

## LR Parsing Example

Computer Science 426

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## Grammar

1	goal	→	expr
2	expr	→	term - expr
3			term
4	term	→	factor * term
5			factor
6	factor	→	id

## Algorithm

```

push '$'
push  $s_0$ 
token  $\leftarrow$  next_token()
repeat forever
    s  $\leftarrow$  top of stack
    if ACTION[s,token] = "reduce  $A \rightarrow \beta$ " then
        pop 2 * | $\beta$ | symbols
        s  $\leftarrow$  top of stack      /* not a pop() */
        push A
        push GOTO[s,A]
    else if ACTION[s,token] = "shift  $s_i$ " then
        push token
        push  $s_i$ 
        token  $\leftarrow$  next_token()
    else if ACTION[s, token] = "accept" and
        token = eof then
        report success
    else report a syntax error

```

## Action and Goto Tables

	<i>ACTION</i>				<i>GOTO</i>		
	id	-	*	eof	<i>expr</i>	<i>term</i>	<i>factor</i>
$S_0$	s4	—	—	—	1	2	3
$S_1$	—	—	—	acc	—	—	—
$S_2$	—	s5	—	r3	—	—	—
$S_3$	—	r5	s6	r5	—	—	—
$S_4$	—	r6	r6	r6	—	—	—
$S_5$	s4	—	—	—	7	2	3
$S_6$	s4	—	—	—	—	8	3
$S_7$	—	—	—	r2	—	—	—
$S_8$	—	r4	—	r4	—	—	—

[illegible]