Project Journal: Weeks 17-20 (3/10 - 4/13)

BLARG! Systems - Ryan Kispert

Weekly Goals:

Week 17:

- Unit testing with AST structs.
- Begin implementing AST generation.

Week 18:

- Continue implementing AST generation.
- Clean up code and add documentation.

Week 19:

- Continue implementing AST generation.
- Test more variations.

Week 20:

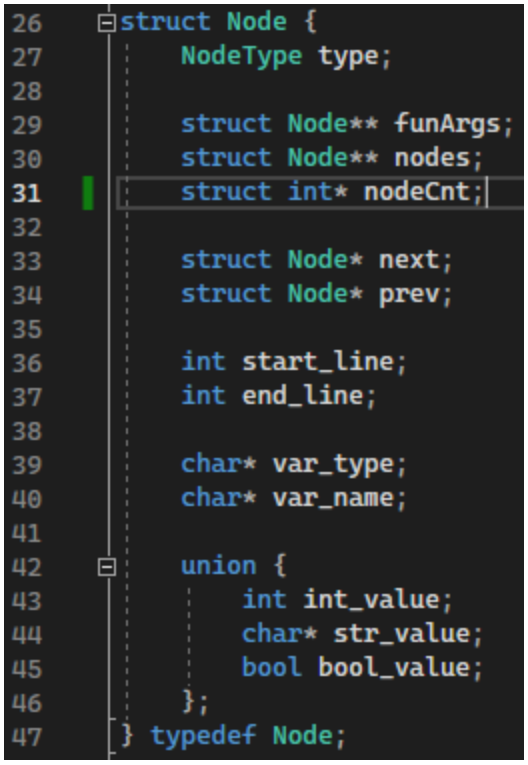
- Prepare table presentation.
- Update presentation.
- Plan table setup.
- Begin implementing code generation.
- Finish implementing AST generation.

Research:

With this being the final stretch to the end of the project, I haven't been researching much. While creating my Abstract Syntax Tree, I continued to reference the *minic* compiler and updated my knowledge on linked lists.[1][2] Linked lists are essentially a way of creating a list that references the next object in the list, which is more efficient and dynamic, and works better for a tree structure. As part of this, I had to include references to the Node struct within itself, which initially puzzled me. I referenced a post on StackOverflow that described my issue, with a certain declaration format that allowed me to define the struct at first, and then initialize it.[3]

Accomplishments:

- AST Structs have been created



```
26  struct Node {
27      NodeType type;
28
29      struct Node** funArgs;
30      struct Node** nodes;
31      struct int* nodeCnt;
32
33      struct Node* next;
34      struct Node* prev;
35
36      int start_line;
37      int end_line;
38
39      char* var_type;
40      char* var_name;
41
42      union {
43          int int_value;
44          char* str_value;
45          bool bool_value;
46      };
47  } typedef Node;
```

- AST Generation is nearly complete
- The presentation has been updated

Reflection:

With time running out, I have been feeling the stress of presentations and the pending end of my senior year. I have gotten close to where I desired to be by the end of the year, although my compiler has yet to successfully generate the resulting C code for a BLARG! program. Despite this, I will continue to work on it until presentations begin in hopes of having something functional. Due to this limitation, I am currently planning my presentation with diagrams explaining how the process works with example output from each step. I still believe I have gained from this project and will continue to complete it in the future.

Bibliography:

1. *NikRadi. (n.d.). Nikradi/minic: A C-compiler written in C. GitHub. https://github.com/NikRadi/minic/tree/master*
2. *GfG. (2024, April 10). Linked list data structure. GeeksforGeeks. https://www.geeksforgeeks.org/data-structures/linked-list/*

3. *Kenny Cason (1956, July 1). How to define a typedef struct containing pointers to itself?. Stack Overflow. https://stackoverflow.com/questions/3988041/how-to-define-a-typedef-struct-containing-pointers-to-itself*