CS323 Compiler Project 2

sid: 11711310
name: 艾君达

Bonus Features

Scope checking:

- **Multiple tables**: Individual symbol tables are implemented with C++ `std::unordered_map`. Keep multiple maps in a vector, push new *maps* (variable types and function types are stored in two distinct maps) to the vector when entering a new scope (before visiting children of `CompSt`), and pop topmost maps when existing current scope (after visiting children of `CompSt`).
- **Adding new symbols**: Always push new types to the topmost map when new declarations or definitions occur.
- **Searching symbols**: Dual `SearchMode`
    - `DecfMode`: checking for duplicate records when new declaration or definition is found to avoid redefinitions. *Only search in current scope (topmost table)*
    - `UseMode`: checking for variable/function type when accessed or invoked in and expression. *Search in current scope and then outter scopes (recursively in all tables in the vector)*

More error types

- Type 16: structure type is used without definition
- Type 17: the variable's assigned type mismatches the declared type

Make Targets

- `splc`: default analyzer that complies with project requirements
- `debug`: output most thorough log information of flex/bison streamline and a parse tree annotated with symbol table actions, type comparison actions, and statement types
- `parse_tree`: output a parse tree for the input SPL source code, no annotation distractions