LAB 7

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Sec- ‘A’

1. Write a YACC program to implement a calculator and recognize a valid arithmetic expression.

Lexical Analyzer Source Code :

```
%{

#include "y.tab.h"

%}

%%

[0-9]+ { yylval = atoi(yytext); return TERM; }

[\t ]    { }

\n       { return '\n'; }

\+       { return '+'; }

\-       { return '-'; }

\*       { return '*'; }

\/       { return '/'; }

\(       { return '('; }
```

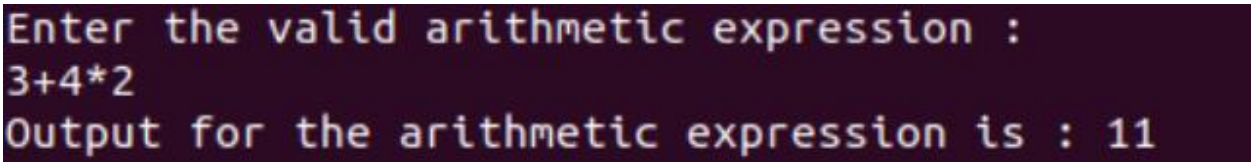
```
\)       { return ')'; }
.        { return yytext[0]; }
%%
int yywrap() {
return 1;
}
```

Parser Source Code :

```
%{
#include<stdio.h>
#include<stdlib.h>
int yylex(void);
void yyerror(const char *s);
%}
%token TERM
%%
calc:
expr '\n' { printf("Output for the arithmetic expression is : %d\n", $1); }
| calc expr '\n' { printf("Output for the arithmetic expression is : %d\n", $2); }
;
```

```
expr:
expr '+' expr { $$ = $1 + $3; }
| expr '-' expr { $$ = $1 - $3; }
| expr '*' expr { $$ = $1 * $3; }
| expr '/' expr { if ($3 == 0) yyerror("Division by 0 - Mathematical
Error"); else $$ = $1 / $3; }
| '(' expr ')' { $$ = $2; }
| TERM
{ $$ = $1; }
;
%%
void yyerror(const char *s) {
fprintf(stderr, "Error: %s\n", s);
}
int main() {
printf("Enter the valid arithmetic expression :\n");
yyparse();
return 0;
}
```

OUTPUT:


Enter the valid arithmetic expression :
3+4*2
Output for the arithmetic expression is : 11