{1}{2} + 1 \right) \left(\frac{n^2 - n^2 - n}{2} + n \right) = 0 \left(\frac{k+1}{2} \right) \left(\frac{m^2 - n}{2k} - \frac{n}{2k} + n \right)$$

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-	Ot can ignore n, as m² is dominant torm,
-	Do drowwan
	0 (b+1) [n2 n +n]
-	$0 (b+1) \left[\frac{m^2}{3b} + \frac{m}{3b} + m \right]$
-	= 0(m² (k+1)) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
-	26
-	= O(n2) as (n2) is dominant term
	their complement is 8000
	Coopmiyery 2 algorithm and and it is and
IS.	For line H & 12 Rock home from x to n & Aleb be handowed
	wine 2 to 4 and 6, do 9 are single operations, thus
	takes O(1) time.
	For line 5 (while loop) it runs from i 4 mass and i is
	adoubled reach iteration. Amittantil is riskness later not
	A) it rums from 1 to i, squance =1, 2, 4, 8, 10
1	Apr & iterations, value of i = 2 bill 1000
	$max is m \cdot n \cdot m = n^3$
	Do, 124 4 n3 we have about it most motormule
	Tabe log both sides
	log (2b) = log (n3)
	b log_(2) 4 3 log_(n)
	b 4 3-log_(n) = +1+1)2
	Using identities, we can say time complexity in 0 (3 log 2(n)
	= 0 (log n) (3 can be ignored)
	[62 0 80 (0+0)0-

-a -5m -5m

1 (1+1)9=

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03	Article 4
À3	a) Mon-recursive complexity of a single call to locuousue- myology with an input of size & 3
	myory with an input of size & 3
	LEWIS COMS COMS
(2)	For non-racuraive complexity we can consider Recursion myrory's
cma	time complexity as O(n).
11/10	There's no other function or looks in code to for
10000	loop in line 6, time complexity will be o(n) as it runs from
	C=1 to m-1. dian dianting com
	So, time complosity will summate !
	0(n)+0(1)+0(1)+
	= 0(n) = Martia 2-10
	Do, non-recornive complexity is O(b) for size be
424	all wast a summarable that approximate time a street to
	Reautism that, Recursion Mystery = RM
	Int I -m on Rm(4) sound it dead to dead to
	april (1-11) amorald windling
	RM(1) RM(2) RM(3)
	RMCI) RMU) (RMCE)
	(A) F (I-m) F RM(I)
	For m=1, subcalls = 4 calls
	n=2, subcalls = 2 calls (-m) (-m)
	n=3, subcalls = 1 call
	M=4, subcalls = 1 call. (-10) T (2-10) T
	The state of the s
-	the on he summed on 1+2+3 1 (m-1).

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<u> </u>	Abetch
Coulon	100 To Manigement man arounded ment in the
	EN PART ENTER ON PARTY OF THE P
	RM(1) RM(2) RM(3) RM(4)
o hokowy	RM(2) RM(2) RM(3)
	RMCI) RMW RMC2) AMCI) RMCU RMC2
	I on about in advant or making on a marine of
ment a	Por n-1, subcallo = 8 callo
	n=2, subcally = yealls
	n=3) subcolls = 2 calls the principle of all
	n=4, subcalls = 1 call 3 + (1) 8 + (m) 8
	n=5, subcallo = 1 call
٨	el esta non tel 19 AL etixultus ourrence al
<u>d</u>	
7	for RM(n). 12 for n-1. Time
	Complisary secomes O(n-1) times.
	RIVED REMAIN RIVERS)
	TON) (I) (I)
	() M T(m-1) T(m)
	For m=1 subcolla : 4 calls (calls)
	T(n-2) T(n-1) Move alloyled 15=11
	T(m-3) T(n-2)
	7 (m-3) 7 (m-2) Mast - allorius N=M
	2
	There are the second of the se
	This can be summated as $1+2+3+(n-1)$. Equation becomes = $T(n) = 2$ $T(n-1) + O(n)$
	$\frac{2}{100000000000000000000000000000000000$