

- SHIFT-REDUCE PARSER

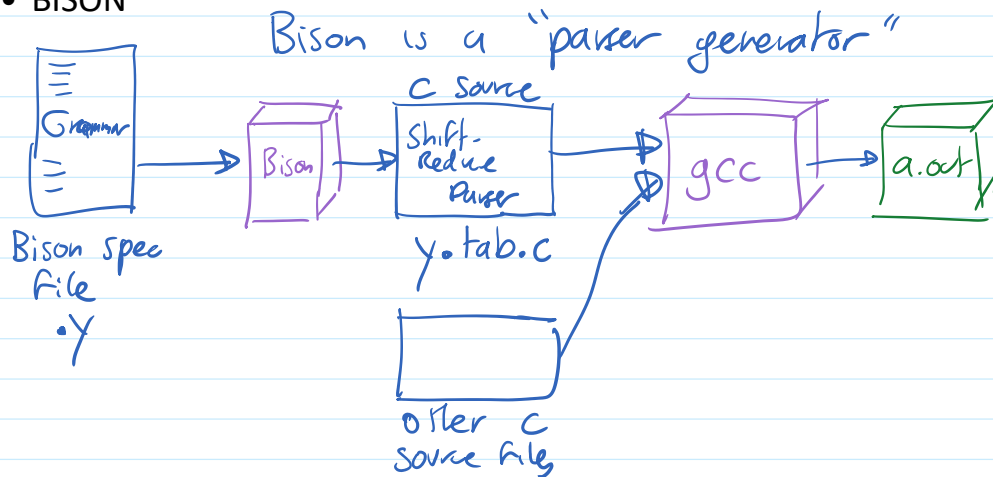
Bison.- an implementation

- input.- Grammar specification
- output.- Source-code for the corresponding shift-reduce parser.
- designed to work with Flex

- HISTORY

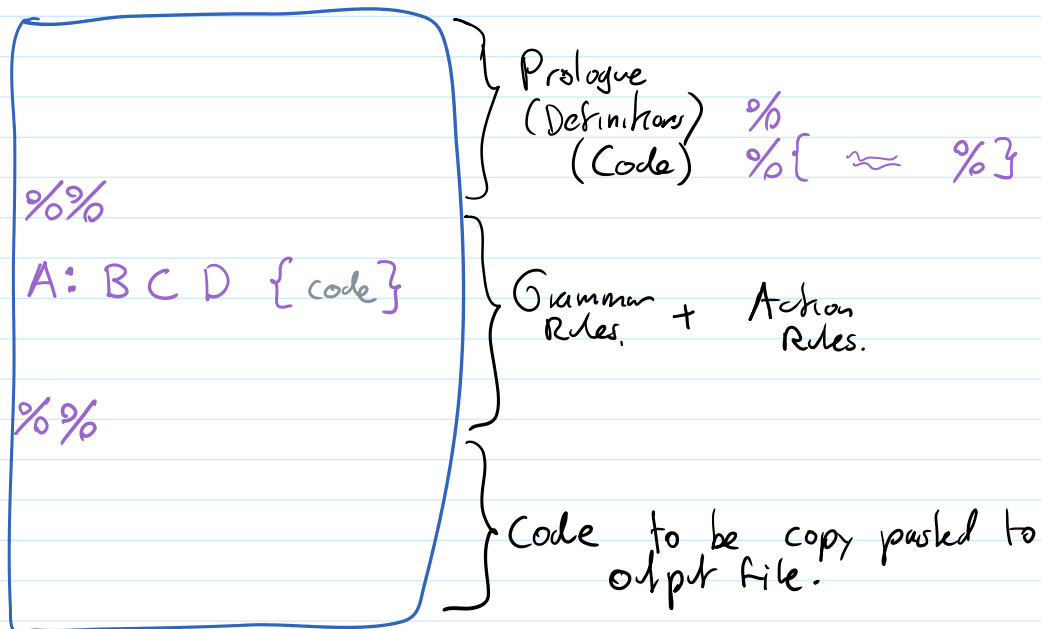
'70 S. Johnson Yacc B, C  
'80 GNU R. Corbett Bison.

- BISON



- Terminal symbols are strings.
- Bison expects a function called `yylex()` to be available to read terminal symbols from the input.

- THE BISON SPECIFICATION FILE



- Bison allows you to attach a value to each non-terminal using special variable  $\$1$

#### • THE CODE GENERATED BY BISON Functions:

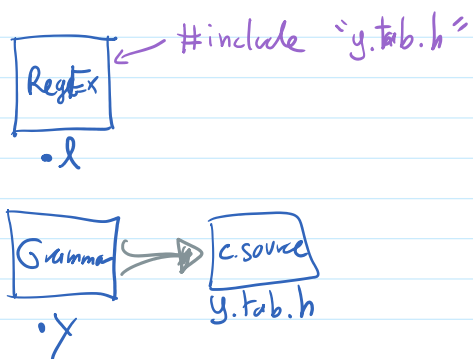
$yyparse()$  :- implements the shift-reduce parser.

- calls  $yylex()$  to get terminal symbols.
- returns 0 if parsing successful  
1 if parsing fails.

$yyerror(char *)$  :- called by  $yyparse()$  when an error is encountered.

- you must write this function.

#### • BISON + FLEX WORKFLOW



```
$ bison -d <bison spec> → y.tab.h
$ flex <flex spec> → lex.yy.c
$ bison <bison spec> → y.tab.c
$ g++ -lfl *.c *.cpp → a.out.
```

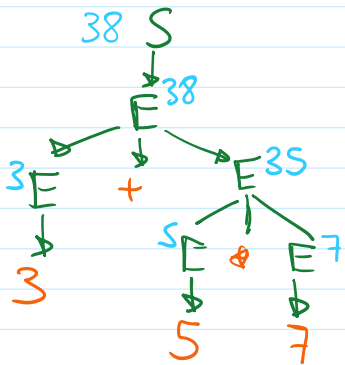
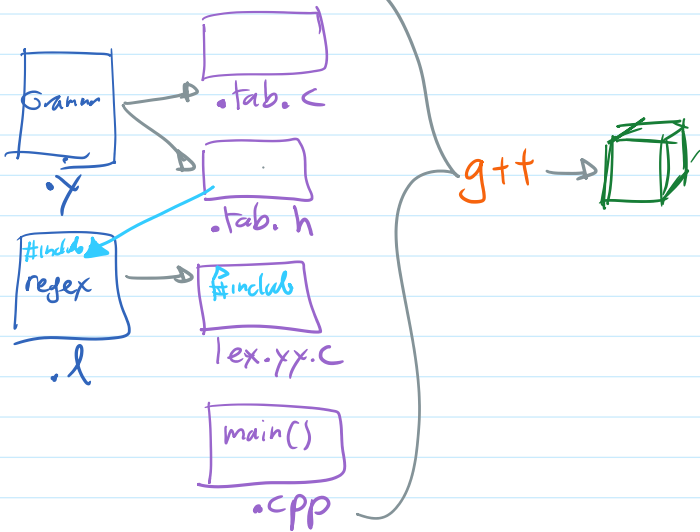
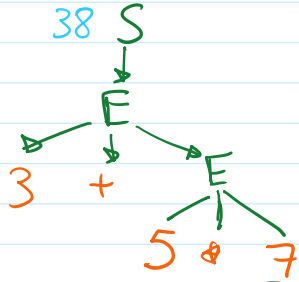


$S \rightarrow \lambda$   
 $S \rightarrow E$   
 $E \rightarrow \text{Int}$   
 $E \rightarrow E + E$   
 $E \rightarrow E * E$

• flex .l  
 - recognizing terminals  
 Int + \*

3 + 5 \* 7

• bison .y  
 - parse the grammar  
 - Compute a value for S



— 0 — EOF