ROB Example

We will go through an example of the use of reorder buffers in two scenarios—
- Completion without exceptions
- One instruction raises an exception
First, let’s consider the data structures in use for the example.

Code for the example

A  LW  R2, 4(R0)
B  MUL  R3, R1, R2
C  LW  R2, 8(R0)
D  AD  R0, R1, R2
E  AD  R0, R1, R2
F  SUB  R2, R0, R1

At each step, we will show the changes by coloring the cell backgrounds pink.
Two scenarios next…

Multiply

- Scenario #1: Completes without exception
- Scenario #2: Raises exception
A. LW    R2, 4(R0)
B. MULT  R3, R1, R2
C. LW    R2, 8(R0)
D. ADD   R1, R1, R2
E. SUB   R2, R0, R1
F. ADD   R0, R1, R2
Now do scenario #2

Multiply raises exception.
Other animations

- Another good animation of reorder buffers is the one by John Kubiatowicz. See www.cs.ccu.edu.tw/~chen/arch/reorder-step.ppt
- A higher-level visualization of the process is at http://www.ece.lsu.edu/koppel/see/