

## Example Parser in Java

From Dr. Scott Gordon

```
import java.io.*;
import java.util.Scanner;
//-----
// Recognizer for simple expression grammar
// Written by Scott Gordon 1/03
// minor modifications made 2/04, 9/06, 2/09, 9/11, 2/15
//
// to run on Athena (linux) -
//   save as: Recognizer.java
//   compile: javac Recognizer.java
//   execute: java Recognizer
//
// EBNF Grammar is -
//   <exp> ::= <atom> | <list>
//   <atom> ::= <digit> | <string>
//   <list> ::= ( <exprlist> )
//   <exprlist> ::= { <exp> }
//   <digit> ::= 0 | 1
//   <string> ::= a | b
//-----

public class Recognizer
{
    static String inputString;
    static int index = 0;
    static int errorflag = 0;

    private char token()
    { return(inputString.charAt(index)); }

    private void advancePtr()
    { if (index < (inputString.length()-1)) index++; }

    private void match(char T)
    { if (T == token()) advancePtr(); else error(); }

    private void error()
    {
        System.out.println("error at position: " + index);
        errorflag = 1;
        advancePtr();
    }
}
```

```

    }
//-----
private void exp()
{ if (token() == '(') list(); else atom(); }

private void atom()
{ if ((token() == '0')
    || (token() == '1')) digit(); else str(); }

private void list()
{
    match('(');
    exprlist();
    match('');
}

private void exprlist()
{ while ((token() == '0')
    || (token() == '1')
    || (token() == 'a')
    || (token() == 'b')
    || (token() == '(')) exp(); }

private void digit()
{ if ((token() == '0') || (token() == '1')) match(token()); else error(); }

private void str()
{ if ((token() == 'a') || (token() == 'b')) match(token()); else error(); }

//-----
private void start()
{
    exp();
    match('$');

    if (errorflag == 0)
        System.out.println("legal." + "\n");
    else
        System.out.println("errors found." + "\n");
}
//-----
public static void main (String[] args) throws IOException
{
    Recognizer rec = new Recognizer();

```

```
Scanner input = new Scanner(System.in);
```

```
System.out.print("\n" + "enter an expression: ");  
inputString = input.nextLine();
```

```
    rec.start();  
}  
}
```