Ψ 1 Ψ	<s></s>								
<w> = abb a <</w>	W>bb								
Write all strings	that are in this langu	uage and that contain	n seven or fewer cha	racters.					
	simple <s></s>	variations of W	\$ <w> combos</w>						
	\$	abb	\$abb						
	\$\$	aabbbb	\$\$abb						
	\$\$\$		\$\$\$abb						
	\$\$\$\$		\$\$\$\$abb						
	\$\$\$\$\$		\$aabbbb						
	\$\$\$\$\$\$								
	\$\$\$\$\$\$\$								
3 <word> = <upp< td=""><td>er><lowercase></lowercase></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></upp<></word>	er> <lowercase></lowercase>								
<upper> = A B .</upper>									
	- ' - <lower> <lower><</lower></lower>	LowerCase>							
<lower> = a b .</lower>									
4 Consider a land	mage of character st	rings that contain on	ly dots and dashes	All strings in th	s language conf	ain at			
			ly dots and dashes.						
least four chara	cters and begin with	either two dots or tw	vo dashes. If the first	two characters	are dots, the la	st one			
least four chara		either two dots or tw	vo dashes. If the first	two characters	are dots, the la	st one			
least four chara	cters and begin with	either two dots or tw	vo dashes. If the first	two characters	are dots, the la	st one			
least four chara must be a dash; this language.	cters and begin with ; if the fi rst two chara	either two dots or tw acters are dashes, th	vo dashes. If the first ne last one must be	two characters a dot. Write a re	are dots, the la	st one ar for	ot> <dot><word><dask< td=""><td>>> <dash><dash></dash></dash></td><td>eh><wor< td=""></wor<></td></dask<></word></dot>	>> <dash><dash></dash></dash>	eh> <wor< td=""></wor<>
least four chara must be a dash; this language. <word> = <dot></dot></word>	cters and begin with ; if the fi rst two chara	either two dots or tw acters are dashes, th	vo dashes. If the first ne last one must be	two characters a dot. Write a re	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four chara must be a dash; this language. <word> = <dot> <dot> = .</dot></dot></word>	cters and begin with ; if the fi rst two chara	either two dots or tw acters are dashes, th	vo dashes. If the first ne last one must be	two characters a dot. Write a re	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four chara must be a dash; this language. <word> = <dot></dot></word>	cters and begin with ; if the fi rst two chara	either two dots or tw acters are dashes, th	vo dashes. If the first ne last one must be	two characters a dot. Write a re	are dots, the la	st one ar for	lot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four charamust be a dash; this language. <pre> <word> = <dot> <dot> = . <dash> = -</dash></dot></dot></word></pre>	cters and begin with ; if the fi rst two chara ; contact two chara ; dot> <dot><dash> -</dash></dot>	either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot>	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash>	sh> <wor< td=""></wor<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = -</dash></dot></dot></word>	cters and begin with ; if the fi rst two chara - <dot><dot><dash> - <word> = X <word></word></word></dash></dot></dot>	either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot>	vo dashes. If the first ne last one must be	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four charamust be a dash; this language. <pre> <word> = <dot> <dot> = . <dash> = -</dash></dot></dot></word></pre>	cters and begin with ; if the fi rst two chara - <dot><dot><dash> - <word> = X <word td="" x<=""><td>either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot></td><td>vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash></td></dash<></word></dot></td></dash<></dash></td></word></word></dash></dot></dot>	either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot>	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash>	sh> <wol< td=""></wol<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = -</dash></dot></dot></word>	cters and begin with ; if the fi rst two chara <dot><dot><dash> - <word> = X <word> X XZ</word></word></dash></dot></dot>	either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot>	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>lot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	lot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash>	sh> <wo< td=""></wo<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = -</dash></dot></dot></word>	cters and begin with ; if the fi rst two chara - <dot><dot><dash> - <word> = X <word td="" x<=""><td>either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot></td><td>vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash></td></dash<></word></dot></td></dash<></dash></td></word></word></dash></dot></dot>	either two dots or tw acters are dashes, th <dot><dot><dash><</dash></dot></dot>	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wo< td=""></wo<></td></da<></dash>	sh> <wo< td=""></wo<>
least four charamust be a dash this language. <pre> <word> = <dot> <dot> = .</dot></dot></word></pre>	cters and begin with ; if the fi rst two chara ; dot> <dot><dot><dash> - </dash></dot><word> = X <word>XXY</word></word></dot>	either two dots or tw acters are dashes, th <dot><dot><dash>< d>>Z <word>Y</word></dash></dot></dot>	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = - 5 a b 6 <word> = <dot></dot></word></dash></dot></dot></word>	cters and begin with ; if the fi rst two chara . <dot><dot><dash> <dot>< X XZ XY .> <dash> <word> </word></dash></dot></dash></dot></dot>	either two dots or twacters are dashes, the dot of two dots or twacters are dashes, the dot of two dots or twill be dots or two dots or two dots or two dots or two dots or tw	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><</dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><</dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><woi< td=""></woi<></td></da<></dash>	sh> <woi< td=""></woi<>
least four charamust be a dash this language. <pre> <word> = <dot> <dot> = .</dot></dot></word></pre>	cters and begin with ; if the fi rst two chara ; dot> <dot><dot><dash> - </dash></dot></dot>	either two dots or two acters are dashes, the same dashes, the same dots of two acters are dashes, the same dots of the same dots of the same dashes of the same dash	dashes. If the first ne last one must be dash> <dash><dash how="" or<="" specify="" td="" to=""><td>two characters a dot. Write a re h><dot><dot> </dot></dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot></td></dash></dash>	two characters a dot. Write a re h> <dot><dot> </dot></dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash>	sh> <wor< td=""></wor<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = - 5 a b 6 <word> = <dot></dot></word></dash></dot></dot></word>	cters and begin with ; if the fi rst two chara ; dot> <dot><dot><dash> </dash></dot></dot>	either two dots or two acters are dashes, the same dashes, the same dots of two acters are dashes, the same dots of the same dots of the same dashes of the same dash	vo dashes. If the first ne last one must be dash> <dash><dash< td=""><td>two characters a dot. Write a re h><dot><dot> </dot></dot></td><td>are dots, the la</td><td>st one ar for</td><td>ot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash></td></dash<></word></dot></td></dash<></dash>	two characters a dot. Write a re h> <dot><dot> </dot></dot>	are dots, the la	st one ar for	ot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wol< td=""></wol<></td></da<></dash>	sh> <wol< td=""></wol<>
least four chara must be a dash; this language. <word> = <dot> <dot> = . <dash> = - 5 a b 6 <word> = <dot></dot></word></dash></dot></dot></word>	cters and begin with ; if the fi rst two chara ; dot> <dot><dot><dash> - </dash></dot></dot>	either two dots or two acters are dashes, the same dashes, the same dots of two acters are dashes, the same dots of the same dots of the same dashes of the same dash	dashes. If the first ne last one must be dash> <dash><dash how="" or<="" specify="" td="" to=""><td>two characters a dot. Write a re h><dot><dot> </dot></dot></td><td>are dots, the la</td><td>st one ar for</td><td>lot><dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot></td></dash></dash>	two characters a dot. Write a re h> <dot><dot> </dot></dot>	are dots, the la	st one ar for	lot> <dot><word><dash< td=""><td>n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash></td></dash<></word></dot>	n> <dash><da< td=""><td>sh><wor< td=""></wor<></td></da<></dash>	sh> <wor< td=""></wor<>

	Per second r	ule " <dash><word>" dashe</word></dash>	s are aiways leπ (oi trie word. This is	not possible				
	c Write a sever	n-character string that conta	ains more dashes	than dots and is in	the language S	how how			
		Write a seven-character string that contains more dashes than dots and is in the language. Show how you know that your answer is correct.							
	you know the	it your answer is correct.							
	1st word	<dot></dot>							
	2nd word	<dot><1st word></dot>	<dot><dot></dot></dot>						
	6th word	<dot><5nd word></dot>	<dot><dot><dot< td=""><td>:><dot><dot></dot></dot></td><td></td><td></td><td></td><td></td><td></td></dot<></dot></dot>	:> <dot><dot></dot></dot>					
	7ths word	<6th word> <dash></dash>	<dot><dot><dot< td=""><td>><dot><dot><</dot></dot></td><td><dash></dash></td><td></td><td></td><td></td><td></td></dot<></dot></dot>	> <dot><dot><</dot></dot>	<dash></dash>				
	the iterations	shows the final answer is o	correct						
9 8	a < legal_word	> = empty string A < legal	_word > BB						
10 I	 s +* a – b / c ++ de – fg a pref	i x expression? Explain in to	erms of the gramr	nar for prefix expre	essions				
		the format that has operat				This string begins	with operator so i	t is a prefix. The	prefix is inv
		<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	ier> <operator></operator>	<pre><prefix> <prefix></prefix></prefix></pre>					
	+E1E2	E1=*E3E4							
		E3=a							
		E4=-E5E6							
		E5=b							
		E6=/E7E8							
		E7=c							
		E8=+E9E10							
		E9=+E11E12							
		E11=d							
		E12=e							
		E10=-E13E14							
		E13=f							
		E14=g							
	E2 is missing	and this expression is inva	alid						
	LZ is illissing	and this expression is inve							
11 I	ls ab /c * efg * h /+d -+ a postf			mar for postfi x exp	ressions.				
	<postfix> = <</postfix>	identifier> <postfix><postfix< td=""><td><><operator></operator></td><td></td><td></td><td></td><td></td><td></td><td></td></postfix<></postfix>	<> <operator></operator>						
	this is a post	ix expression because it fo	llows the a b / ->	<postfix><postfix></postfix></postfix>	operator>. The	expression is inval	id		
	E1E2/								
	E1=a								

	E	2=b							
	E	3E4*							
	E	3=E1E2/							
	E	4=c							
	E	5E6							
	E	5=E3E4*							
	E	6=e							
	b	ut operator is missi	ing after E6 and hence	e it's an invalid ex	pression				
1	2 Consider the langu	age that the followi	ing grammar defi nes	:					
	<s> = <l> <d><s< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></s<></d></l></s>								
	<l> = A B</l>								
	<d> = 1 2</d>								
		naracter strings tha	t are in this language) <u>.</u>					
		econd							
	A 1,	AA							
		AA							
		BB							
		 ВВ							
	b. Write one string	in this language th	at contains more thar	three characters					
		nird							
	1	1AA1AA							
		2AA2AA							
		1BB1BB							
		1BB1BB							
	_								
1	3 Consider a languag	ne of the following	L character strings: The	e letter A the lette	er B the letter C	followed by a strir	ıa		
			D followed by a string						
			CCB, DB, and DCCB		, , , , , , , , , , , , , , , , , , , ,				
	a. Write a grammar								
			 A <word> B<word> </word></word>	C <word> D<wo< td=""><td>rd></td><td></td><td></td><td></td><td></td></wo<></word>	rd>				
		יין פוסוטוי.	ora D words	S Moral B WO	. •				
	b. Is CAB in this lar	nguage? Explain							
		rst	В						
		nd	AB	A <firt></firt>					
		nird	CAB	C<2nd>					
		est, its possible	CAD	O VEHUE					
	11	cai, ita puaainie							