

TinyC for the SD-8516

Introduction

TinyC refers to V1 (tinyc.asm) and V2 (tinyc.c), which is the same as V1 but written in C. V1 is intended to compile V2, and then we have self-hosting C. Thus, this TinyC should be more like the “B” language in it's feature set, and in the idea that it is intended to compile a version of itself written in C. From there, we can iterate on the C compiler and make it better.

V1 Current Feature Set:

- Expressions with precedence
- Local variables
- if/else/else if
- Comparison operators
- while
- break/continue
- Multiple functions + function calls
- Function arguments
- Pointers (read, write, address-of)
- Array indexing
- char* (8-bit access)
- String literals
- Hex literals
- Character literals
- Comments (//)
- Global variables
- Builtins (putchar, getchar, halt, yield)

This is enough that I was able to start writing functions in C like abs, min, max, strlen, strcmp, atoi/itoa, and so on.

Function Library

- [List of TinyC built-in functions](#)

History

A self-hosting C compiler had been my goal for quite some time. But I didn't know how to write one. I hacked out a BASIC first, then followed some guides and source code to get a Forth running. But C eluded me for several months. Eventually I was able to leverage what I had learned doing BASIC to get a parser that could compile int main(void) { return 0; } and emitted LDA #0 and RET. The debugger was simply printing the return value. The rest of the story is found in the [TinyC Developer Diary](#). Mainly so I don't forget what I learned, as this project has gotten quite big.

Last update: 2026/04/17
14:24

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