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CS-3B

Regular Expression Assignment

1. For each if the following Regular Expressions (RE), decide which of the 4 REs accept the given word. Indicate yes if accepted and leave it blank for not accepted.

RE1: (ab*b*a) + (ab+b)

RE2: ∧ + (aa*b) + b

RE3: ((ab+ba) + [(aa+bb) (ab+ba)*(aa+bb)*])* (aa+bb) (ab+ba)*

RE4: (ab*a) + (ba*b)

	Word	RE1	RE2	RE3	RE4
1	∧		yes	yes	
2	a		yes	yes	yes
3	b		yes		
4	aa		yes	yes	
5	ab		yes	yes	yes
6	aba	yes			yes
7	abba			yes	yes
8	bab			yes	yes
9	baab			yes	yes
10	abbb	yes			

2. Tell where the following pairs of RE define the same language over the alphabet ∑ = {a,b}, if not equal, show strings that are not acceptable in RE1 but acceptable in RE2, or vice-versa.

	RE1	**RE2**	**Equal or not, explanation:**
1.	(ab)*a	a(ba)*	Not Equal, an “abab” string is accepted by RE2 but noy by RE1.
2.	(a* + b)*	(a+b)*	Not Equal, string “aa” is accepted by RE1 but not by RE2, also “ba” is accepted by RE1 but not by RE2.
3.	(a* + b*)*	(a+b)*	Not Equal, “aa or”bbb” accepted by RE1 but not by RE2
4.	(a*bbb)*a*	a*(ba*)*	Not Equal, “ba” accepted by RE2 but not by RE1.

5.	((a + bb)*aa)*	Λ + (a +bb)*aa	Not Equal, “aaaaaa” accepted by RE1 but not by RE2.
6.	(a+b)*a(a+b)*(a+b)*	(a+b)*ab(a+b)*	Not Equal, “aaa” is accepted by RE1 but not by RE2
7.	(a+b)*ab(a+b)* + b*a*	(a+b)*	Equal, any string by RE1 is accepted by RE2
8.	(aa)*(Λ + a)	a*	Equal, RE1 and RE2 defines the same language and any string by RE1 is accepted by RE2