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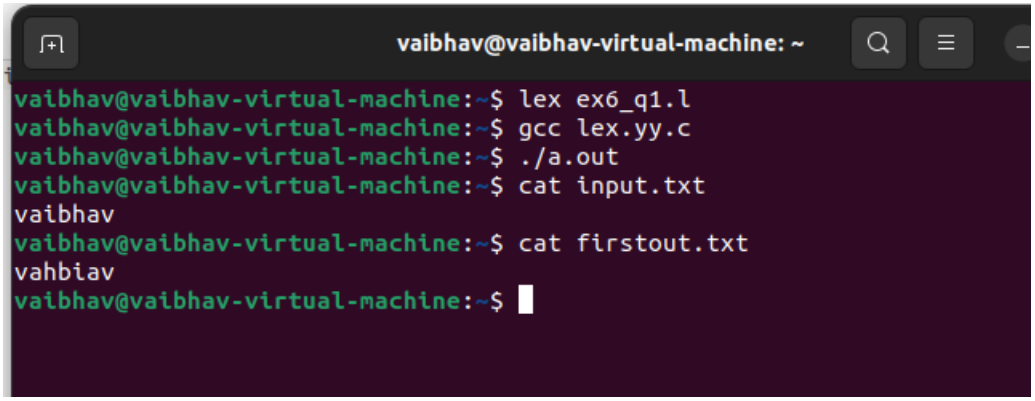
EXPERIMENT NUMBER: 6

1. **Reverse the given word**

CODE

```
%{
 #include <stdio.h>
 #include <string.h>
 char target[] = "vaibhav";
%}
%%
[a-zA-Z]+ {
 if(strcmp(yytext, target)==0){
  for(int i=strlen(target)-1;i>=0;i--){
   fprintf(yyout,"%c",target[i]);
  }
 }
 else {
  fprintf(yyout,"%s",yytext);
 }
}
. {fprintf(yyout,"%s",yytext);}
%%
int yywrap(){}
int main(){
 yyin = fopen("input.txt","r");
 yyout = fopen("firstout.txt","w");
 yylex();
 return 0;
}
```

OUTPUT



2. **Reverse all the words**

CODE

```
%{
 #include <stdio.h>
 #include <string.h>
%}
%%
[a-zA-Z]+ {
 for(int i=strlen(yytext)-1;i>=0;i--)
 {
  fprintf(yyout,"%c",yytext[i]);
 }
}
. {fprintf(yyout,"%s",yytext);}
%%
int yywrap(){}
int main()
{
 yyin=fopen("input.txt","r");
 yyout=fopen("output2.txt","w");
 yylex();
 return 0;
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q2.l
vaibhav@vaibhav-virtual-machine:~$ gcc lex.yy.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
vaibhav@vaibhav-virtual-machine:~$ cat input.txt
this is compiler lab assignment.
vaibhav@vaibhav-virtual-machine:~$ cat output2.txt
siht si relipmoc bal tnemngissa.
vaibhav@vaibhav-virtual-machine:~$ s
```

3. **Replace the matching word**

CODE

```
%{
 #include <stdio.h>
 #include <string.h>
 char target[] = "compiler";
%}
%%
[a-zA-Z]+ {
 if(strcmp(yytext, target)==0){fprintf(yyout,"best");}
 else{fprintf(yyout, "%s", yytext);}}
. {fprintf(yyout, "%s", yytext);}
%%
int yywrap(){}
int main(){
 yyin = fopen("input.txt", "r");
```

```
 yyout = fopen("output3.txt", "w");
 yylex();
 return 0;
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q3.l
vaibhav@vaibhav-virtual-machine:~$ gcc lex.yy.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
vaibhav@vaibhav-virtual-machine:~$ cat input.txt
this is compiler lab assignment.
vaibhav@vaibhav-virtual-machine:~$ cat output3.txt
this is best lab assignment.
vaibhav@vaibhav-virtual-machine:~$ S
```

4. **Lower case into upper case**

CODE

```
%{
 #include <stdio.h>
%}
%%
[a-z] {fprintf(yyout,"%c", yytext[0]-32);}
. {fprintf(yyout, "%s" , yytext);}
%%
int yywrap(){}
int main(){
 yyin = fopen("input.txt","r");
 yyout = fopen("output4.txt","w");
 yylex();
 return 0;
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q4.l
vaibhav@vaibhav-virtual-machine:~$ gcc lex.yy.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
vaibhav@vaibhav-virtual-machine:~$ cat input.txt
vaibhav banka 21bce1955
vaibhav@vaibhav-virtual-machine:~$ cat output4.txt
VAIBHAV BANKA 21BCE1955
vaibhav@vaibhav-virtual-machine:~$
```

5. **Count the total number of words, lines characters without including white spaces**

CODE

```
%{
 #include <stdio.h>
 int w=0,l=0,c=0;
%}
%%
[A-Za-z]["  "|.|,|"|'']|[0-9] {w++; c++;}
[A-Za-z]|["  "|.|,|"|'']|[0-9] {c++;}
\n {l++;}
. {c++;}
%%
```

```
int yywrap(){};
int main()
{
 yyin=fopen("input.txt","r");
 yylex();
 printf("Words: %d\n",w);
 printf("Lines: %d\n",l);
 printf("Characters: %d\n",c);
 return 0;
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q5.l
vaibhav@vaibhav-virtual-machine:~$ gcc lex.yy.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
Words: 17
Lines: 3
Characters: 68
vaibhav@vaibhav-virtual-machine:~$ cat input.txt
this is compiler lab assignment 6
vaibhav banka 21bce1955
submitted to ashok sir
vaibhav@vaibhav-virtual-machine:~$
```

6. **Read the file contents and display it in terminal**

CODE

```
%{
 #include <stdio.h>
%}
%%
. {printf("%s", yytext);}
%%
int yywrap(){}
int main(){
 yyin = fopen("input.txt","r");
 yylex();
 return 0;
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q6.l
vaibhav@vaibhav-virtual-machine:~$ gcc lex.yy.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
this is compiler lab assignment 6
vaibhav banka 21bce1955
question 6 trial
vaibhav@vaibhav-virtual-machine:~$
```

7. Yacc program for while loop

LEX CODE

```
%{
  #include "y.tab.h"
%}
alpha [A-Za-z]
digit [0-9]
%%
[\t \n]
"while" return WHILE;
{digit}+ return NUM;
{alpha}({alpha}|{digit})* return ID;
"<=" return LE;
">=" return GE;
"==" return EQ;
"!=" return NE;
"||" return OR;
"&&" return AND;
. return yytext[0];
%%
int yywrap(){}
```

YACC CODE

```
%{
  #include <stdio.h>
  #include <stdlib.h>
  int yylex(void);
  int yyerror(char *s);
%}
%token ID NUM WHILE LE GE EQ NE OR AND
%right '='
%left OR
%left AND
%left '>' '<' LE GE EQ NE
%left '+' '-'
%left '*' '/'
%right UMINUS
%left '!'
%%
S : ST {printf("Input accepted\n");
 exit(0); }
ST : WHILE '(' E ')' DEF
 ;
DEF : '{' BODY '}'
 | E';'
 | ST
 |
 |
 ;
```

```
BODY : BODY BODY
 | E ';'
 | ST
 |
 ;
E : ID '=' E
 | E '+' E
 | E '-' E
 | E '*' E
 | E '/' E
 | E '<' E
 | E '>' E
 | E LE E
 | E GE E
 | E EQ E
 | E NE E
 | E OR E
 | E AND E
 | E '+' '+'
 | E '-' '-'
 | ID
 | NUM
%%
int main() {
 printf("Enter the expression:\n");
 yyparse();
 return 0;
}
int yyerror(char *s)
{
  printf("invalid");
}
```

OUTPUT

```
vaibhav@vaibhav-virtual-machine:~$ lex ex6_q7.l
vaibhav@vaibhav-virtual-machine:~$ yacc -d ex6_q7.y
ex6_q7.y:49 parser name defined to default :"parse"
conflicts:  13 shift/reduce, 9 reduce/reduce
vaibhav@vaibhav-virtual-machine:~$ cc lex.yy.c y.tab.c
vaibhav@vaibhav-virtual-machine:~$ ./a.out
Enter the expression:
while(i<10);
Input accepted
vaibhav@vaibhav-virtual-machine:~$ ./a.out
Enter the expression:
while(i<10 || i=10)
;
Input accepted
vaibhav@vaibhav-virtual-machine:~$
```