History As I Remember It

Also a minor upcoming feature

Bill Wendling

morbo@google.com

Clang-Built Linux Meetup—2020/02/08

History

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work
- 2003: Chris releases LLVM, using GCC as the front-end (called llvm-gcc)

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work
- 2003: Chris releases LLVM, using GCC as the front-end (called llvm-gcc)
- 2005: Chris joins Apple, who invests heavily in LLVM's development

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work
- 2003: Chris releases LLVM, using GCC as the front-end (called llvm-gcc)
- 2005: Chris joins Apple, who invests heavily in LLVM's development
- 2007: Chris creates Clang as a replacement for llvm-gcc

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work
- 2003: Chris releases LLVM, using GCC as the front-end (called llvm-gcc)
- 2005: Chris joins Apple, who invests heavily in LLVM's development
- 2007: Chris creates Clang as a replacement for llvm-gcc
- 2009: Clang is unleash upon an unsuspecting populace

Brief History of Clang/LLVM

- 2000: Chris Lattner creates LLVM to aid in his Ph.D. work
- 2003: Chris releases LLVM, using GCC as the front-end (called llvm-gcc)
- 2005: Chris joins Apple, who invests heavily in LLVM's development
- 2007: Chris creates Clang as a replacement for llvm-gcc
- 2009: Clang is unleash upon an unsuspecting populace
- 2010: Apple moves to Clang for all builds, including Darwin

Brief History of Clang/LLVM

- 2010: Clang can build a modified Linux kernel

Brief History of Clang/LLVM

- 2010: Clang can build a modified Linux kernel
- 2010: Migration to Clang planning starts at Google

Brief History of Clang/LLVM

- 2010: Clang can build a modified Linux kernel
- 2010: Migration to Clang planning starts at Google
- 2016: Michael Davidson works on Clang-built prodkernel

Brief History of Clang/LLVM

- 2010: Clang can build a modified Linux kernel
- 2010: Migration to Clang planning starts at Google
- 2016: Michael Davidson works on Clang-built prodkernel
- 2017: Google migration completed

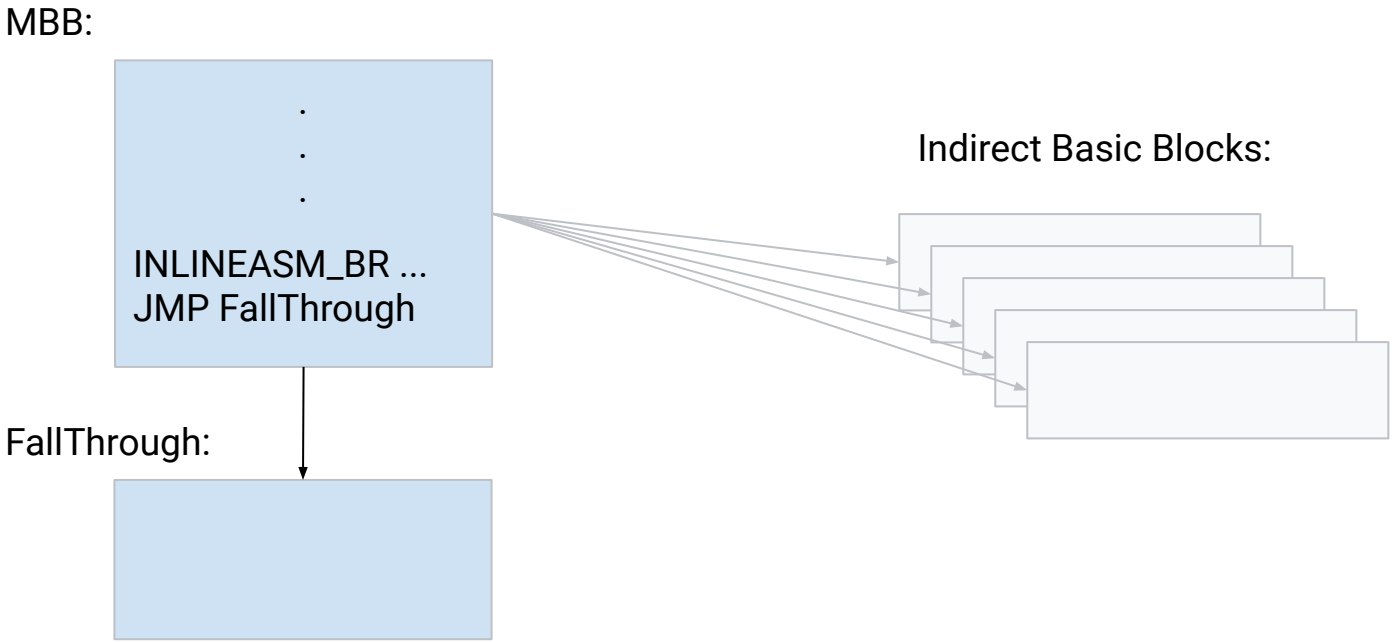
Asm Goto with Outputs

Asm Goto with Outputs

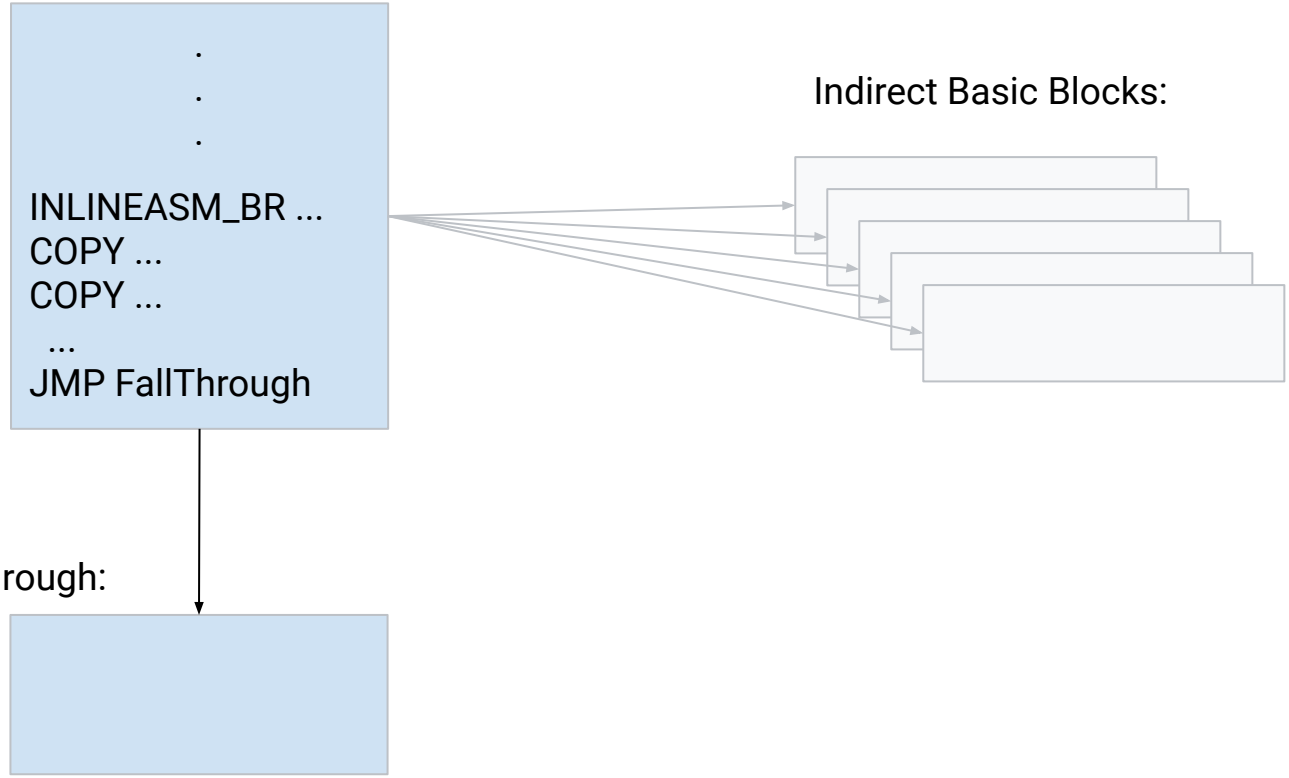
- Asm goto allows a jump from inline assembly to a C label
- GCC isn't able to support asm goto with outputs due to terminators not having returns
- LLVM doesn't have this issue

Why do this?

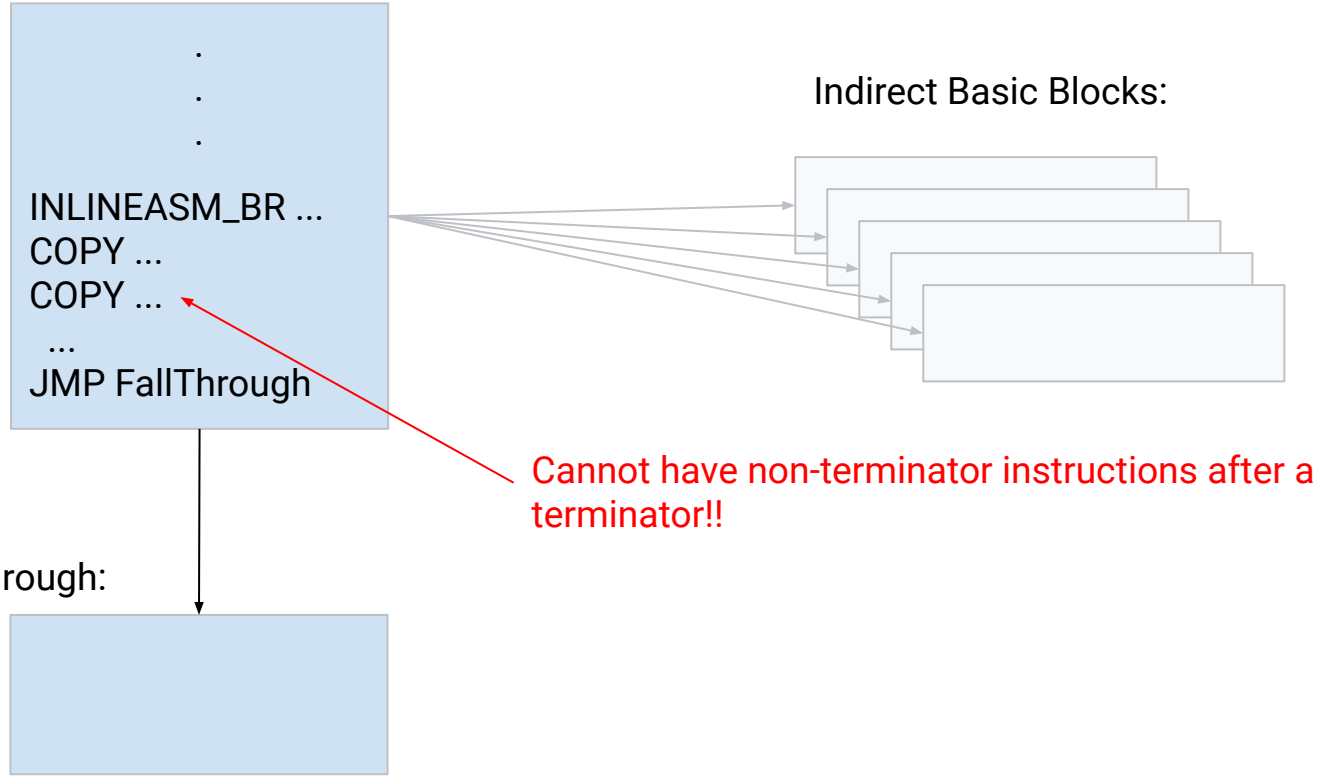
- Clang has been largely indifferent to the Linux community, because Linux has always used GCC
- We want to change this!
- Delivering a desired feature goes a long way towards this goal

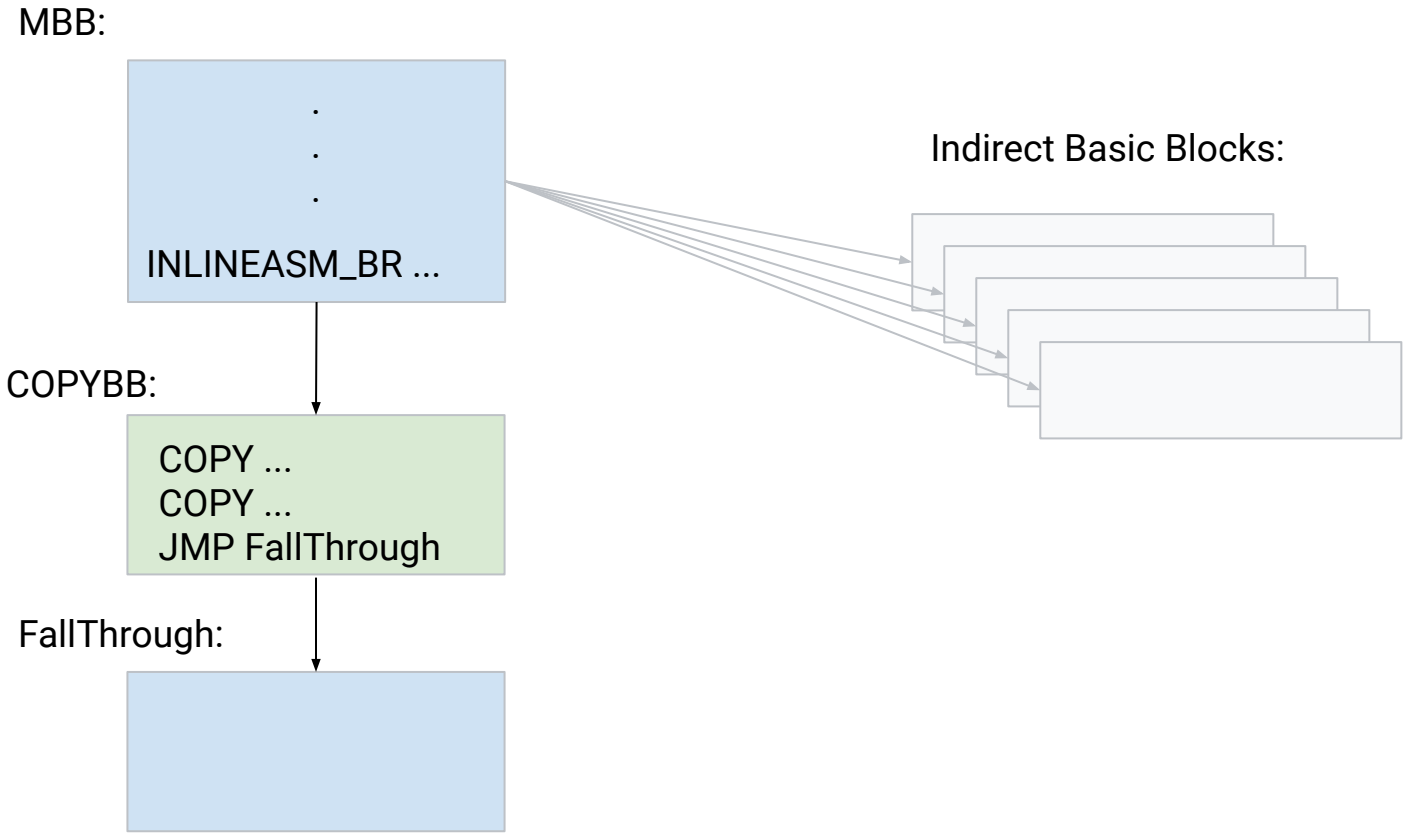


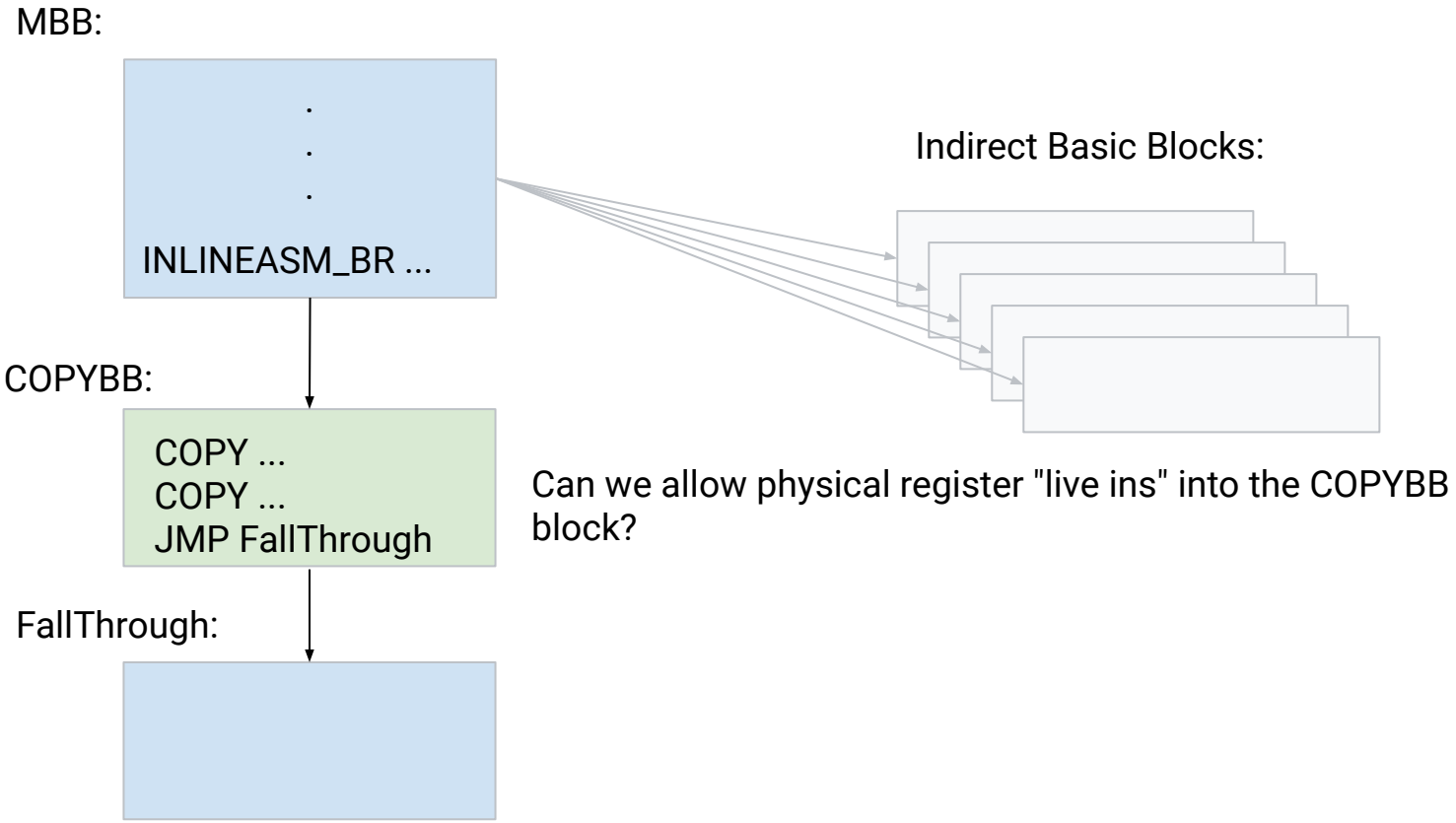
MBB:



MBB:







Can we allow physical register "live ins" into the COPYBB block?

Thank You