Parsers – Flipped Lab

Your names here:
(alphabetical by last name, place a star by the typist's name)

You are working on this as a group!!

Complete one problem at a time
Have the Instructor or TA sign off ***after you complete each*** problem so you may move on.
You will be graded on your overall completion.
You **are allowed** notes, books, etc…

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1. Convert this grammar from left to right recursive for predictive parsing. You may assume that this grammar is unambiguous. Please use "X" as the new production symbol. Create a few possible strings, then convert, and test with those possible strings.

E := E + a
    | b

Instructor/TA signature	

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2. Use left-factoring to enable this grammar for predictive parsing. You may assume that this grammar is unambiguous. Please use the "|" symbol for multiple options.

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

Instructor/TA signature	

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3. For the parse table below, prove the input string ***works***. Show the stack, input stack, and the action. (Push, pop, etc)

Grammar

A -> t B' D
| v D'
B -> t B'
| ε
B' -> w B
| u w B
D -> v D'
D' -> x B D'
| ε

LL(1) Parse Table

	t	u	v	w	x
A	t B' D		v D'		
B	t B'		ε		ε
B'		u w B		w B	
D			v D'		
D'					x B D'

Input String

tuwvxtw

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4. Using the grammar below, show how the Shift-Reduce parser would work with the input string also given below. Please use the table given in the notes to be organized!! (Step, Parse Stack, Look ahead, Unscanned, Action) The input string SHOULD be correct.

Given grammar:

$E \rightarrow E + T$
$\quad\quad |T$
$T \rightarrow T * F$
$\quad\quad |F$
$F \rightarrow (E)$
$\quad\quad | id$

Given input:
id + id * id

Instructor/TA signature	