	LONGEST COMMON SUBSEQUENCE (LCS)
->	A subsequence is any subset of the elements of a sequence
	that oneintains the same relative order.
_ `	If A is a subsequence of B, this is denoted by DCBACB
_ `	Example! If A = ay a, a, ay a, the sequence A' - azayas
A .	is a Subsequence of A
	A"= a2 a1 a5 ès not a subsequence af A bcot a2 and a1
	are reversed.
>	The logest common subsequence CLCs) of two sequences
	A and B is a sequence c such that CCA and CEB
	and 101 ès maximorn.
\rightarrow	Example: PEXPLY RE TETE ET - TE
	A = abacdae B = cadcddc
	20050) = 24 X 2 X 25 X 20 X 2 X 25 X 2 X 25 X 2 X 25 X 2 X 25 X 2 X 2
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	10501 - F-3 2-1 no
100	Applications of LCs:
	1. Molecular biology: The Tillian
	2. File comparison.
	3. Screen desploy de la
	は、ではついてことの 15 N×U+ StSu toward たちた
\rightarrow	/m LC3 problem, four sequences
	x= (21, 22, 2m) and
	7 = (4, 42) 4n / are airen
\rightarrow	
	the longest Common Sabsequence problem.
	THE PROPERTY OF THE PROPERTY O
	Character tong a Wondert Colon
	Theorem: Optional Substructure for 1 CS
4-14	ALL 1 - MIXI, Tony and lo-
	and Z=(Z1, Z2,, Zx) be any Lcc of m and y
15.5	of R and y
4	

	1. If $n_m = y_m$, then $Z_K = n_m = y_m$ and Z_{K-1} is an LCS of X_{m-1} and Y_{n-1} .
	X_{m-1} and Y_{n-1}
-	a. If $x_m \neq y_n$, then $x_k \neq x_m$ implies that I is an LCS of
	xm-1 and Y.
1	3. If am # yn, then Zx # yn complies that Z is an LCB of
	x and Yn=1.
	x and Yn-1.
The state of the s	step 2! A recursive solution
→	There are either one or two subproblems to study when finding
	an LCS of x = (21, 22,, 2m) and y = (y1, y2,, yn)
	If an= yn then find the LCS of Xm-1 and Yn-1 and append
	In = yn to this to get the LCS of x and Y.
	If an + you
	(a) find the -LCS of Xim-1 and 7
	(b) Find the Ecs of x and Yn-1.
- 11	그러는 이렇게 되는 것이 하는 것이 되었다. 그는 사람들은 이 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은
	whichever of these two Los's is longer is an Los of of
2.5	그는 이 중앙에서 보다는 그 그 그 모든 이 없는 어떻게 되었다. 그 그는 그는 그는 그는 그를 모든 그는 그를 모든 그를 보는 것이다. 그 사람들이 그 사람들이 그 모든 그를 보는 것이다.
7	Let Cli, j] be the length of an LCS of the sequences
7	to and Yi. If either i=0 or j=0, one of the sequences
<i>F</i> ,	as length 0. So the LCs has length 0.
-> 7	The optimal substructure of the LCS is:
300	
	$C[i,j] = C[i-1,j-i]+1 \qquad if i=0 \text{ or } j=0$ $C[i,j] = C[i-1,j-i]+1 \qquad if i,j>0 \text{ and } x_i=y_i$ $max(c[i,j-i],c[i-1,j]) \qquad ef c,j>0 \text{ and } x_i\neq y_i$
	ese: 17=0 ese: 1=17+1: 2 0 = 0
	$max(eF: 7, 2F) \rightarrow 0 \text{ and } xi = yi$
	of cijo and xi + yi
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5	tep-3: Computery the length of an LCs.
#	ere two sequences x = (x1, x0, , Kon) and
Y	= () . 40 4)
6	= (y, ya,, yn) are coppets.
	force ceri, j. values in a table closer, o o]
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	tional subproblem solution
74	phone the length of one los of chables: c[m,n]
Co	House the least of on the of
	Haine the length of an LCS of x and p.
19.	

		The second second
LCS-	-LENGTH (X,Y)	
1. 07	+ length [x]	3 1000 1-50
2.0	+ length [r]	
3. fo	or c+1 to on	
4.	do c[i,o]+o	To all the second
5. for	or je o ton	
	do clo,jj+o	
7 for	rit 1 to on.	
Dillow of 8. section	do for jel don	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
9.	do if x = y;	N 70 00 12 00
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12.	else of clo-1, j] > cli,	
13.	then clijj+cl	
14,	"→[i,7]d	
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15.	c[ij]←c	The Control of the Service and December 2 to the Control of the Co
16.	b[ij] + "	
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-> 2.5.4.	is (B,C,B,A) of X and	X. The state of th
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4	ach entry of teste tesces OCI) Incog teme of this procedure is	Scanned by CamScanner
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Step-4: Constructing an LCS The 6 table is used to construct an LCS of X=(xy, xz,, xm) and Y=(yi, yz,, yz) > are begin at b[m,n] and trace through the stable followed by arrows. > afen we encounter a " x" in entry b[i,i], it implies that x; = y; is an element of the LCS. The elements of the LCS are encountered by reverse order but we prints out an LCS of x and y an forward order. PRINT-LCS(b, x, i, j) 1. if i=0 or j=0 2. then retiern 3. if b[i,j] = " x" 4. then print-LCS(b, x, i-1, j-1) 5. print a: 6. else if b[i,j] = " x" 4. then print-LCS(b, x, i-1, j-1) 8. else print-LCS(b, x, i, j-1) 2. then print-LCS(b, x, i, j-1)
X=(44, 42,, xm) and Y=(y1, y2,, y2) > cove begin at b[m, n] and trace through the stable followed by arrows. > offer one encounter a " x" in entry b[i,j], cit implies that x:=y: is an eliment of the LCS. The elements of the LCS are encountered in remove order but we prints out an LCS of x and y in forwoord order. PRINT-LCS(b, x, i, j) if i=0 or j=0 3. if b[i,j] = " x" 4. then retiern 3. if b[i,j] = " x" 4. then print-LCS(b, x, i-1, j-1) 5. print as 6. else if -b[i,j] = " i" i" 7. then print-LCS(b, x, i-1, j)
> cove begin at b[m,n] and trace through the stable followed by arrows. > asken one encounter a " x" in entry b[i,i], it implies that X; = Yi is an eliment of the LCS. The elements of the LCS are encountered in removes order But we prints out an LCS of x and y on forwoord order. PRINT-LCS (b, X, i, j) 1. if i=0 or j=0 3. if b[i,j] = " x" 4. then rettern y. then print-LCS (b, X, i-1, j-i) 5. print a: 6. else if b[i,j]=" x" Then print-LCS (b, X, i-1, j)
followed by arrows. - oxfer we encounter a " " in entry bling, it implies that xi = yi is an element of the LCS. The elements of the LCS are encountered in reverse order But we prints out an LCS of x and y an forward order. PRINT-LCS (b, X, i, j) 1. if i=0 or j=0 2. then return 3. if b[inj] = " x " 4. then PRINT-LCS (b, X, i-1, j-i) 5. print xi 6. else if b[inj] = " x" Then PRINT-LCS (b, X, i-1, j)
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The elements of the LCS are encountered in reverse order but we prints out an LCS of x and y an foreword order. PRINT-LCS (b, X, i, j) 1. if i=0 or j=0 3. if b[ij] = "K" - 1 4. then print-LCS (b, x, i-1, j-i) 5. print a: 6. else if b[ij] = "T" then print-LCS (b, x, i-1, j)
The elements of the LCS are encountered in reverse order but we prints out an LCS of x and y an foreword order. PRINT-LCS (b, X, i, j) 1. if i=0 or j=0 3. if b[ij] = "K" - 1 4. then print-LCS (b, x, i-1, j-i) 5. print a: 6. else if b[ij] = "T" then print-LCS (b, x, i-1, j)
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PRINT-LCS (b, X, i, j) 1. if i=0 or j=0 2. then retiern 3. if b[ij] = " K" 4. then PRINT-LCS (b, X, i-1, j-i) 5. print ai 6. else if -b[ij] = " f" then PRINT-LCS (b, X, i-1, j)
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3. c'f b[i/j] = " K" - 7 4. then PRINT-LCS (b; x; i-1, j-i) 5. prigt a: 6. else if b[i/j] = " j" Then PRINT-LCS (b, x, i-1, j)
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4. then PRINT-LCS (b, x; i-1, j-1) 5. prigt a 6. else if -b[ij] = "i" Then PRINT-LCS (b, x, i-1, j)
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7. then PRINT-LCS (6, X, i-1, j)
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