PROJCT NO : 6

AIM: Write an appropriate language description for a layman language which can do mathematical operations using English like sentences.

EXAMPLE:

Add 100 ,200,300,400 . Sub 250 from result.

Mul 400 to it. Div the answer by 2. Show me

the answer.

LAB9: Yacc useful for your language / any other highlevel langauge.

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Regular Defination	Examples:
Keywords	From, from, Show, show, by, to, it, number, and, result, the, me, Answer, answer
Operation	Add, Sub, Mul, Div
Digit(Number)	[0-9]
Que. Mark	"?"//end of line
White Space	(Tab | Newline)$^+$
Letter	[A-Za-z]

Grammer:-

E->S

S-> OPERATION |SHOW

OPERATION -> NUMBER SEMI | NUMBER | KEYWORD

NUMBER-> SEMI NUMBER | KEYWORD | QUE

SHOW-> SHOW KEYWORD

KEYWORD-> KEYWORD | QUE

- **lab9.l**

```
%{
#include<stdio.h>
#include "y.tab.h"
%}
%%
"Add"|"add"|"Sub"|"sub"|"Mul"|"mul"|"Div"|"div" {printf("<%s,
OPERATION>\n", yytext); return OPERATION;}


"From"|"from"|"by"|"to"|"it"|"number"|"and"|"result"|"Result"|"the"|"me"|"Ans
wer"|"answer" {printf("<%s, KEYWORD>\n", yytext); return KEYWORD;}


"Show"|"show" {printf("<%s, KEYWORD>\n", yytext); return SHOW;}


"," {return SEMICOLON;}


[0-9]+ {printf("<%s, NUMBER>\n",yytext); return NUMBER;}
```

"?" {printf("<%s, QUESTION MARK>\n",yytext); return QM;}

\n {return NL;}

. {}
%%

int yywrap(void)
{
    return 1;
}

- **lab9.y**

%{

#include<stdio.h>
#include "y.tab.h"
int yyerror(char *s);
int yyparse(void);

%}

%token OPERATION KEYWORD SHOW SEMICOLON QM NUMBER NL

%%

E : S NL { return 0;}

S : T {printf("\nYour Given String is Valid\n\n");}

T : OPERATION NUMBER SEMICOLON NUMBER SEMICOLON
NUMBER SEMICOLON NUMBER QM |

      OPERATION NUMBER KEYWORD KEYWORD QM |

      OPERATION KEYWORD KEYWORD KEYWORD NUMBER QM|

      SHOW KEYWORD KEYWORD KEYWORD QM

%%

```
int main()
{
   while(1)
   {
     printf("Enter your language input:");
     yyparse();
   }
}
int yyerror(char *s)
{
   fprintf(stderr,"%s\n",s);
   exit(0);
}
```

OUTPUT:

Case: Valid Input

```
D:\00 Study\SEM 6\0LAB\LT\LAB 9>lab9.exe
Enter your language input:Add 100,200,300,400?
<Add, OPERATION>
<100, NUMBER>
<200, NUMBER>
<300, NUMBER>
<400, NUMBER>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:Sub 250 from result?
<Sub, OPERATION>
<250, NUMBER>
<from, KEYWORD>
<result, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:Mul 400 to it?
<Mul, OPERATION>
<400, NUMBER>
<to, KEYWORD>
<it, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:Div the answer by 2?
<Div, OPERATION>
<the, KEYWORD>
<answer, KEYWORD>
<by, KEYWORD>
<2, NUMBER>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:Show me the answer?
<Show, KEYWORD>
<me, KEYWORD>
<the, KEYWORD>
<answer, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid
```

Case: Language seen Some Case sensitive Input.

```
Enter your language input:add 100,200,300,400?
<add, OPERATION>
<100, NUMBER>
<200, NUMBER>
<300, NUMBER>
<400, NUMBER>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:sub 250 From Result?
<sub, OPERATION>
<250, NUMBER>
<From, KEYWORD>
<Result, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:mul 400 to it?
<mul, OPERATION>
<400, NUMBER>
<to, KEYWORD>
<it, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:div the Answer by 2?
<div, OPERATION>
<the, KEYWORD>
<Answer, KEYWORD>
<by, KEYWORD>
<2, NUMBER>
<?, QUESTION MARK>

Your Given String is Valid

Enter your language input:show me the answer?
<show, KEYWORD>
<me, KEYWORD>
<the, KEYWORD>
<answer, KEYWORD>
<?, QUESTION MARK>

Your Given String is Valid
```

Invalid Input Error:

If user enter number in word form then:

```
Enter your language input:add 100,200,threehundred,400?
<add, OPERATION>
<100, NUMBER>
<200, NUMBER>
syntax error
```

If user forget to enter semicolon in between two number then:

```
D:\00 Study\SEM 6\0LAB\LT\LAB 9>lab9.exe
Enter your language input:add 100 200 300 400?
<add, OPERATION>
<100, NUMBER>
<200, NUMBER>
syntax error
```

If user forget to enter "?" at the end then:

```
D:\00 Study\SEM 6\0LAB\LT\LAB 9>lab9.exe
Enter your language input:add 100,200,300,400
<add, OPERATION>
<100, NUMBER>
<200, NUMBER>
<300, NUMBER>
<400, NUMBER>
syntax error
```

If user enter invalid case Input then:

```
D:\00 Study\SEM 6\0LAB\LT\LAB 9>lab9.exe
Enter your language input:show ME THE ANSWER?
<show, KEYWORD>
<?, QUESTION MARK>
syntax error
```