

## Compiler Design Homework 12

### Due before Week 13

### Compiler Project

- Starting from the cleaned up version of Prof. Parr's VM in C provide on Blackboard, **add a timer before and after the call to vm\_exec(...)** to determine run time for a comparisons report.
- **Modify the VM by splitting the stack** into:
  - A Data Stack, (for all data handled by ALU, in and out)
  - A Return Address Stack and
  - An Activation Stack (for other local variables e.g. loop variables).
- **Modify the VM to use Computed Goto Threading.**
- Run timing comparisons (with trace off) between the **original VM**, the VM with **split stack** and the **calculated goto VM** for all four of the input bytecode arrays in **vmtest.c** to determine the speedup of your modifications.
- Submit a **zip** file with a **readme** identifying everything, and your **code** and your **report** with the results of your timing tests.
- Submit it to Blackboard by **Week 13 class**

### Reading (optional)

[Byte Magazine August 1980 - The FORTH Language](#)

**“The Life of an Instruction in LLVM” by Eli Bendersky,**

<https://eli.thegreenplace.net/2012/11/24/life-of-an-instruction-in-llvm/>

Start preparing a **notes page** for the **Final Exam** similar to the page for the MidTerm Exam. The notes need to be on **one piece of 8.5X11 paper** written **front and back in your own hand**, not copied.