

1.To convert an if statement multiple conditions to nested-if statements using pattern-action rules.

CODE :-

```

1  %option noyywrap
2  %{
3      #include <stdio.h>
4      int i, n = 0, j;
5  %}
6
7  %%
8  if\(.+\) {
9      i = 0;
10     while(yytext[i] != '&' && i < yyleng) {
11         printf("%c", yytext[i]);
12         i++;
13     }
14     printf("\n");
15     n++;
16     while(i < yyleng) {
17         i+=2;
18         if(i > yyleng)
19             break;
20         for(j=0; j < n; j++)
21             printf(" ");
22         printf("if(");
23         while(yytext[i] != '&' && i < yyleng && yytext[i] != ')') {
24             printf("%c", yytext[i]);
25             i++;
26         }
27         n++;
28         printf("\n");
29     }
30 }
31 .*; {
32     for(j=1; j < n; j++)
33         printf(" ");
34     printf("%s", yytext);
35 }
36 .|\n
37 %%
38
39 int main() {
40     FILE* fd = fopen("input.txt", "r");
41     yyin = fd;
42     yylex();
43     return 0;
44 }|

```

OUTPUT :-

```
C:\WINDOWS\system32\cmd.exe

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>lex p1.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>a.exe
if(x == 5 )
  if( y == 10 )
    if( z == 15)
      statement;
```

```
input.txt - Notepad
File Edit Format View Help

if(x == 5 && y == 10 && z == 15)
    statement;
```

2.Convert nested if-else to nested do - while syntax using LEX.

CODE :-

```
1 %option noyywrap
2 %{
3     #include<string.h>
4     int n = 0, i, j, m;
5     char stack[10][1024];
6 %}
7 %%
8 if\(.+\) {
9     printf("while(");
10    j = 0;
11    for(i = 3; i < yytext[i]; i++) {
12        printf("%c", yytext[i]);
13        if(yytext[i] == '=' && yytext[i+1] == '=') {
14            stack[n][j++] = '!';
15        }
16        else {
17            stack[n][j++] = yytext[i];
18        }
19    }
20    printf(") {"");
21    n++;
22 }
```

```

23  .*; {
24      for(i=0; i < yytext[i] == ' '; i++);
25      m = i / 4;
26
27      printf("%s\n", yytext);
28      for(i=0; i<m; i++) {
29          printf(" ");
30      }
31      printf("break;\n");
32      for(i = 0; i < m-1; i++) {
33          printf(" ");
34      }
35      printf("{}");
36      n--;
37  }
38  .*else {
39      for(i=0; i < yytext[i] == ' '; i++);
40      m = i / 4;
41      for(i = m; i < n; i++) {
42          for(j = 0; j < n - i; j++) {
43              printf(" ");
44          }
45          printf("break;\n");
46          for(j = 1; j < n - i; j++) {
47              printf(" ");
48          }
49          printf("{}\n");
50      }
51      n = m;
52      for(i=0; i<m; i++) {
53          printf(" ");
54      }
55      printf("while(%s) {" , stack[n]);
56      n++;
57  }
58  %%
59  int main() {
60      FILE *fd = fopen("input2.txt", "r");
61      yyin = fd;
62      yylex();
63      printf("\n");
64      for(i = 0; i < n; i++) {
65          for(j = 0; j < n - i; j++) {
66              printf(" ");
67          }
68          printf("break;\n");
69          for(j = 1; j < n - i; j++) {
70              printf(" ");
71          }
72          printf("{}\n");
73      }
74      return 0;
75  }

```

OUTPUT :-

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>lex p2.1
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>gcc lex.yy.c
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>a.exe
while( x == 1 ) {
    while( y == 2 ) {
        statement 1;
    break;
    }
    break;
}
while( x != 1 ) {
    statement 2;
break;
}
while( x != 1 ) {
    while( z == 3 ) {
        statement 3;
    break;
    }
    break;
}
while( x != 1 ) {
    statement 4;
break;
}
```

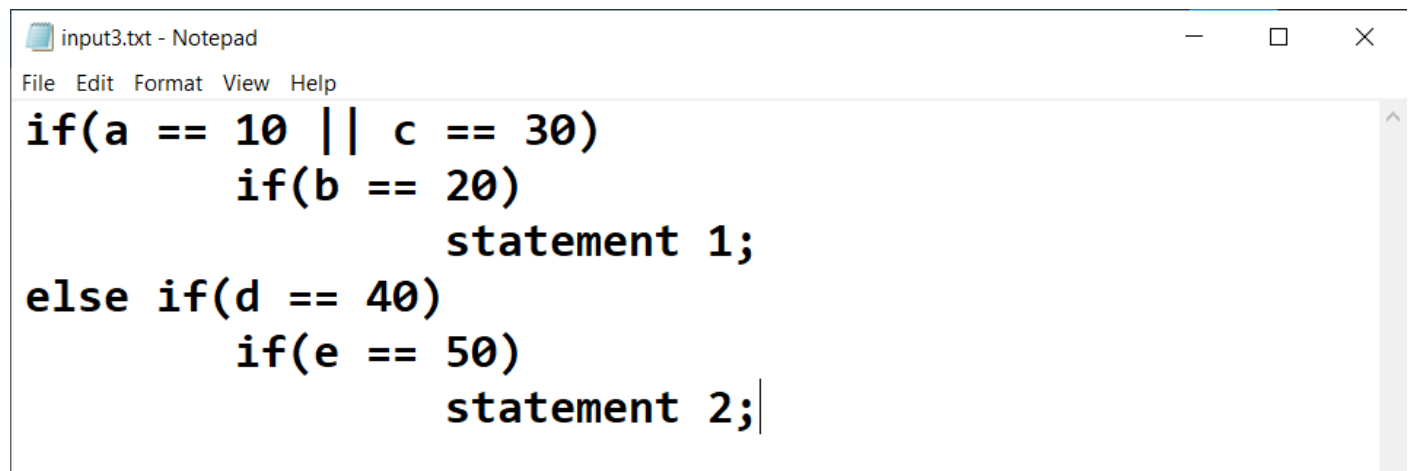
3.Convert a nested if –else if consisting of multiple expressions into a single if-else if

CODE :-

```
1  %option noyywrap
2  %{
3      #include <stdio.h>
4      int i, n = 0, j;
5  %}
6
7  %%
8  if\(.+\) {
9      if(n == 0) {
10         for(i = 0; i < yyleng-1; i++) {
11             printf("%c", yytext[i]);
12         }
13         n++;
14     }
15     else {
16         printf(" && ");
17         for(i = 3; i < yyleng-1; i++) {
18             printf("%c", yytext[i]);
19         }
20         n++;
21     }
22 }
23 else.if\(.+\) {
24     n = 1;
25     printf("\n");
26     for(i = 0; i < yyleng-1; i++) {
27         printf("%c", yytext[i]);
28     }
29 }
30 .*; {
31     printf("\n");
32     i = 0;
33     while(yytext[i] == ' ' && i < yyleng) {
34         i++;
35     }
36     printf(" ");
37     while(i < yyleng) {
38         printf("%c", yytext[i]);
39         i++;
40     }
41 }
42 .|\n
43 %%
44
45 int main() {
46     FILE* fd = fopen("inp.txt", "r");
47     yyin = fd;
48     yylex();
49     return 0;
50 }
```

OUTPUT :-

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>lex p3.1
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>gcc lex.yy.c
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>a.exe
if(a == 10 || c == 30 && b == 20)
    statement 1;
else if(d == 40 && e == 50)
    statement 2;
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 7>
```



```
input3.txt - Notepad
File Edit Format View Help
if(a == 10 || c == 30)
    if(b == 20)
        statement 1;
else if(d == 40)
    if(e == 50)
        statement 2;|
```