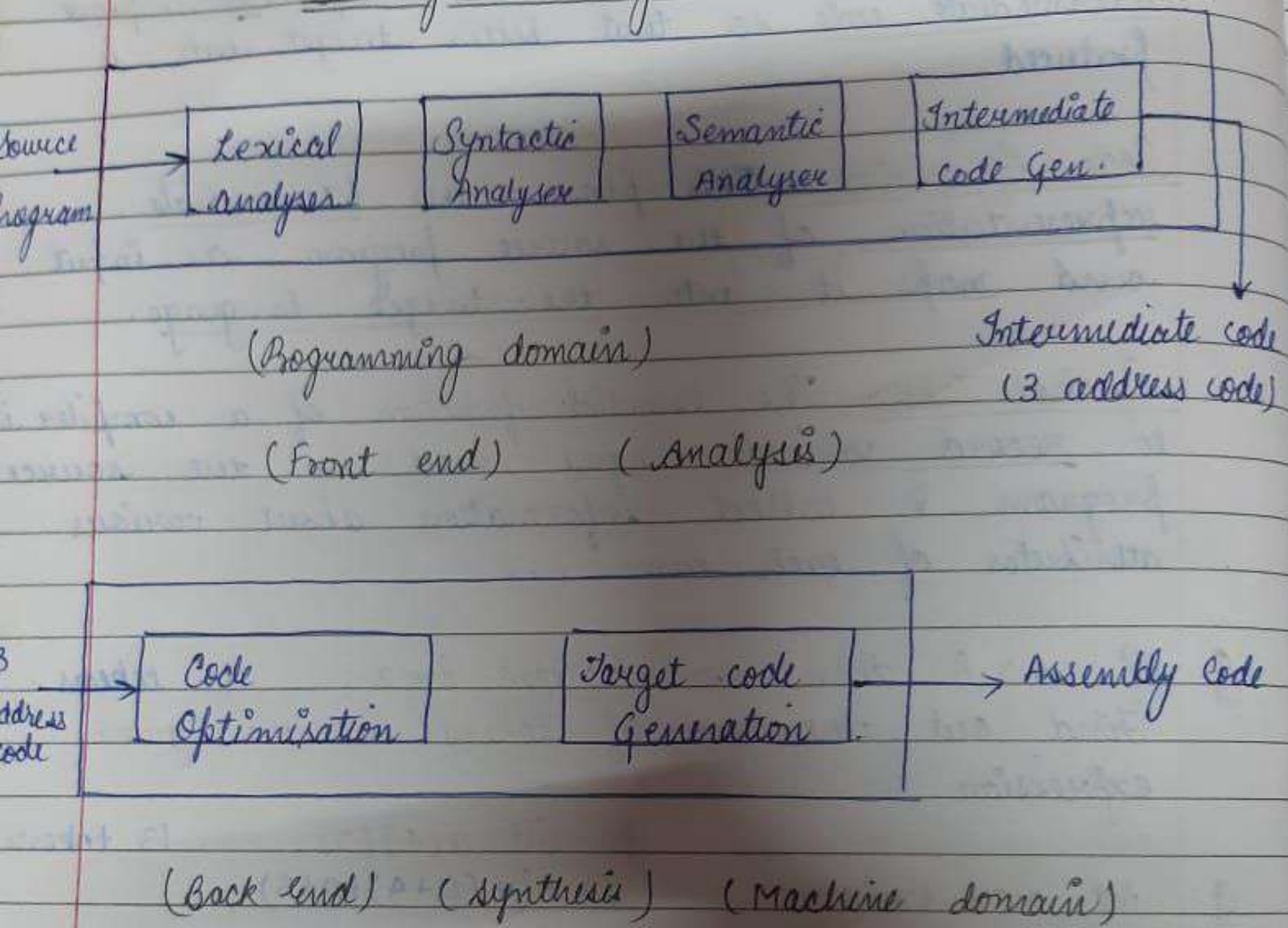


30/Jan/18

Date

## Analysis & Synthesis Model



- # The analysis part is called the front end of the compiler.
- # The synthesis part is called the back end of the compiler.
- # The analysis part breaks up the source program into pieces (tokens) and impose a grammatical structure on them (CFG).
- # It then uses this structure to create an intermediate representation of source program.

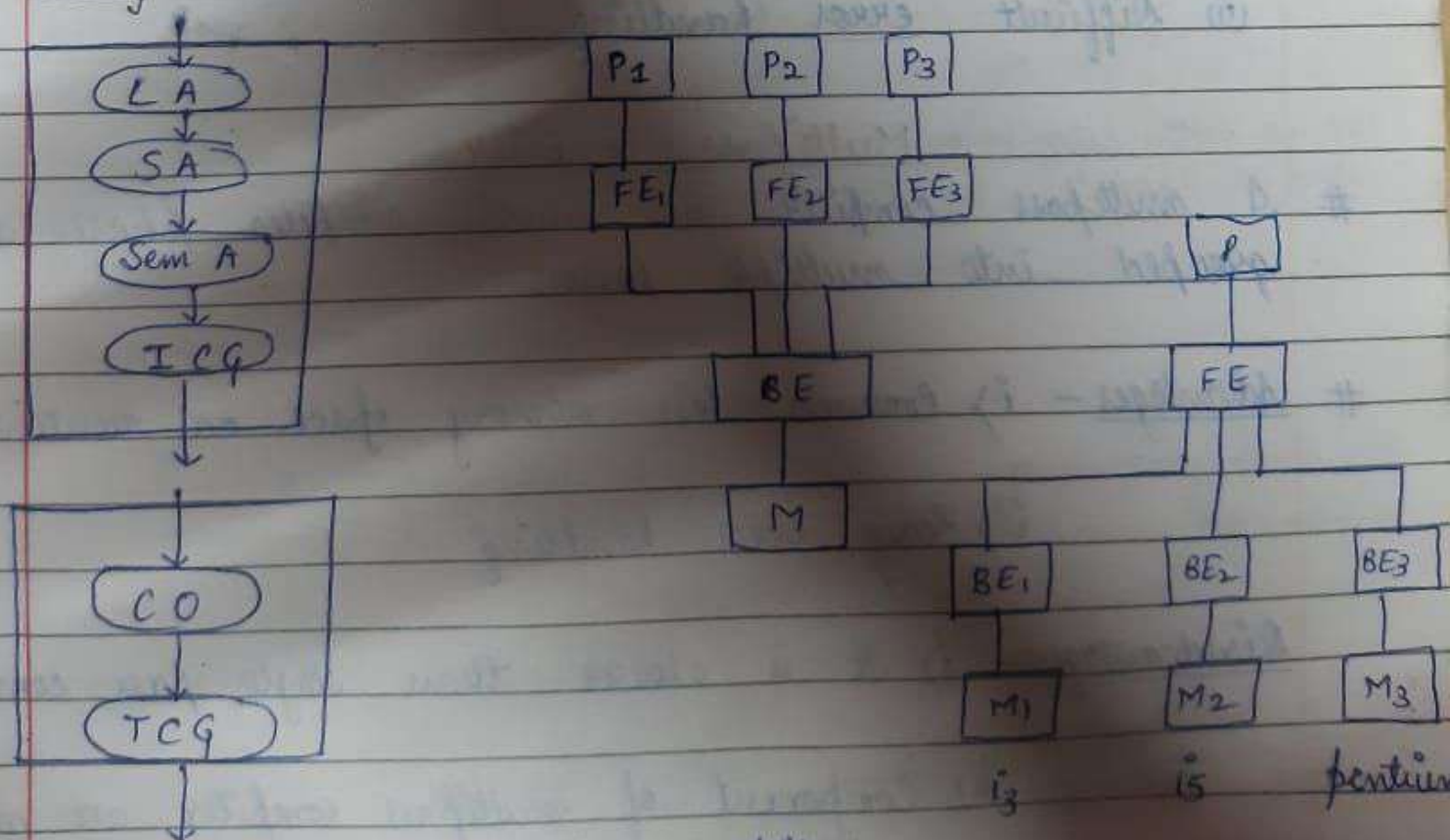
# The analysis part also collects information about the source program and store in a data structure called a symbol table.

# Next, the synthesis part construct the desired target program from the intermediate representation and the information stored in a symbol table.

# Single pass compiler -



# Multipass Compiler





\* Different phases of compiler can be grouped into a single pass depending upon the implementation requirement.

Imp: 2

### # Advantage of single pass compiler

- (i) It is faster than multipass compiler
- (ii) Component of single pass compiler are closely related.
- (iii) No need to keep track of intermediate file.

### # Disadvantage of single pass compiler

- (i) Consume more memory space.
- (ii) Difficult error handling.

### Multipass Compiler

# A multipass compiler in which compiler phases are grouped into multiple passes.

# Advantages - i) Consumes less memory space on runtime  
ii) Easy error handling

Disadvantages i) It is slower than single pass compiler  
ii) Component of multipass compiler are not related

# NE

# To

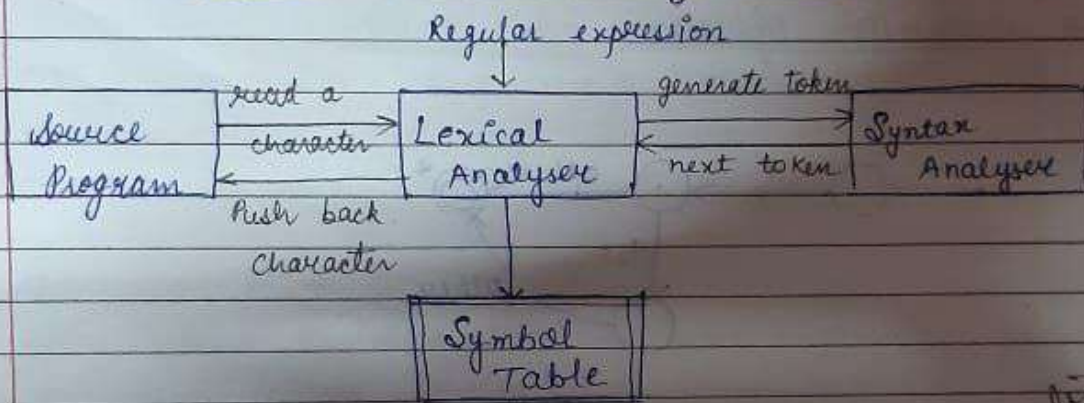
# For

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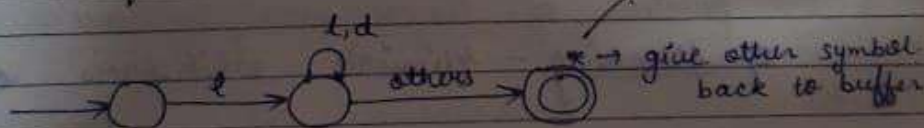
iii) We need to track intermediate files.

mp: Q Apply all the phases of compiler in a given expression:  $a+b+c*d$

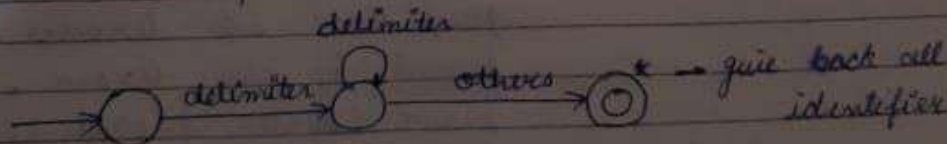
## Lexical Analyser



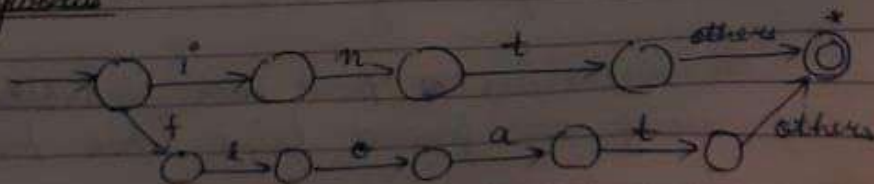
# NFA for Identifier -  $[l+d]^*$



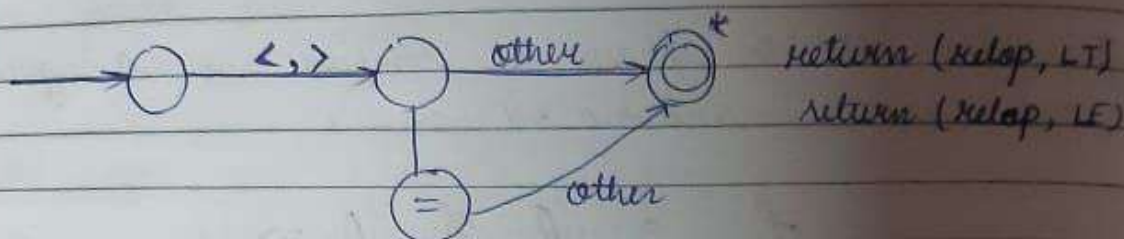
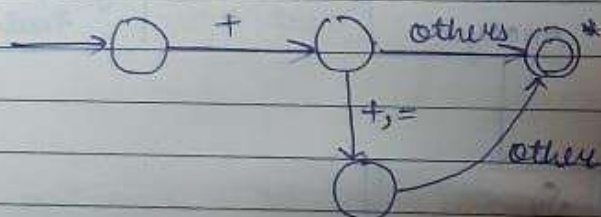
# To remove whitespaces



# For keywords -





# Relational operators# Arithmetic operator1 / Feb / 18# Two function of lexical analyser are -1) Scanning - eliminate whitespaces and comments.2) Tokenisation - The role of lexical analyser is to read the input character, and group them into lexemes. The token formed by the lexeme, input to the parser (Syntax analyser).

Lexical analyser report the error encountered while generating token.

The mechanism of push back character is implemented by moving the forward pointer one position back.