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 **Symbol Table and Declaration Checking**:

* **Symbol Table** stores variable details (name, type, line number).
* **Declaration Check** ensures variables are declared before use.
* **Insert Type** adds variable types to the symbol table.

 **Type Checking and Conversion**:

* **Check Types** ensures operand type compatibility.
* **Type Conversion** handles type mismatches (e.g., int to float).
* **Code Generation for Conversion** generates intermediate steps for type casting.

 **Intermediate Code Generation (ICG)**:

* Generates code for assignments, operations, and conditions.
* Converts statements to ICG (e.g., a = b + c becomes t1 = b + c, then a = t1).

 **Handling Conditional Statements**:

* For loops and if-else statements generate jump instructions and ensure type compatibility in conditions.

 **Operator Handling**:

* **Arithmetic and Relational Operations** ensure compatible types and generate appropriate ICG for operations.
* **Unary Operations** like increment/decrement are processed into intermediate code.

 **Error Handling**:

* Tracks **semantic errors** like undeclared variables or type mismatches.
* Generates error messages for issues encountered.

 **ICG Buffer**:

* Stores generated intermediate code for further processing and optimization.