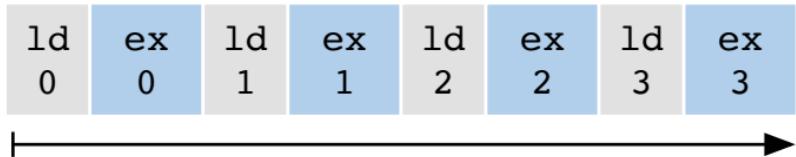


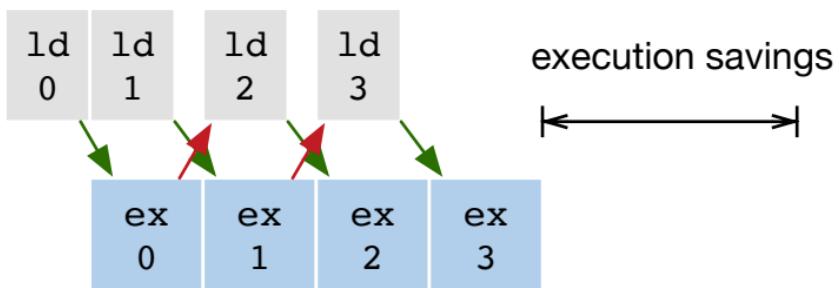
Monolithic Pipeline



Instruction Stream

```
ld.perform_action(ld0)  
ex.perform_action(ex0)  
ld.perform_action(ld1)  
ex.perform_action(ex1)  
...  
ld.perform_action(ld2)
```

Decoupled Access-Execute Pipeline



- read after write (RAW) dependence
- write after read (WAR) dependence

A vertical sequence of operations. It starts with a gray box labeled "ld 0", followed by a blue box labeled "ex 0". This is followed by a series of alternating gray and blue boxes, each with a red curved arrow pointing from the gray box to the blue box above it. The sequence continues with "ld 1", "ex 1", "ld 2", "ex 2", "ld 3", and "ex 3". Below this sequence, a legend defines the colors and arrows: a green arrow for RAW dependence and a red arrow for WAR dependence.

```
ld.perform_action(ld0)  
ld.push_dep_to(ex)  
ld.perform_action(ld1)  
ld.push_dep_to(ex)  
ex.pop_dep_from(ld)  
ex.perform_action(ex0)  
ex.push_dep_to(ld)  
ex.pop_dep_from(ld)  
ex.perform_action(ex1)  
ex.push_dep_to(ld)  
ld.pop_dep_from(ex)  
ld.perform_action(ld2)  
...
```