**Project Title:**  
**MiniLang Compiler – Lexical Analysis, Parsing, and Intermediate Code Generation (with Romanized Hindi Keywords)**

**Objective:**  
The objective of this project is to design a simple compiler for a miniature programming language ("MiniLang") that can:  
• Perform Lexical Analysis (tokenizing input),  
• Conduct Syntax Analysis (building an Abstract Syntax Tree),  
• Generate Three-Address Intermediate Code (TAC) using **Romanized Hindi keywords** for control structures and print statements.

**Technologies Used:**  
• Language: Python 3  
• Libraries: PLY (Python Lex-Yacc)

**Project Modules:**  
• **lexer.py:**  
Handles token definitions and lexical analysis, recognizing keywords written in Romanized Hindi such as agar, warna, jabtak, and chhapo.

• **parser.py:**  
Defines grammar rules, builds the Abstract Syntax Tree (AST), and generates Three-Address Intermediate Code with Romanized Hindi constructs.

**Sample Input Program:**

nginx

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a = 5;

b = 10;

agar (a < b) chhapo a; warna chhapo b;

jabtak (a < b) a = a + 1;

chhapo a;

**Output:**

**Parsed AST:**

rust

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[('assign', 'a', 5),

('assign', 'b', 10),

('if-else', ('binop', '<', 'a', 'b'), ('print', 'a'), ('print', 'b')),

('while', ('binop', '<', 'a', 'b'), ('assign', 'a', ('binop', '+', 'a', 1))),

('print', 'a')]

**Three-Address Code Generated:**

makefile

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a = 5

b = 10

t0 = a < b

agar t0:

chhapo a

warna:

chhapo b

t1 = a < b

jabtak t1:

t2 = a + 1

a = t2

chhapo a

**Conclusion:**  
This project successfully demonstrates the first three important stages of compiler construction:  
• Lexical Analysis  
• Syntax Analysis  
• Intermediate Code Generation

The compiler handles basic programming constructs and generates intermediate code using **Romanized Hindi keywords** (agar, warna, jabtak, chhapo), giving a localized flavor to the MiniLang language.  
Further extensions could include semantic analysis, code optimization, and final target code generation.

**Screenshot Guide:**





