2CS701 Compiler Construction

Practical 5	
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Aim

To implement a calculator in YACC: Syntax Directed Translation

Code:

prac_5.y

```
%{
#include <iostream>
#include <string>
#include <map>
#include <cmath>
static std::map<std::string, int> value;
int yylex();
int yyparse();
void yyerror(const char *s) { std::cout << s << std::endl; }
%}
%union { int i; std::string *s; }
%token<i> INT
%token<s> VAR
%type<i> E
%right '='
%left '+' '-'
%left '*' '/' '%'
%right '^'
%%
SS : S SS
| S
;
S : E ';' {std::cout << "Answer: " << $1 << std::endl;}
;
E : INT {$$ = $1;}
| VAR {$$ = value[*$1]; delete $1;}
| VAR '=' E {$$ = value[*$1] = $3; delete $1;}
| E '+' E {$$ = $1 + $3;}
| E '-' E {$$ = $1 - $3;}
| E '*' E {$$ = $1 * $3;}
| E '/' E {$$ = $1 / $3;}
| E '%' E {$$ = $1 % $3;}
| E '^' E {$$ = pow($1,$3);}
;
```

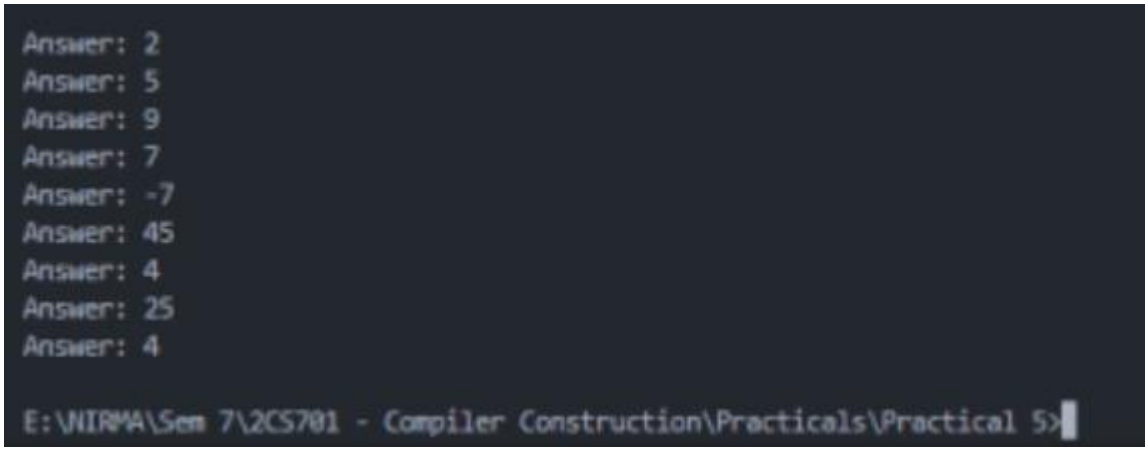
```
%%
int main() { yyparse(); }
```

prac_5.l

```
%option noyywrap
%{
#include <cstdlib>
#include <string>
#include "y.tab.h"
using namespace std;
%}
%%
([_a-zA-Z](0-9)*)+ {yylval.s = new string(yytext); return VAR;} [0-9]+
{yylval.i = atoi(yytext); return INT;} [-+*/%^=;] {return *yytext;}
[.\n\t] ;
%%
```

Input:

Output



Conclusion

In this practical, we learnt how to perform some basic arithmetic calculations using parser and lexer.