SPOT – EXERCISE

1.Write a lex program to convert the following while statement to for statement.

```
while(condition) {
        statement(s);
}
```

```
%{
        #include <string.h>
        int initialization = 1, condition = 0, incordec = 0, content = 0;
        char initializationbuffer[20], conditionbuffer[20], incordecbuffer[20], contentbuffer[20];
%}

%option noyywrap

%%
"while (" { initialization = 0;
 condition = 1; }
"{" { condition = 0;
content = 1; }
")" {}
"}" {}
";" { if(content) {content = 0; incordec=1;}}
. { if(initialization)
        strcat(initializationbuffer, yytext);
    else if(condition)
        strcat(conditionbuffer, yytext);
    else if(incordec)
        strcat(incordecbuffer, yytext);
    else if(content)
        strcat(contentbuffer, yytext); }
%%

int main(int argc, char* argv[]) {
        if(argc > 1) { FILE* fp = fopen(argv[1], "r");
        if(fp) yyin = fp; }
        yylex();
        FILE* fp = fopen("output1.txt", "w");
        strcat(contentbuffer,";");
        fprintf(fp, "for(%s; %s; %s)\n{\n%s\n}\n", initializationbuffer, conditionbuffer, incordecbuffer,
        contentbuffer);
        fclose(fp);
        return 0;
}
```

OUTPUT :-

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>lex p1.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>a.exe input1.txt

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>type input1.txt
x = 0;
while (x < 3) {
print x; x = x + 1;
}
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>type output1.txt
for(x = 0 ; x < 3 ;  x = x + 1 )
{
 print x;
}

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>
```

2.Write a lex program to convert if-else statement to switch-case statement.

CODE :-

```
%option noyywrap
%{
        #include<stdio.h>
        int i, first=1;
%}

%%
{
}
"if("[a-zA-Z0-9]+" == "[a-zA-Z0-9]+"){" {
        if(first){
                fprintf(yyout,"switch(");
                for(i=3; yytext[i]!=' '; i++)
                        fprintf(yyout,"%c",yytext[i]);
                fprintf(yyout,"){\n");
        }
        first=0;
        fprintf(yyout,"case ");
        for(i=3; yytext[i]!=' '; i++);
        i+=3;
        for(; i<yyleng-2; i++)
                fprintf(yyout,"%c",yytext[i]);
        fprintf(yyout,": ");
}
[ \t\n]*([a-zA-Z0-9]+";"[ \t\n]*)+"}" {
        for(i=0; i<yyleng-1; i++)
                fprintf(yyout,"%c",yytext[i]);
        fprintf(yyout,"\tbreak;");
}
"else{"[ \t\n]*([a-zA-Z0-9]+";"[ \t\n]*)+"}" {
        fprintf(yyout,"default:");
        for(i=5; i<yyleng-1; i++)
                fprintf(yyout,"%c",yytext[i]);
        fprintf(yyout,"}");
}
. ;
%%

void main()
{
        extern FILE *yyin, *yyout;
        yyin=fopen("input2.txt", "r");
        yyout=fopen("output2.txt", "w");
        yylex();
}
```

OUTPUT :-

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>lex p2.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>a.exe

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>type input2.txt
if(expression  == value1){
        statement1;
}
else if(expression  == value2){
        statement2;
}
else{
        statementDefault;
}
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>type output2.txt
switch(expression){
case value1:
        statement1;
        break;
case value2:
        statement2;
        break;
default:
        statementDefault;
}
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 6\SPOT>
```