

NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR

Cachar, Assam

B.Tech. VIth Sem

Subject Code: CS-316

Subject Name: Compiler Design Lab

Submitted By:

Name : Subhojit Ghimire

Sch. Id. : 1912160

Branch : CSE – B

1. Write a yacc program to recognise a valid variable, which starts with a letter followed by any number of digit and letter.

➔ **CODE:**

LEX (lab6_1.l)

```
%{
    #include "lab6_1.tab.h"
    extern int yylval;
}%

%%
[a-zA-Z] {return LETTER;}
[0-9] {return DIGIT;}
\n {return NL;}
_ {return UND;}
. {return yytext[0];}
%%

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

YACC (lab6_1.y)

```
%{
    #include <stdio.h>
    #include <stdlib.h>
}%

%token DIGIT LETTER NL UND

%%
start: variable NL {printf ("\n<VALID IDENTIFIER>\n"); exit (0);} ;
variable: LETTER alnum ;
alnum: LETTER alnum
| DIGIT alnum
| UND alnum
| LETTER
| DIGIT
| UND
;
%%

int yyerror (char *msg) {
    printf ("\n<INVALID IDENTIFIER>\n");
    exit (0);
}
```

```

}

int main () {
    printf ("ENTER VARIABLE NAME: ");
    yyparse ();
}

```

OUTPUT:

```

PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> yacc -d lab6_1.y
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> lex lab6_1.l
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> cc lex.yy.c lab6_1.tab.c
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> ./a.exe
ENTER VARIABLE NAME: _abcd
<INVALID IDENTIFIER>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> ./a.exe
ENTER VARIABLE NAME: ab_cd
<INVALID IDENTIFIER>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> ./a.exe
ENTER VARIABLE NAME: ab34
<VALID IDENTIFIER>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> ./a.exe
ENTER VARIABLE NAME: 34ab_cs
<INVALID IDENTIFIER>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI>

```

2. Write a yacc program to recognise strings “aaab”, “abbb”, “ab” and “a” using the grammar $a^n b^n$, where $n > 0$.

→ **CODE:**

LEX (lab6_2.l)

```

%{
    #include "lab6_2.tab.h"
}%

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

```

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

YACC (lab6_2.y)

```
%{
    #include <stdio.h>
    #include <stdlib.h>
}%

%token A B NL

%%

start: string NL {printf ("<VALID STRING>\n"); exit (0);} ;
string: A string B | ;
%%

int yyerror (char *msg) {
    printf ("<INVALID STRING>\n");
    exit (0);
}

int main () {
    printf ("ENTER A STRING: ");
    yyparse ();
}
```

OUTPUT:

```
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> yacc -d lab6_2.y
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> lex lab6_2.1
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> cc lex.yy.c lab6_2.tab.c
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: aaab
<INVALID STRING>
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: aabb
<VALID STRING>
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: abbb
<INVALID STRING>
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: ab
<VALID STRING>
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: a
<INVALID STRING>
PS D:\Documents\NITS\Semester VI\LAB\CS316 Compiler Design\LAB VI>
```