

NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR

Cachar, Assam

B.Tech. VIth Sem

Subject Code: CS-316

Subject Name: Compiler Design Lab

Submitted By:

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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:

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
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

<VALID 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 $a^m b^n$, where $m, n \geq 0$.

➔ **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

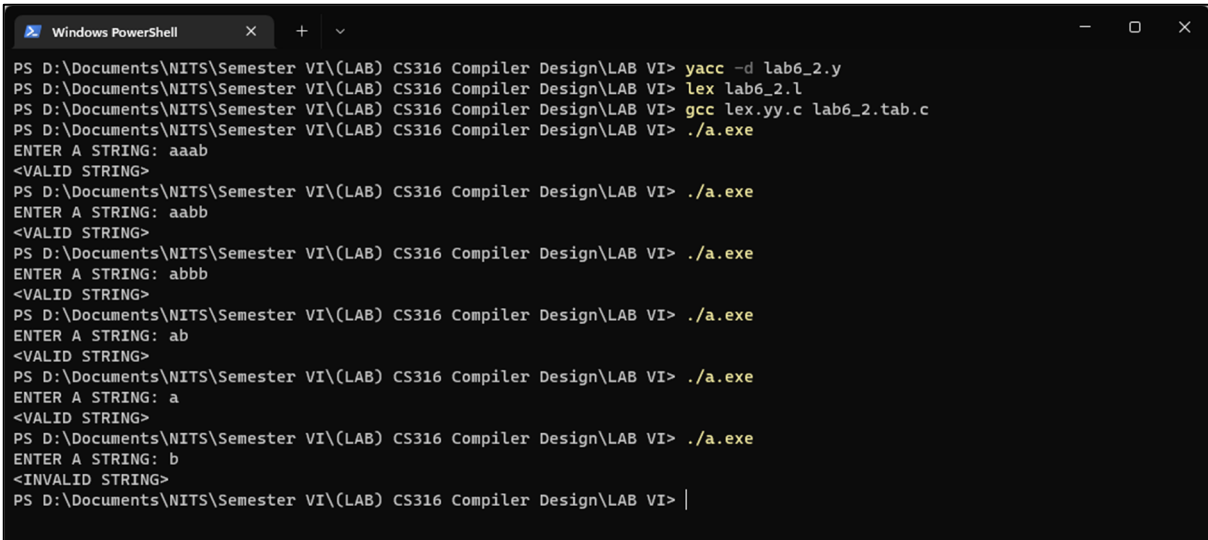
%%

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

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

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

OUTPUT:



```
Windows PowerShell
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.l
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> gcc 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
<VALID 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
<VALID 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
<VALID STRING>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> ./a.exe
ENTER A STRING: b
<INVALID STRING>
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design\LAB VI> |
```