8 logical phases.

1/ lexical analyser / scanner.

Functions

Scanner is responsible for.

i/ Reading the source code.
2/ Tokenization of source code.
3/ Creation of symbol table and storing information about each programming Construct in it.
4/ Removal of comments and white spaces.
5/ Handling lexical errors (related to puncuation marks) if occured

2/ Syntax Analyzer / Parsar

Function:

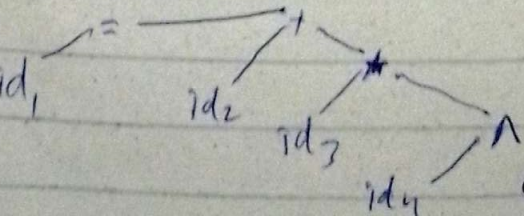
Parsar is responsible for.

i/ Syntax analysis of source code
ii/ Construction of parsar tree
iii/ Handling any Syntax error.
↳ grammatical error.

Example

$x = y + 2 * a \wedge 3$

$id_1 = id_2 + id_3 * id_4 \wedge Constant$



3/ Semantical Analyzer

Function →

it is Responsible for.

i/ Collecting type (datatype) relavent information and storing them into Symbol table.

ii/ datatype Conversion if Required.

two type of datatype Conversion

a: corresion

Done by Compilar.

b: Type Casting

done by user.

iii/ Handling Semantical errors.

↳ relavento datatype

4/ Intermediate Code Generator.

ICG

Functions →

↳ is Responsible for taking

i/ The parsar tree as input and Convert it into intermediate code

2/ by using war Through process.

3/ It also Handle any error occur during intermediate code generator.

5. **Code optimization:**

This phase optimizes the intermediate code, means that it makes the code efficient.

Basic purpose of code optimization is to input that intermediate code.

Now

Temp2= id2+temp1

id1=temp2

so

id1= id2+temp1

it is called code optimization.

6. Machine code generator (MCG):

Intermediate code is called in different languages:

In assembly language----------> intermediate code.

C language----------> object code.

In Java----------> Byte code.

Function of this phase is to convert data into machine code and make links and if there occurs an error, it deliver it to Error Handler.

There is pneumatic version of Machine code in which there is a Dictionary of acronyms.

MCG makes links with system function through addresses. It takes the addresses from vector table.

Now

Intermediate code is in three address code.

Temp1=id3*const.

id1= id2+temp1.

Let

Move Ax, const.

Multi Ax, id3

Move temp1, Ax

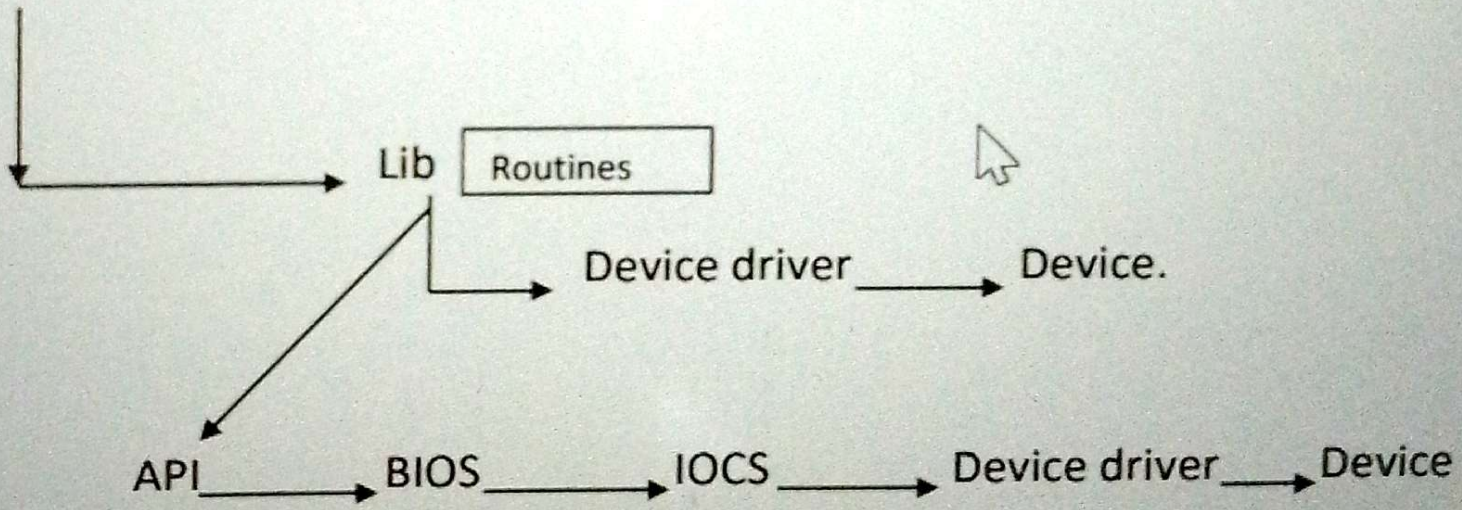
Move Bx, temp1

Add Bx, id2

Move id1, Bx

This is the complete machine structure.

Printf/cout



7. **Symbol table manager:**

STM is a two dimensional array used to hold the relevant information of all programming constructs.

Two phases enter data into the symbol table while other uses the data stored in symbol table.

(lexical, sementic analyser etc)

STM is a software module used to Handle the symbol table.

8. **Error Handler:**

During the code transformation, whenever there occurs an error at any stage, it will give into the custody of Error Handler.

Error Handler finds the nature and location of error and generate a proper Error report and displays it to the user.