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**COMSATS University Islamabad (CUI) Attock Campus**

Compiler Construction Lab  
(Semester Project)

MiniCompiler

***By***

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Semester Project Report :

MiniCompiler

Q1:

*Brief of the project*

**Objective Enhancement**:

Extend the compiler to support additional language features, such as user-defined functions and control structures.

**Additional Components**:

* **Function Analyzer:** Handle function declarations and calls.
* **Control Structure Parser**: Implement support for if statements and loops.

**User Interface Expansion:**

* Allow users to define functions and use control structures in their source code.
* Provide prompts and messages for guiding users on new language features.

**Extended Coding Techniques:**

* Implement abstract syntax trees (ASTs) for representing the structure of the source code.
* Utilize recursion for parsing complex language constructs.

**Procedure Refinement:**

* Enhance the syntax analysis phase to handle functions and control structures.
* Augment the code generation phase to generate code for functions and control flow.

**Testing and Validation Expansion:**

* Extend the test suite to cover scenarios involving user-defined functions and control structures.
* Validate correct parsing and code generation for the new language features.

**Updated Conclusion:**

* Summarize the successful incorporation of additional language features.
* Highlight the expanded capabilities of the compiler.

**Future Improvements:**

* Explore advanced language constructs like object-oriented programming.
* Consider optimization techniques for improved code generation.