

Ex No: 6**Date:****RECOGNIZE A VALID VARIABLE WITH LETTERS AND DIGITS USING LEX AND YACC****AIM:**

To recognize a valid variable which starts with a letter followed by any number of letters or digits.

ALGORITHM:

- Include necessary headers and declarations within `%{ %}` in the lexer file.
- Define rules to match identifiers (starting with a letter or underscore, followed by letters, digits, or underscores) and return token `letter`.
- Define a rule to match digits (single digit) and return token `digit`.
- Define a rule to match any other character and return it.
- Define a rule to match newline character and return 0 to indicate end of input.
- Implement `yywrap()` function to return 1, indicating end of input.
- In the parser file, include necessary headers and declarations within `%{ %}`.
- Define tokens `digit` and `letter`.
- Specify grammar rules for parsing identifiers recursively.
- Implement `yyerror()` function to handle parsing errors, setting `valid` flag to 0.
- In `main()` function, prompt the user to enter a name to test for an identifier.
- Call `yyparse()` to initiate parsing.
- If `valid` flag is set, print "It is an identifier", else print "It is not an identifier".

PROGRAM:**variable.l:**

```
%{
    #include "y.tab.h"
}%
%%
[a-zA-Z_][a-zA-Z_0-9]* return letter;
[0-9]          return digit;
.              return yytext[0];
\n            return 0;
```

```

%%
int yywrap(){
return 1;
}

variable.y:
%{
#include<stdio.h>
int valid=1;
%}
%token digit letter
%%
start : letter s
s :   letter s
    | digit s
    |
    ;
%%
int yyerror()
{
printf("\nIts not an identifier!\n");
valid=0;
return 0;
}
int main() {
printf("\nEnter a name to test for an identifier: ");
yyvsparse();
if(valid) {
printf("\nIt is an identifier!\n");
} }

```

OUTPUT:

```
→ CD_record vi 288_ex6.l
→ CD_record vi 288_ex6.y
→ CD_record yacc -d 288_ex6.y
→ CD_record cc lex.yy.c y.tab.c
y.tab.c: In function 'yyparse':
y.tab.c:1013:16: warning: implicit declaration of function 'yylex' [-Wimplicit-function-declaration]
1013 |         yychar = yylex ();
      |                  ^~~~~~
y.tab.c:1148:7: warning: implicit declaration of function 'yyerror'; did you mean 'yyerrok'? [-Wimplicit-function-declaration]
1148 |         yyerror (YY_("syntax error"));
      |         ^~~~~~
      |         yyerrok
→ CD_record ./a.out

Enter a name to test for an identifier: s

It is an identifier!
```

RESULT: