Dated: 13/01/2022   (SACHIN   BTECH/60055/19)

Lab No:1

Understand the concept of Tokens. Tokens are backbone of compiler design as it used it in the first phase to do lexical analysis.

Question: WAP to count white spaces, numbers, words in a file.

Upgrade this question to find keywords and assigned variables.

:Note:

Keywords can be defined using arrays.

Procedure to follow:

1. Use any Programming language without using in built library.
2. Use file handling method to open any programming file.
3. Read the content of the file and break it into tokens as per questions asked.
4. Use special keywords like strtok(), tokenizer in java to perform your task.
5. Print the output and sent it through the concerned MS Team message box of individual users.

CODE:

```java
import java.io.File;
import java.util.Scanner;
public class LAB1
{

    static int words = 0;
    static int space = 0;
    static int num = 0;
    static int keywords = 0;
    static String[] KeyArray = new String[]{ "abstract", "assert", "boolean",
    "break", "byte", "case", "catch", "char", "class", "const",
    "continue", "default", "do", "double", "else", "extends", "false",
    "final", "finally", "float", "for", "goto", "if", "implements",
    "import", "instanceof", "int", "interface", "long", "native",
    "new", "null", "package", "private", "protected", "public",
    "return", "short", "static", "strictfp", "super", "switch",
    "synchronized", "this", "throw", "throws", "transient", "true",
    "try", "void", "volatile", "while" };
  public static void main(String[] args) throws Exception
```

```java
{
    // pass the path to the file as a parameter
    File file = new File("C:\\Users\\sachi\\Desktop\\CD\\CODE_LAB1.txt");
    Scanner sc = new Scanner(file);

    while (sc.hasNextLine())
    {
        String test = sc.nextLine();
        count(test);
    }

    System.out.println("words: " + words);
    System.out.println("space: " + space);
    System.out.println("number: " + num);
    System.out.println("keywords: " + keywords);
    System.out.println("variables: "+ (words - keywords));
}
public static void count(String x){
    char[] ch = x.toCharArray();
    for(int i = 0; i < x.length(); i++){
        if(Character.isDigit(ch[i])){
            num ++ ;
        }
        else if(Character.isSpaceChar(ch[i])){
            space ++ ;
        }
    }
    for (int i = 0; i < x.length() - 1; i++)
    {
        if ((x.charAt(i) == ' ') && (x.charAt(i + 1) != ' '))
        {
            words++;
        }
    }
    String[] words=x.split("\\s");
    for(String w:words){
        for (int i = 0; i < KeyArray.length; i++) {
            if(KeyArray[i].equals(w))
                keywords++;
        }
    }
}
}
```

INPUT:

```java
import java.util.Scanner;
/**
 * search
 */
public class search {

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        int arr[] = {1, 2, 3, 4, 5, 6, 7, 8, 9};
        int x = in.nextInt();
        if(binary(arr, x) == x)
            System.out.println("Found");
        else
            System.out.println("Not Found");
    }
    public static int linear(int arr[], int x)
    {
        for (int i = 0; i < arr.length; i++) {
            if(arr[i] == x)
                return x;
        }
        return -1;
    }
    public static int binary(int arr[], int x) {
        int lo = 0;
        int hi = arr.length-1;
        while (hi >= lo) {
            int mid = lo + (hi - lo)/2;
            if(arr[mid] == x)
                return x;
            else if(arr[mid] > x)
                hi = mid-1;
            else lo = mid+1;
        }
        return -1;
    }
}
```

OUTPUT:

```
PROBLEMS  1    OUTPUT    DEBUG CONSOLE    TERMINAL

Windows PowerShell
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PS C:\Users\sachi\Desktop\CD>  & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '--enable-preview
Code\User\workspaceStorage\e17ac23dcad2350669924eb711c66060\redhat.java\jdt_ws\CD_ca51496c\bin' 'L
words: 119
space: 354
number: 17
keywords: 29
variables: 90
PS C:\Users\sachi\Desktop\CD> ▮
```