COMSATS Institute of Information Technology
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"CC Mid Lab"

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Course**:** **CC (lab)**

PROGRAM**:** **BS(CS)-7A**

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QUESTION NO.1

Brief Of Project:

Memory Analyzer:

A specialized component focused on memory aspects of the code, the memory analyzer checks for allocation and deallocation issues like memory leaks or attempts to access unallocated memory. It may involve tracking variables, ensuring proper initialization and release, and managing dynamic memory allocation for enhanced code reliability and efficiency.

Scanner (Lexical Analysis):

The initial phase of the compiler reads Java source code, breaking it into tokens—essential code units like keywords, identifiers, literals, operators, and punctuation. The scanner ensures code correctness by categorizing tokens based on Java language rules, eliminating comments and whitespace.

Semantic Analysis:

As the second compiler phase, semantic analysis verifies the meaning and logic of the code. It ensures compliance with Java's semantic and syntactic rules, addressing issues like proper variable declarations, type compatibility, and adherence to language rules. This phase identifies errors related to variable misuse, incompatible data types, and undeclared identifiers.

Simplified Compiler Flow:

Input: Java source code.
Scanner: Tokenizes the code, removing comments and whitespace.
Semantic Analysis: Checks for adherence to language rules, proper variable usage, and type compatibility
Memory Analyzer: Focuses on memory-related aspects, identifying allocation and deallocation issues.
Output: Reports errors or warnings detected during scanning, semantic analysis, and memory analysis phases.