Comsats University Islamabad, Attock Campus



BACHELOR OF COMPUTER SCIENCE

***Name:***

Muhammad Osman

***Registration no.***

FA21-BCS-029

***Course:***

Compiler Construction

***Submitted To:***

Sir Bilal Bukhari

Qno.2

## 2 Core Functions of Mini Compilers

**1. Lexical Analysis (Tokenization)**

* **Function:** Breaks down the source code into a stream of tokens.
* **Process:**
  + Identifies and classifies individual characters into meaningful units.
  + Examples:
    - Keywords (e.g., if, else, while)
    - Identifiers (variable names)
    - Operators (+, -, \*, /)
    - Literals (numbers, strings)
    - Punctuation marks

**2. Syntax Analysis (Parsing)**

* **Function:** Checks if the sequence of tokens adheres to the grammatical rules of the programming language.
* **Process:**
  + Creates an abstract syntax tree (AST) that represents the hierarchical structure of the program.
  + Ensures the code is syntactically correct.
  + Examples:
    - Checking for matching parentheses
    - Validating the number of arguments in a function call
    - Ensuring correct operator precedence