

**EXP NO: 05**

**DATE:**

**RECOGNIZE A VALID VARIABLE WHICH STARTS WITH A LETTER  
FOLLOWED BY ANY NUMBER OF LETTERS OR DIGITS USING LEX AND  
YACC**

**Problem Statement:**

Recognizes a valid variable name. The variable name must start with a letter (either uppercase or lowercase) and can be followed by any number of letters or digits. The program should validate whether a given string adheres to this naming convention.

**AIM:**

To develop a **LEX and YACC program** that recognizes a **valid variable name** in C programming, which:

- Starts with a **letter** (a-z or A-Z)
- Followed by **any number of letters or digits** (a-z, A-Z, 0-9, \_)
- **Does not allow** invalid characters (e.g., 123abc, @var, x!y)

**ALGORITHM:**

**Step 1:** A Yacc source program has three parts as follows: Declarations %% translation rules %% supporting C routines

**Step 2:** Declarations Section: This section contains entries that:

Include standard I/O header file.

Define global variables.

Define the list rule as the place to start processing.

Define the tokens used by the parser.

**Step 3:** Rules Section: The rules section defines the rules that parse the input stream. Each rule of a grammar production and the associated semantic action.

**Step 4:** Programs Section: The programs section contains the following subroutines. Because these subroutines are included in this file, it is not necessary to use the yacc library when processing this file.

Main- The required main program that calls the yyparse subroutine to start the program.

yyerror(s) -This error-handling subroutine only prints a syntax error message.

yywrap -The wrap-up subroutine that returns a value of 1 when the end of input occurs. The

calc.lex file contains include statements for standard input and output, as programmer file information if we use the -d flag with the yacc command.

The y.tab.h file contains definitions for the tokens that the parser program uses.

**Step 5:** calc.lex contains the rules to generate these tokens from the input stream.

## **PROGRAM:**

### **Lex.l**

```
%{
#include "yac.tab.h"
#include <stdio.h>

int yywrap(void) {
    return 1;
}

%}

%%

[a-zA-Z_][a-zA-Z0-9_]* { return IDENTIFIER; }
\n                { return 0; }
.                  { return yytext[0]; }

%%
```

### **Yac.y**

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

extern char *yytext;
int yylex();
int yyerror(char *msg);
%}

%token IDENTIFIER

%%

variable: IDENTIFIER { printf("Valid variable name: %s\n", yytext); }
;

%%
```

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```
int main() {  
    printf("Enter a variable name:\n");  
    yyparse();  
    return 0;  
}  
  
int yyerror(char *msg) {  
    printf("Error: %s\n", msg);  
    return 0;  
}
```

### OUTPUT :

```
yacc -d parser.y  
lex lexer.l  
cc lex.yy.c y.tab.c -o var_checker  
./a.out
```

```
Enter a variable name: myVar1  
Valid variable: myVar1  
Enter a variable name: Hello123  
Valid variable: Hello123
```

### RESULT:

Thus the above program reads an input string, checks whether it follows the rules for a valid variable name, and produces the following output.