Compiler Design Laboratory (CS 653)

Sessional Study Materials

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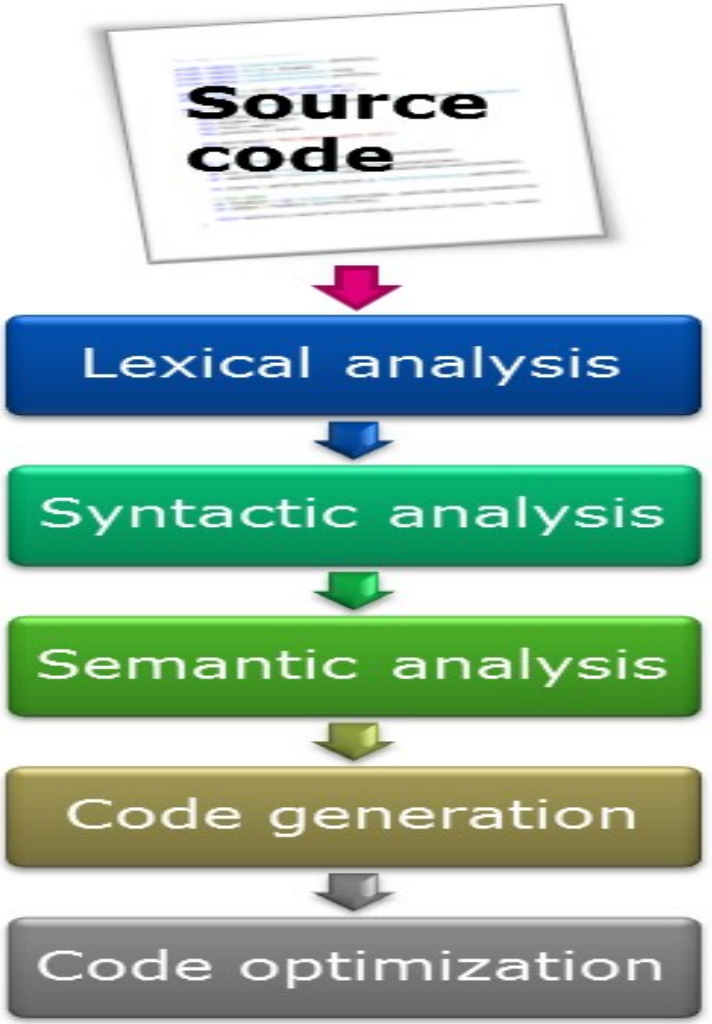
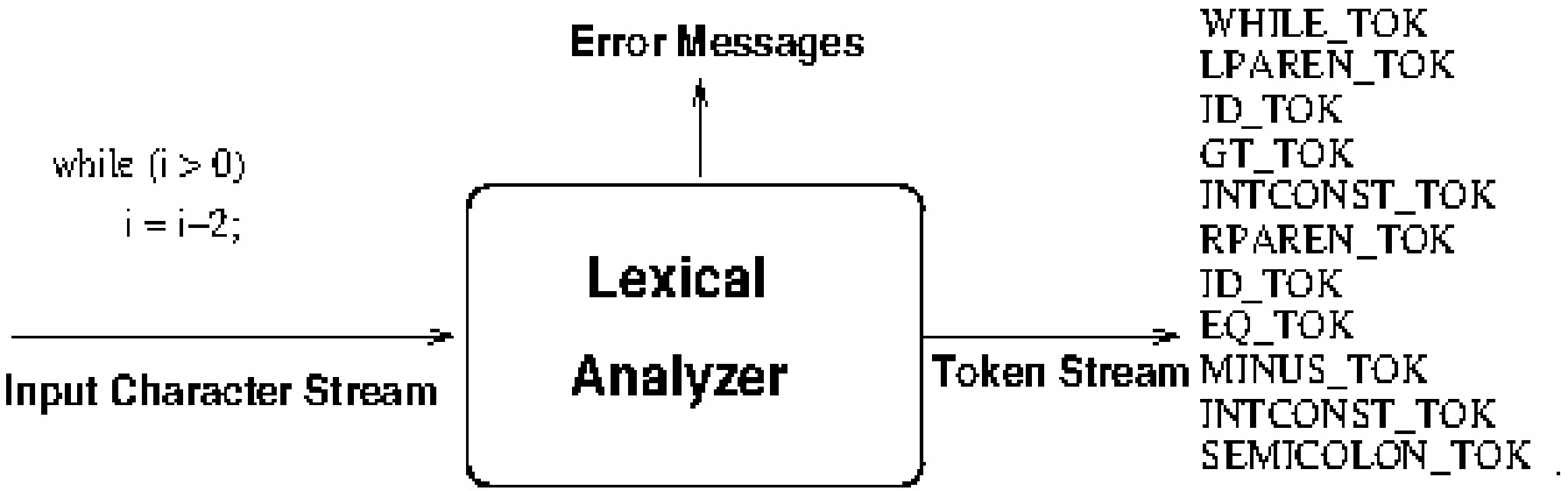
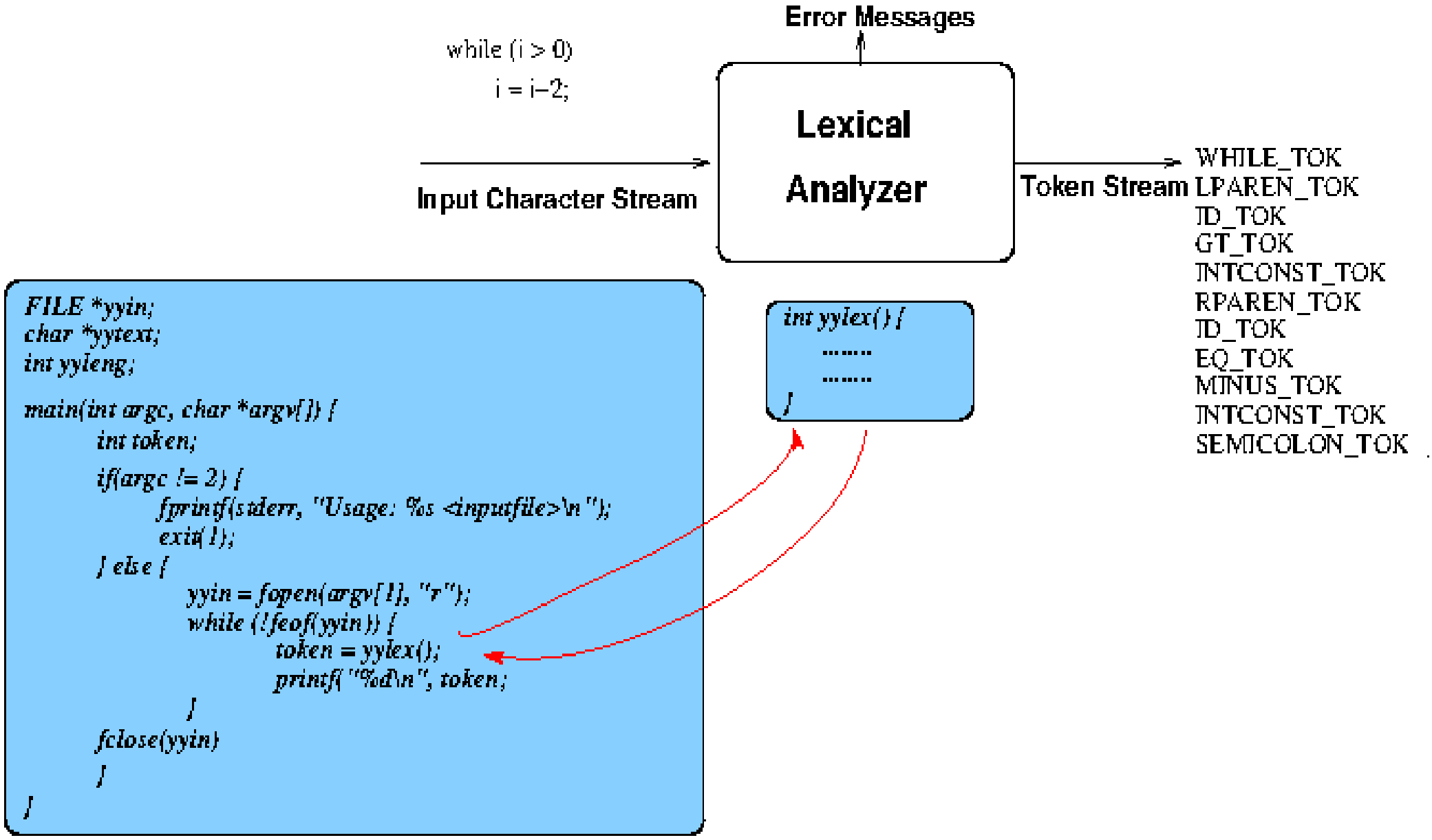
Phases of Compilation



What Lexical Analyzer does



Programmer's View



Loop and switch Approach

```
/* Single caharacter lexemes */
#define LPAREN_TOK '('
#define GT_TOK '>'
#define RPAREN_TOK ')'
#define EQ_TOK '='
#define MINUS_TOK '-'
#define SEMICOLON_TOK ';'
/*
.
.
.*/
/* Reserved words */
#define WHILE_TOK 256
/*
.
.
.*/
/* Identifier, constants..*/
#define ID_TOK 350
#define INTCONST 351
/*
.
.
.*/
```

Loop and switch Approach (contd.)

```
int yylex() {
        char ch;
        If (yyin == null) {
                yyin = stdin;
        }
        ch = getc(fp); // read next char from input stream
        while (isspace(ch)) // if necessary, keep reading til non-space char
                ch = getc(fp);
                // (discard any white space)

        switch(ch) {
                case ';': case ',': case '=': // ... and other single char tokens
                yytext[0] = ch;
                yyleng = 1;
                return ch;  // ASCII value is used as token value

                case 'A': case 'B': case 'C': // ... and other upper letters
                .
                .
                case 'a': case 'b': case 'c': // ... and other lower letters
                .
                .
}
```

Assignment Statement

Implement a hardcoded lexical analyzer for exactly the following types of tokens

- Arithmetic, Relational, Logical, Bitwise and Assignment Operators of C
- Reserved words: for, while, if and else
- Identifier
- Integer Constants
- Parentheses, Curly braces

Follow the ideas of yytext, yyleng, etc as stated in the study material.