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Assignment on Yacc - 5

1. Write a YACC program to implement following arithmetic operations
Addition, Subtraction, Multiplication, and Division. Also print whether a
arithmetic expression is valid or not.

LEX File : main.l

```
%{

#include<stdio.h>
#include "y.tab.h"
extern int yylval;
%}
%%
[0-9]+ {
yylval=atoi(yytext);
return NUMBER;
}
[\t] ;
[\n] return 0;
. return yytext[0];
%%



int yywrap(){
return 1;

}
```

YACC File : main.y

```
%{

#include<stdio.h>
int flag=0;
%}
%token NUMBER
%left '+' '-'
%left '*' '/' '%'
%left '(' ')'


%%
ArithmeticExpression: E{
printf("\nOutput =%d\n", $$);
return 0;
};
E:E'+'E {$$=$1+$3;}
|E'-'E {$$=$1-$3;}
|E'*'E {$$=$1*$3;}
|E'/'E {$$=$1/$3;}
|E'%'E {$$=$1%$3;}
|'('E')' {$$=$2;}
| NUMBER {$$=$1;}
;
%%
//driver code
void main()
{
printf("\nEnter Arithmetic Expression :\n");
yyparse();
}
void yyerror()
{
printf("\nInvalid Arithmetic Expression \n");
```

```
flag=1;
}
```

```
F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"

Enter Arithmetic Expression :
2+5

Output =7

F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"

Enter Arithmetic Expression :
7-5

Output =2

F:\Compiler Design\Lab\LakhanKumawat\Assignment>
```

---

2. Write a YACC program to recognize string over alphabet {a,b} havingequal no. of ‘a’and equal no of ‘b’ and length of string is greater than equal to
zero.

LEX File : main.l

```
%{
#include<stdio.h>
#include "y.tab.h"
int yylval;

%}
%%
[aA] {return A;}
[bB] {return B;}
[\n] {return NL;}
[.] {return yytext[0];}
%%
```

```
int yywrap()
{
return 1;
}
```

YACC File : main.y

```
%{
#include<stdio.h>
#include<stdlib.h>
void yyerror(char *msg){
printf("String is Invalid\n");
exit(0);
}
%}
%token A B NL
%%
stmt: S NL { printf("String is Valid\n");
exit(0); }
;
S: A S B |
;
%%
void main()
{
printf("Enter the string\n");
yyparse();
}
```

```
F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter the string
aaaabbb
invalid string

F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter the string
aabb
valid string

F:\Compiler Design\Lab\LakhanKumawat\Assignment>
```

---

3. Write and YACC program which accept string that starts and end with 0 or 1.

LEX file : main.l

```
%{
#include<stdio.h>
#include "y.tab.h"
int yylval;
%}
%%
[0] {
yylval=0;
return ZERO;}
[1] {
yylval=1;
return ONE;
}
[\t] {;}
[\n] return 0;
[.] return yytext[0];
%%
int yywrap()
{
```

```
return 1;
}
```

YACC file : main.y

```
%{
#include<stdio.h>
#include <stdlib.h>
void yyerror(char *str)
{
printf("\nSequence Not Matching \n");
exit(1);
}
%}
%token ZERO ONE
%%
r : s {printf("\nSequence Matching\n");}
;
s : n
| ZERO a
| ONE b
;
a : n a
| ZERO
;
b : n b
| ONE
;
n : ZERO
| ONE
;
%%
int main()
{
printf("\nEnter your Sequence : ");
yyparse();
```

```
printf("\n");
return 0;
}
```

```
F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter your Sequence : 0101010
Sequence Matching

F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter your Sequence : 1010
Sequence Not Matching
```

---

4. Write an YACC program to convert base 2 digit to base 10 Digit.

Lex file : main.l

```
%{

#include<stdio.h>
#include<stdlib.h>
#include"y.tab.h"
extern int yylval;
%}

%%
0 {yylval=0;return ZERO;}
1 {yylval=1;return ONE;}
[ \t] {;}
\n return 0;
. return yytext[0];
%%
```

```
int yywrap()
{
return 1;
}
```

YACC File : main.y

```
%{
#include<stdio.h>
#include<stdlib.h>
void yyerror(char *s);
%}
%token ZERO ONE
/* Rule Section */
%%
N: L {printf("\n%d", $$);}
L: L B {$$=$1*2+$2;}
| B {$$=$1;}
B:ZERO {$$=$1;}
|ONE {$$=$1;};
%%
//driver code
int main()
{
printf("Enter the binary String :\n");
while(yyparse());
}
yyerror(char *s)
{
fprintf(stdout, "\n%s", s);
}
```

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```
F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter the binary String :
1010

10
F:\Compiler Design\Lab\LakhanKumawat\Assignment>"f:\Compiler Design\Lab\LakhanKumawat\Assignment\a.exe"
Enter the binary String :
110

6
F:\Compiler Design\Lab\LakhanKumawat\Assignment>
```

End Of Assignment