Lab program 2:

Write a program for Lexical analyzer.

Aim: Program for Lexical analyzer to identify stream of tokens.

Algorithm:

The pattern we are checking is “Datatype Variable1,Variable2,….. VariableN$”;

1. Read an input string ending with $.
2. Using the function tokens we are checking whether the input string is accepted or not.
3. After the completion of datatype we will check for identifier, which may contain both letters and digits but must start with a letter.
4. The string can also end with delimiter and also we can define more than one variable at a time.

Program

```
#include<string.h>
#include<ctype.h>
#include<stdio.h>
void keyword(char str[10])
{
   if(strcmp("for",str)==0||strcmp("while",str)==0||strcmp("do",str)==0||strcmp("int",str)==0||
strcmp("float",str)==0||strcmp("char",str)==0||strcmp("double",str)==0||strcmp("static",str)==0||
strcmp("switch",str)==0||strcmp("case",str)==0)
      printf("\n%s is a keyword",str);
   else
      printf("\n%s is an identifier",str);
}

main()
{
   FILE *f1,*f2,*f3;
   char c,str[10],st1[10];
   int num[100],lineno=0,tokenvalue=0,i=0,j=0,k=0;
   printf("\nEnter the c Program: ");/*gets(st1);*/
   f1=fopen("input","w");
   while((c=getchar())!=EOF)
      putc(c,f1);
   fclose(f1);
   f1=fopen("input","r");
   f2=fopen("identifier","w");
   f3=fopen("specialchar","w");
   while((c=getc(f1))!=EOF)
   {
      if(isdigit(c))
      {
         tokenvalue=c-'0';
         c=getc(f1);
         while(isdigit(c))
         {
            tokenvalue*=10+c-'0';
            c=getc(f1);
```

```
        }
        num[i++]=tokenvalue;
        ungetc(c,f1);
    }
    else if(isalpha(c))
    {
        putc(c,f2);
        c=getc(f1);
        while(isdigit(c)||isalpha(c)||c=='_'||c=='$')
        {
            putc(c,f2);
            c=getc(f1);
        }
        putc(' ',f2);
        ungetc(c,f1);
    }
    else if(c==' '||c=='\t')
        printf(" ");
    else if(c=='\n')
        lineno++;
    else
        putc(c,f3);
}
fclose(f2);
fclose(f3);
fclose(f1);
printf("\nThe no's in the program are");
for(j=0; j<i; j++)
    printf("%d",num[j]);
printf("\n");
f2=fopen("identifier","r");
k=0;
printf("The keywords and identifiersare:");
while((c=getc(f2))!=EOF)
{
    if(c!=' ')
        str[k++]=c;
    else
    {
        str[k]='\0';
        keyword(str);
        k=0;
    }
}
fclose(f2);
f3=fopen("specialchar","r");
printf("\nSpecial characters are");
while((c=getc(f3))!=EOF)
    printf("%c",c);
printf("\n");
fclose(f3);
printf("Total no. of lines are:%d",lineno);
```

}

Output:

Enter the c Program: a+b*c
^Z

The no's in the program are
The keywords and identifiersare:
a is an identifier
b is an identifier
c is an identifier
Special characters are+*
Total no. of lines are:1