AIR UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

Lab Task 5

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Subject: Compiler Construction **Semester: VIII**

Objective: Binary to decimal and total 0s and 1s same / start & end with 0

ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Ability to Conduct Task					
Ability to assimilate the results					
Effective use of theorems/postulates/formulas					

Total Marks:
Obtained Marks:

REPORT ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Data presentation					
Experimental results					
Conclusion					

Question 1:

binary.l:

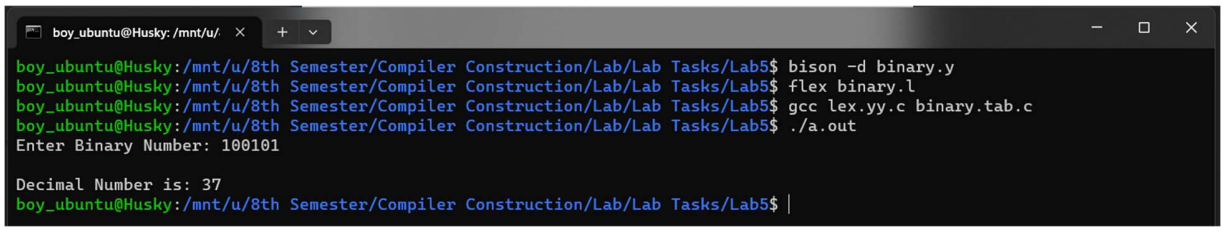
```
%{
#include <stdio.h>
#include <stdlib.h>
#include "binary.tab.h"
extern int yylval;
%}

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

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

binary.y:

```
%{
#include <stdio.h>
#include <stdlib.h>
void yyerror(const char *s);
int yylex(void);
int yywrap(void);
%}

%token ZERO ONE

%%
N: L {printf("\nDecimal Number is: %d\n", $1);}
L: L B {$$ = $1 * 2 + $2;}
 | B {$$ = $1;}

B: ZERO { $$ = 0; }
 | ONE { $$ = 1; }
```

```
%%

void yyerror(const char *s) {
    fprintf(stderr, "%s\n", s);
}

int main() {
    printf("Enter Binary Number: ");
    yyparse();
    return 0;
}
```

Output:



Question 2:

q2.y:

```
%{
#include <stdio.h>
int start_end_zero = 0;
int start_end_one = 0;
int equal_zero_one = 1;
%}

%token DIGIT

%%

input : sequence {
            if(start_end_zero || start_end_one)
                printf("Rule 1 matched:\n");
            if(equal_zero_one)
                printf("Rule 2 matched:\n");
            else
```

```
        }
      | { printf("Empty sequence\n"); }
      ;

sequence : '0' sequence_body '0' { printf("Matched sequence starting and ending
with 0.\n"); start_end_zero = 1; }
         | '1' sequence_body '1' { printf("Matched sequence starting and ending
with 1.\n"); start_end_one = 1; }
         ;

sequence_body : DIGIT { printf("Matched digit: %d\n", $1); if($1 == 0)
equal_zero_one++; else if($1 == 1) equal_zero_one--; }
              | /* empty */ { printf("No digits found\n"); }
              ;

%%

int main() {
    yyparse();
    return 0;
}

int yyerror(const char *s) {
    printf("%s\n", s);
    return 0;
}
```

q2.l:

```
%{
#include "q2.tab.h"
%}

%%

[0-1]   { yylval = yytext[0] - '0'; printf("Token: %s\n", yytext); return DIGIT;
}
\n      { /* skip newlines */ }
.       { /* skip other characters */ }

%%
```

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

Output:

```
boy_ubuntu@Husky:/mnt/u/8th Semester/Compiler Construction/Lab/Lab Tasks/Lab
5$ ./q2
Enter a Number: 100111

Rule 1 Matched:
Enter a Number: 00011101

Rule 2 Matched: boy_ubuntu@Husky:/mnt/u/8th Semester/Compiler Construction/L
ab/Lab Tasks/Lab5$
```