Data Hazards and Stalls

- Data hazards and forwarding
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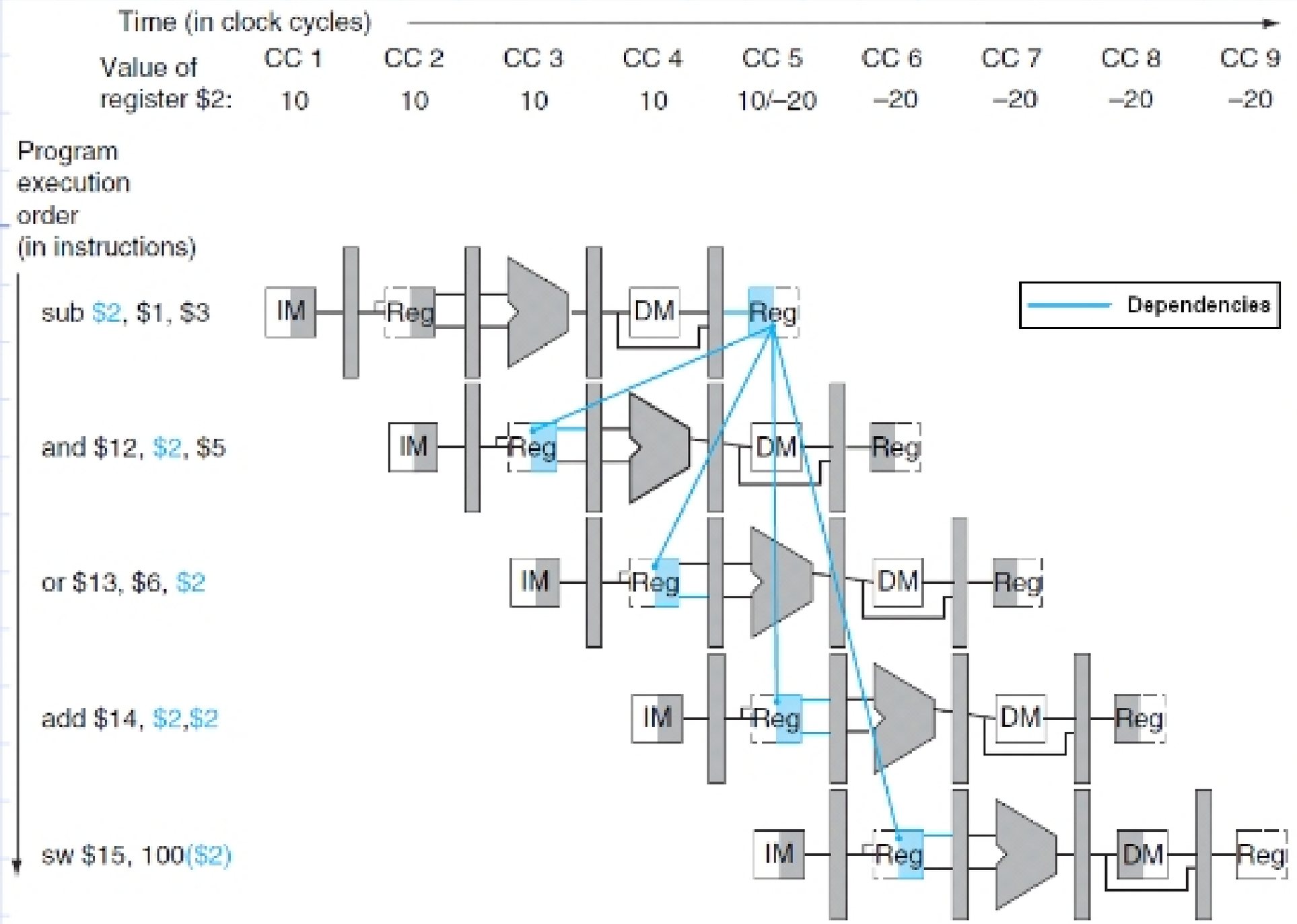
An Example

```
sub     $2, $1, $3      #  Register $2 written by sub
and     $12, $2, $5     #  1st operand ($2) depends on sub
or      $13, $6, $2     # 2nd operand ($2) depend on sub
add     $14, $2, $2     #  1st ($2) & 2nd ($2) depend on sub
sw      $15, 100($2)    #  Index ($2) depends on sub
```

Assuming that register R2 = 10 initially. And the sub instruction will result in R2 = -20.



See P&H Fig. 6.28 3rd Ed or 4.52 4th Ed

Pipelined dependencies in a five instruction sequence using simplified datapaths to show the dependencies.

Note: only add and sw get the right value R2 = - 20