

Practical No. 08

Page No.

Class

Roll No.

Date: / / 201

Title & Implement of shift reduce parsing algorithm

Theory & A shift-reduce parser is a class of efficient table driven bottom-up parsing method for computer language and other notation formally defined by a grammar the parsing method must

All shift-reduce parses have similar outward effects in the incremental order in which they build a parse tree or call specific output actions

Shift Reduce parser in compiler:

Prerequisite :- parsing / (Bottom up or shift reduce parser)

Shift reduce attempts for the consumption of parse in a similar manner is done in bottom up parsing i.e. the parsing tree is constructed from leaves to the root.

The parser require some data structure as

A input buffer for storing the input string

A stack for string and accessing the production rule

Basic operation :-

Shift :- This involves moving of symbols from input buffer onto the stack.

Reduce :- If the handle appears on top of the stack then, it reduction by using appropriate production rule is done i.e. RHS of production rule is popped out of stack and LHS of production rule is pushed onto the stack.

Accepts :- If only start symbol is present in the stack and the input buffer is empty then parsing tree action is called accept when accept is obtained. it means successful parsing is done.

Error :- this is the situation in which the parser can neither perform shift action nor reduce action and not even accept action.

Exa :- Consider the Grammar

$$S \rightarrow S + S$$

$$S \rightarrow S * S$$

$$S \rightarrow id$$

perform shift reduce parsing for input string
" id + id + id "

Page No.
Class
Roll No.
Date: / / 201

stack	Input Buffer	passing Action
\$	id + id + id \$	shift
\$id	+ id + id \$	reduce by $s \rightarrow id$
\$s	+ id + id \$	shift
\$s +	id + id \$	shift
\$s + id	+ id \$	reduce by $s \rightarrow id$
\$s + s	+ id \$	shift
\$s + s +	id \$	shift
\$s + s + id	\$	reduce by $s \rightarrow id$
\$s + s + s	\$	reduce by $s \rightarrow s + s$
\$s + s	\$	reduce by $s \rightarrow s + s$
\$s	\$	Accept

Result: Implementation of shift reduce parser has been perform successfully.