

الكود السليم هنا أي عمار في سعاد حسب السؤال المطلوب نظام كاتالي

Page number Word - Comend - relation - number

```

Public Token Scan() {
    //space
    For (; ; Peek = (char) system.in.read()) {
        if (Peek == ' ' || Peek == '\t') Continue;
        else if (Peek == '\n') line = line + 1;
        else break;

        //number
        if (character.isDigit(Peek)) {
            int v = 0;
            do {
                v = v * 10 + character.digit(Peek, 10);
                Peek = (char) System.in.read();
            } while (character.isDigit(Peek));
            return new Num(v);
        }

        //Word
        if (character.isLetter(Peek)) {
            String Buffer b = new StringBuffer();
            do {
                b.append(Peek);
                Peek = (char) System.in.read();
            } while (character.isLetter(Peek));
            String s = b.toString();
            Word w = (Word) words.get(s);
            if (w != null) return w;
            else w = new Word(Tag.ID, s);
            words.put(s, w);
            return w;
        }

        //Comment Single line Comment
        if (Peek == '/') {
            Peek = (char) stream.read();
            if (Peek == '/') {
                For (; ; Peek = (char) stream.read()) {
                    if (Peek == '\n') break;
                }
            }
            else throw new SyntaxException();
        }
    }
}

```


~~Comment / x x /~~

```

if (peek == '/') {
    peek = (char) stream.read();
    if (peek == '*') {
        char prevpeek = ' ';
        for (; prevpeek = peek, peek = (char) stream.read(); ) {
            if (prevpeek == '*' && peek == '/') {
                break;
            }
        }
    } else throw new SyntaxException();
}

```

// Relation sign {<, <=, ==, !=, >=, >}?

```

if ("<=!>".indexOf(peek) > -1) {
    StringBuffer b = new StringBuffer();
    b.append(peek);
    peek = (char) stream.read();
    if (peek == '=') b.append(peek);
    return new Rel(b.toString());
}

```

// number no type sensitive float

```

if (character.isDigit(peek) || peek == '.') {
    Boolean isDotExist = false;
    StringBuffer b = new StringBuffer();
    do {
        if (peek == '.') isDotExist = true;
        b.append(peek);
        peek = (char) stream.read();
    } while (isDotExist == true ? character.isDigit(peek) :
            character.isDigit(peek) || peek == '.');
    return new Num(new Float(b.toString()));
}

```

Token t = new Token(peek);

peek = ' '; // peek = blank;

return t;

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6 - Inbook look fg 2.16 و 2.17 و 2.18 تحس عليا دقت بالاكوان الشقية

Predictive Parsing

For (optexpr ; optexpr ; optexpr) stmt
Match(For); Match('('); optexpr(); Match(';');
optexpr(); Match(';'); optexpr(); Match(')');
stmt()

Void match (terminal t) {
if (lookahead == t)

lookahead = nextTerminal;
else report ("syntax error"); }

Void optexpr () {
if (lookahead == expr) match (expr); }

Void stmt () { Switch (lookahead) {

Case expr : match (expr); match(';'); break;

Case if : match('if'); Match('('); match (expr); match(')');

Case For : match(For) break;

Case other: match (other); break;

default : report ('syntax error'); }

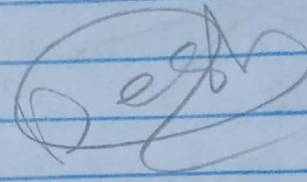
Page:
~~Left Recursion~~ $\text{expr} \rightarrow \text{expr} + \text{term}$
 $A \rightarrow A \alpha \mid B$

8- Construct recursive-descent parsers, starting with the following grammars

(a) $S \rightarrow +SS \mid -SS \mid a$

(b) $S \rightarrow S(S)S \mid \epsilon$

(c) $S \rightarrow 0S \mid 1 \mid 01$



void match (Terminal t) {

if (lookahead == t) { lookahead = nextTerminal(); }

else { report("syntax error"); }

}

(a) void S() { switch (lookahead) {

case "+": match("+"); S(); S(); break;

case "-": match("-"); S(); S(); break;

case "a": match("a"); break;

default: report("syntax error"); }

(b) void S() {

if (lookahead == "(") {

match("("); S(); match(")"); S(); }

(c) void S() { switch (lookahead) {

case "0": match("0"); S(); match("1"); break;

case "1": // match(epsilon); break;

default: report("syntax error"); }

9- in book pg 2.23 & 2.24 read 2.5.2 $A \rightarrow \lambda R$

الكود يقبل لال صيغة اللول 2.5.2

$R \rightarrow \lambda R \mid PR \mid \epsilon$

- void expr() { term(); rest(); }

- void term() { if (lookahead is a digit) {

t = lookahead; match(lookahead); print(t); }

else { report("syntax error"); }

Desha

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* Fig 2.25 `void rest() { if (lookahead == "+") {
 Match("+"); term(); Print('+'); rest(); }
 else if (lookahead == "-") {
 Match("-"); term(); Print('-'); rest(); }
 else { } }`

Def `- void rest() { while (true) {
 if (lookahead == '+') {
 Match('+'); term(); Print('+'); continue; }
 elseif (lookahead == '-') {
 Match('-'); term(); Print('-'); continue; }
 break; } }`

to-Write a pseudoCode of a Program that takes input from File and remove the new line and multiple spaces?

1 or Skip White Space

Fig 2.20 `for (; peek = next input character) {
 if (peek is a blank or a tab) do nothing;
 else if (peek is a newline) line = line + 1;
 else break; }`

2 Grouping digits into integers

Fig 2.30 `if (peek holds a digit) { int v = 0;
 do { v = v * 10 + integer value of digit peek;
 peek = next input character;
 } while (peek holds a digit);
 return token(num, v) }`

3 Recognizing Key words and Identifiers

Fig 2.31 `if (peek holds a letter) {
 Collect letter or digits into a buffer b;
 S = string formed from the characters in b;
 W = token returned by Words.get(s);
 if (W is not Null) return W;
 else Enter the Key Value Pair (S, <id, s>) into Words;
 return token(id, S); }`