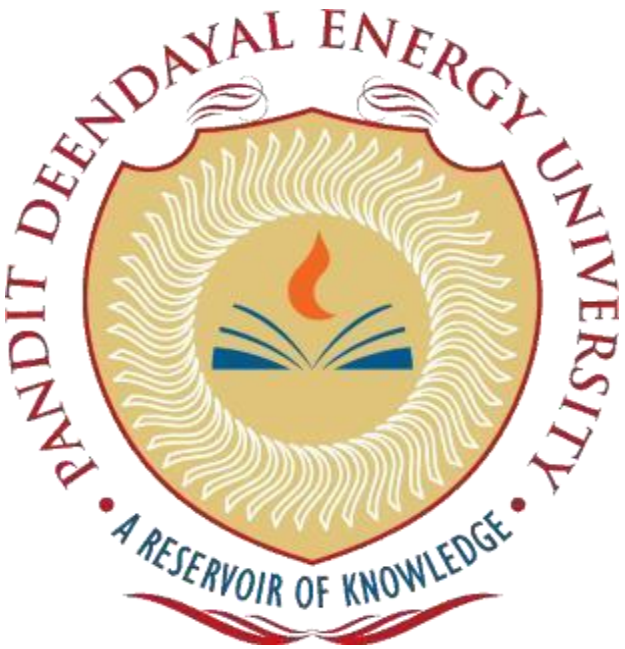
Pandit Deendayal Energy University, Gandhinagar

School of Technology

Department of Computer Science & Engineering

System Software & Compiler Design Lab (20CP302P)



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Semester: **V**

Division: **3 (G5)**

Branch: **Computer Science Engineering**

Practical: 1

Aim: Write C/C++/Java/Python program to identify keywords, identifiers and others from the given input file.

Code:

```
#include <bits/stdc++.h>
#include <fstream>
#include <string>
#include <vector>
using namespace std;

int main() {
    //array of keywords
    string
keywords[32]={"void","int","float","double","char","long","short","signed","unsig
ned","bool","if","else","for","while","do","break","continue","switch","case","de
fault","return","goto","auto","extern","register","static","const","sizeof","type
def","volatile","struct","union"};

    //array of operators
    string operators[45]={"+","-","*","/","%",">","<","=","==","++","--","+=","-
=","*=","/=","%=","&&","||","!","!=","&","|","^","~",">>","<<",">>=","<<=","&=","
|=","^=",".","->","?",":","::",";",",","(",")","{","}","[","]"};

    //reading the file and storing each word in respective vectors
    ifstream file("input.cpp");
    string word;
    vector<string> keywordsVector;
    vector<string> operatorsVector;
    vector<string> identifiersVector;

    int key=0;
    int op=0;
    int id=0;

    //read file word by word
    while (file >> word){
        //check if a word is keyword
        for(int i=0;i<32;i++){
```

```
            if(word==keywords[i]){
                keywordsVector.push_back(word);
                cout << word << " is a keyword." << endl;
                key++;
                goto end;
            }
        }
        //check if a word is operator
        for(int i=0;i<45;i++){
            if(word==operators[i]){
                operatorsVector.push_back(word);
                cout << word << " is an operator." << endl;
                op++;
                goto end;
            }
        }

        identifiersVector.push_back(word);
        cout << word << " is an identifier." << endl;
        id++;
        end:;
    }
    cout<< endl;
    //print the vectors
    cout<<"Keywords: ";
    for(int i=0;i<keywordsVector.size();i++){
        cout<<keywordsVector[i]<<" ";
    }
    cout<<endl;

    cout<<"Operators: ";
    for(int i=0;i<operatorsVector.size();i++){
        cout<<operatorsVector[i]<<" ";
    }

    cout<<endl;
    cout<<"Identifiers: ";
    for(int i=0;i<identifiersVector.size();i++){
        cout<<identifiersVector[i]<<" ";
    }
    cout<< endl;
    cout<< endl;
    cout << "total keywords: " << key << endl;
    cout << "total operators: " << op << endl;
    cout << "total identifiers: " << id << endl;
```

```
    cout<<endl;
    return 0;
}
```

Output:

```
PS D:\Sem-5\compiler\Lab_1> cd "d:\Sem-5\compiler\Lab_1\" ;
void is a keyword.
main() is an identifier.
{ is an operator.
float is a keyword.
f1,f2; is an identifier.
int is a keyword.
a, is an identifier.
b, is an identifier.
total; is an identifier.
total is an identifier.
= is an operator.
f1 is an identifier.
+ is an operator.
f2 is an identifier.
+ is an operator.
a is an identifier.
+ is an operator.
b; is an identifier.
} is an operator.
```

```
Keywords: void float int
Operators: { = + + + }
Identifiers: main() f1,f2; a, b, total; total f1 f2 a b;

total keywords: 3
total operators: 6
total identifiers: 10

PS D:\Sem-5\compiler\Lab_1>
```