Middle End Register Pressure Sensitivity BoF

GNU TOOLS TRACK @ LINUX PLUMBERS

AARON SAWDEY, SEGHER BOESSENKOOL, JIU FU GUO, KEN WEN LIN, ET AL.

SEPTEMBER 23, 2021

MIDDLE END REGISTER PRESSURE SENSITIVITY

- What benefits from knowing of register pressure?
  - Inlining and function cloning
  - Loop invariant code motion
  - Parallel reassociation
  - Loop unrolling (if we ever do it in gimple)
- Currently most things look at code size, which tends to limit register pressure.
  - code size not a good analog for register pressure
  - loop unrolling can easily increase pressure without growing code size very much
  - Parallel reassociation multiplies number of registers
  - LICM increases register pressure across loop body, rematerialization may be cheaper than spilling
- What would infrastructure for pressure sensitivity look like in a machine independent pass?
  - No registers in gimple
  - Estimate with SSA width?
  - Investigated using SSA width for inlining about 5 years ago, community not receptive.
  - Target hook to reveal some info about register classes?

NOTES FROM DISCUSSION

- Topic:

BACKUP