

Name: \_\_\_\_\_

NetID: \_\_\_\_\_ Lecture: B

Discussion: Friday 11 12 1 2 3 4

1. (8 points) Here is a grammar with start symbol  $S$  and terminal symbol  $b$ . Draw three parse trees for the string `bbb` that match this grammar.

$$S \rightarrow S S \mid S \mid b$$

2. (4 points) Check the (single) box that best characterizes each item.

Number of bit strings of length  $k$ .

 $2^k$  ☐ $2^k - 1$  ☐ $2^{k-1}$  ☐ $k$  ☐

The chromatic number of a full 3-ary tree

1 ☐2 ☐ $\leq 2$  ☐3 ☐ $\leq 3$  ☐can't tell ☐

Name: \_\_\_\_\_

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Discussion: Friday 11 12 1 2 3 4

1. (8 points) Here is a grammar with start symbol  $S$  and terminal symbol  $a$ . Draw three parse trees for the string `aaaaaa` that match this grammar.

$$S \rightarrow SS \mid aSa \mid aa$$

2. (4 points) Check the (single) box that best characterizes each item.

The chromatic number of  
a full 3-ary tree

1	<input type="checkbox"/>	2	<input type="checkbox"/>	$\leq 2$	<input type="checkbox"/>
3	<input type="checkbox"/>	$\leq 3$	<input type="checkbox"/>	can't tell	<input type="checkbox"/>

Number of bit strings of  
length  $k$ .

$2^k$	<input type="checkbox"/>	$2^k - 1$	<input type="checkbox"/>	$2^{k-1}$	<input type="checkbox"/>	$k$	<input type="checkbox"/>
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