

Lecture 16: Dynamic ILP and real systems

Wednesday, February 13, 2019 8:17 AM

Outline

- Dynamic ILP
- Real in-order designs
- Real out-of-order designs

Dynamic ILP

Issues \Rightarrow Guessing Wrong

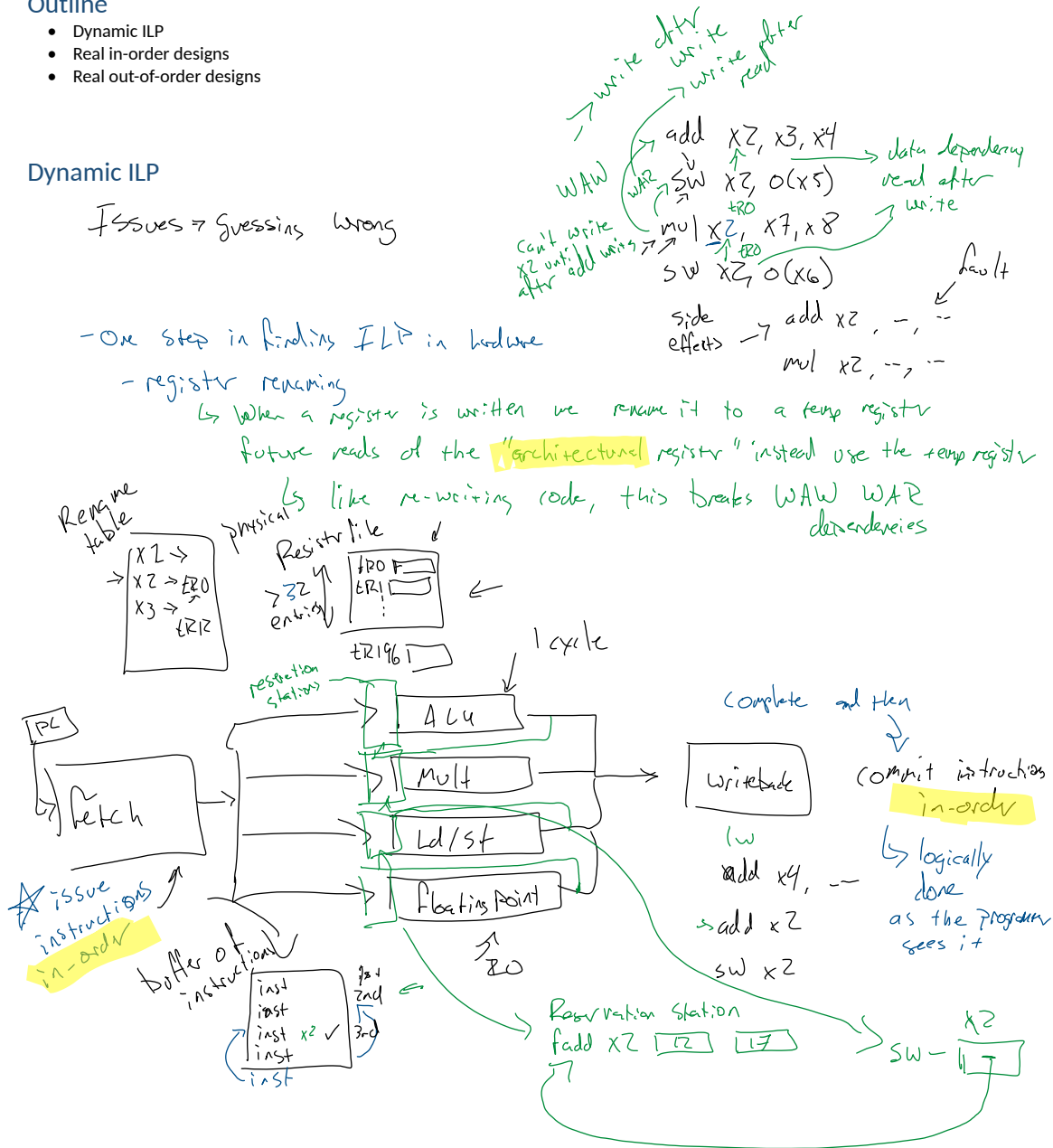
- One step in finding ILP in hardware

- register renaming

\hookrightarrow when a register is written we rename it to a temp register

future reads of the "architectural register" instead use the temp register

\hookrightarrow like re-writing code, this breaks WAW WAR dependencies



Why dynamic ILP?

faster because of parallelism, not waiting

\hookrightarrow can find more ILP than static techniques

\hookrightarrow some things not known until runtime (addresses)

\hookrightarrow know exactly what the hardware is

\hookrightarrow search for ILP around control

\hookrightarrow it can fail

A real pipeline (ARM A55)

