## //Some helpful methods

```
public static void LexicalAnalyzer(String[] inputs){
      String Keywords = "if|then|else|def";
      String Openpar = "\\(";
String Closepar = "\\)";
String Semicolon = ";";
      String Comma = ",";
      String Equal = "=";
      String Plus = "\\+";
      String Minus = "\\-";
      String Identifier = "[a-zA=Z]([a-zA-Z]|[0-9])*";
      String Number = [0-9]+;
      Pattern patternK = Pattern.compile(Keywords);
      Pattern pattern0 = Pattern.compile(Openpar);
      Pattern patternC = Pattern.compile(Closepar);
      Pattern patternS = Pattern.compile(Semicolon);
      Pattern patternCm = Pattern.compile(Comma);
      Pattern patternE = Pattern.compile(Equal);
      Pattern patternP = Pattern.compile(Plus);
      Pattern patternM = Pattern.compile(Minus);
      Pattern patternI = Pattern.compile(Identifier);
      Pattern patternN = Pattern.compile(Number);
      Matcher matcher;
      for(int i=0;i<inputs.length;i++){</pre>
             matcher=patternK.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Keyword,\""+inputs[i]+"\">";
             else {
                    matcher=patternO.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Openpar,\""+inputs[i]+"\">";
             else {
                    matcher=patternC.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Closepar,\""+inputs[i]+"\">";
             else {
                    matcher=patternS.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Semicolon,\""+inputs[i]+"\">";
             else {
                    matcher=patternCm.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Commar,\""+inputs[i]+"\">";
             else {
                    matcher=patternE.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Equal,\""+inputs[i]+"\">";
             else {
                    matcher=patternP.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Plus,\""+inputs[i]+"\">";
             else {
                    matcher=patternM.matcher(inputs[i]);
if(matcher.matches())inputs[i]="<Minus,\""+inputs[i]+"\">";
             else {
                    matcher=patternI.matcher(inputs[i]);
```

```
if(matcher.matches())inputs[i]="<Identifier,\""+inputs[i]+"\">";
                   else {
                          matcher=patternN.matcher(inputs[i]);
      if(matcher.matches())inputs[i]="<Number,\""+inputs[i]+"\">";
                   else {if (inputs[i].isEmpty());
                          System.out.println("Error !! "+inputs[i]+"(word
No "+(i+1)+") could not be recognized");
                          System.exit(0);
                   }}}}}}
             }
      }
}
                            **********
import java.io.*;
public class FileString {
      public static String readFile( String file ) throws IOException {
          BufferedReader reader = new BufferedReader( new FileReader
(file));
          String line = null;
          StringBuilder stringBuilder = new StringBuilder();
          String ls = System.getProperty("line.separator");
          while( ( line = reader.readLine() ) != null ) {
              stringBuilder.append( line );
              stringBuilder.append( ls );
          }
          return stringBuilder.toString();
      }
      public static void writeFile(String name, String text){
             try {
                    if (new File(name).exists()){
                          System.out.println("CHANGE FILE'S NAME OR DELETE
THE OLD ONE !");System.exit(0);}
                   FileWriter writer=new FileWriter(name);
                   BufferedWriter buffered=new BufferedWriter(writer);
                   buffered.write(text);
                   buffered.close();
             }
             catch (Exception e) {
                   System.err.println(e.getMessage());
      }
      }
}
```

## Input:

```
def fib(x) = if x = 1 then 0 else if x = 2 then 1 else fib(x-1) +fib(x-2)
```

## Output:

```
<Keyword,"def"> , <Identifier,"fib"> , <Openpar,"("> , <Identifier,"x"> ,
<Closepar,")"> , <Equal,"="> , <Keyword,"if"> , <Identifier,"x"> ,
<Equal,"="> , <Number,"1"> , <Keyword,"then"> , <Number,"0"> ,
<Keyword,"else"> , <Keyword,"if"> , <Identifier,"x"> , <Equal,"="> ,
<Number,"2"> , <Keyword,"then"> , <Number,"1"> , <Keyword,"else"> ,
<Identifier,"x"> , <Keyword,"else"> ,
<Number,"1"> , <Closepar,"("> , <Identifier,"x"> , <Minus,"-"> ,
<Number,"1"> , <Closepar,"("> , <Identifier,"fib"> ,
<Openpar,"("> , <Identifier,"fib"> ,
<Openpar,"("> , <Identifier,"x"> , <Number,"2"> ,
<Closepar,"("> , <Identifier,"x"> , <Number,"2"> ,
<Closepar,"(")</pre>
```