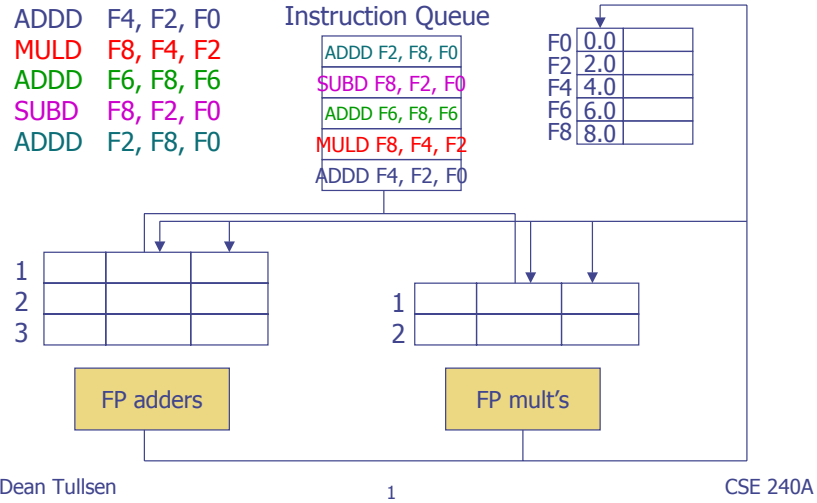
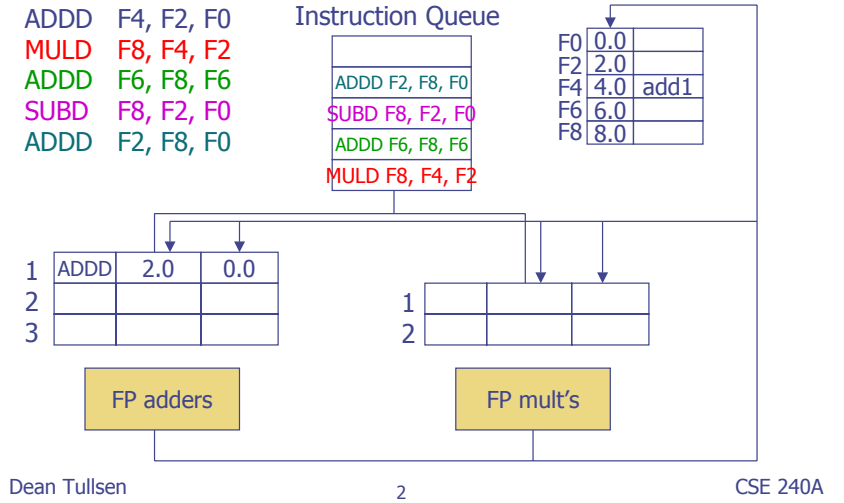


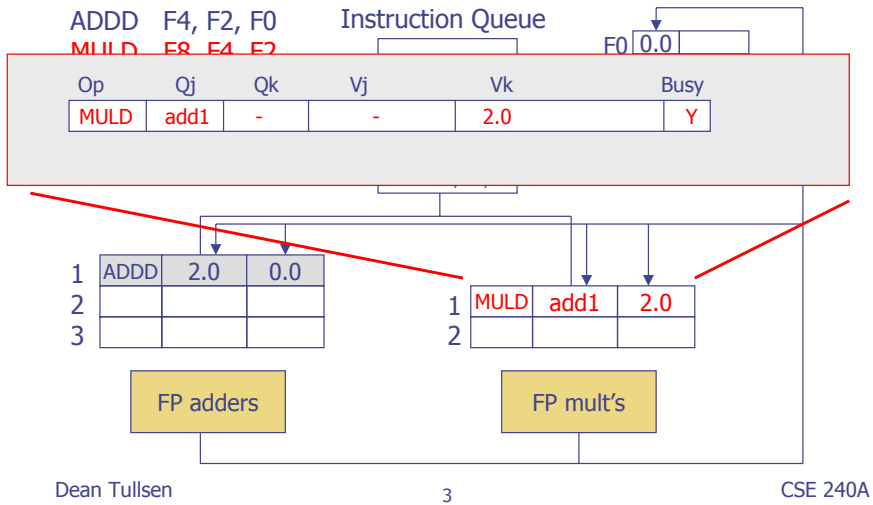
Tomasulo – cycle 0



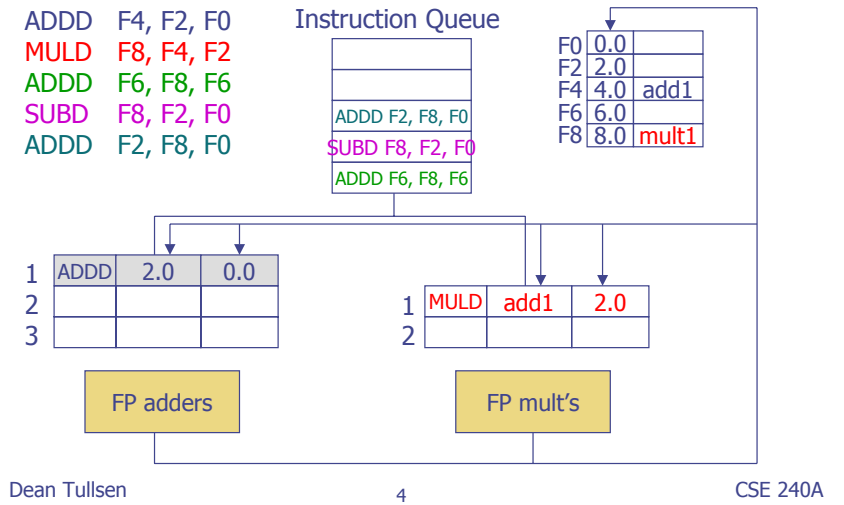
Tomasulo – cycle 1



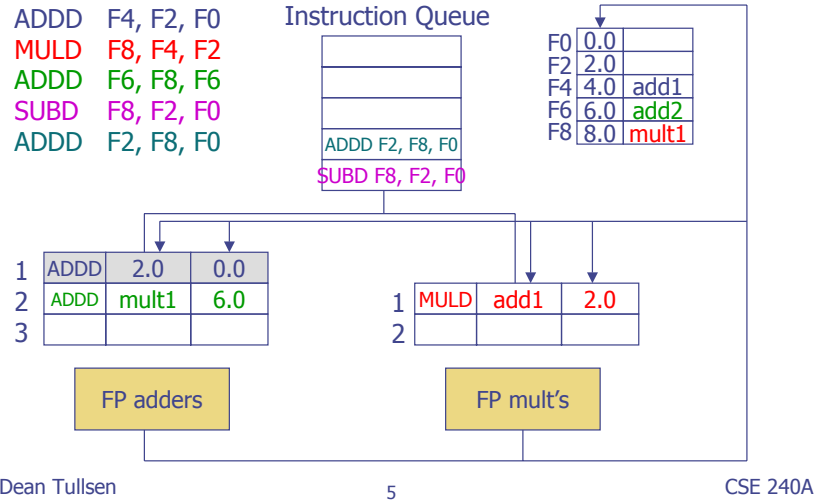
Tomasulo – cycle 2



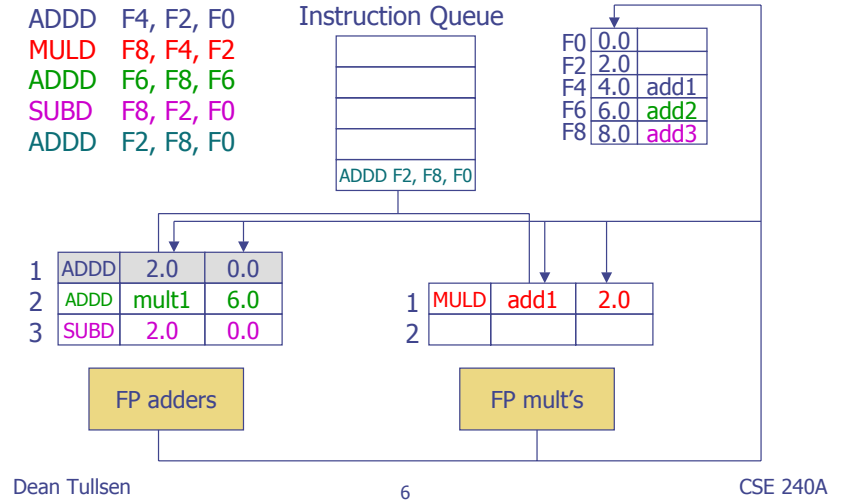
Tomasulo – cycle 2



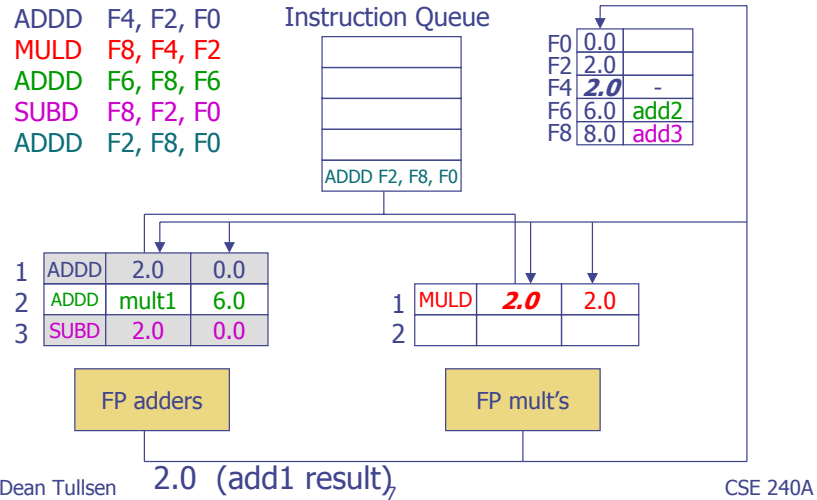
Tomasulo – cycle 3



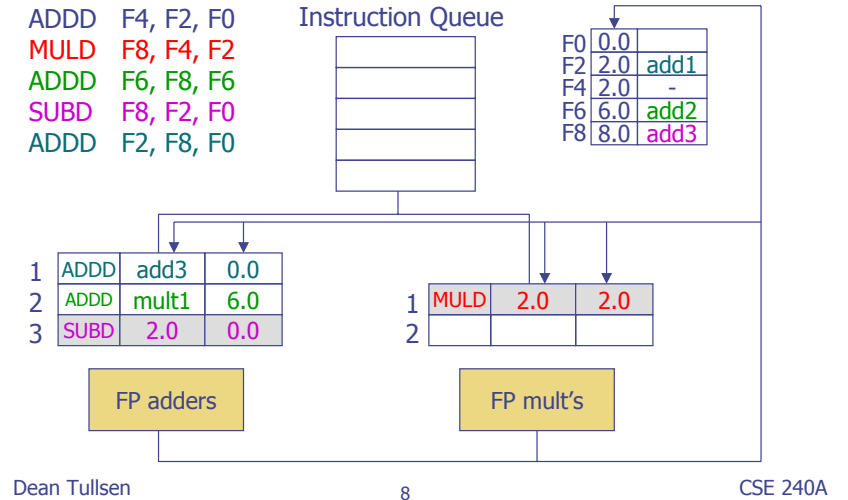
Tomasulo – cycle 4



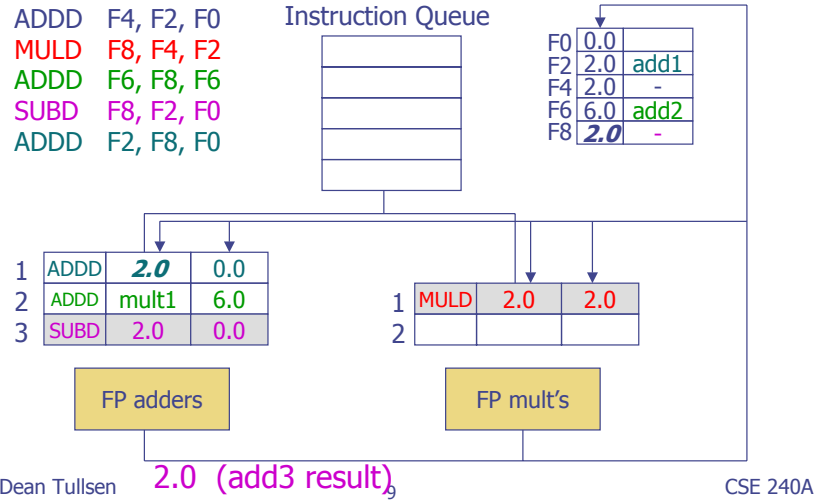
Tomasulo – cycle 5



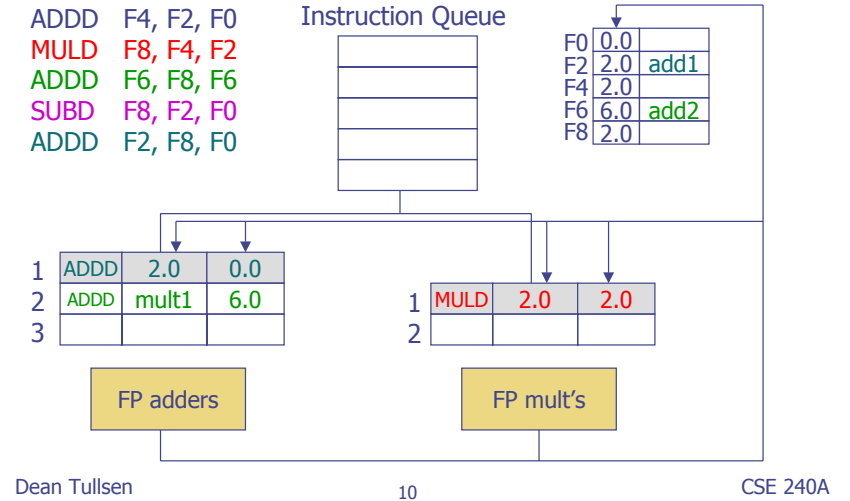
Tomasulo – cycle 6



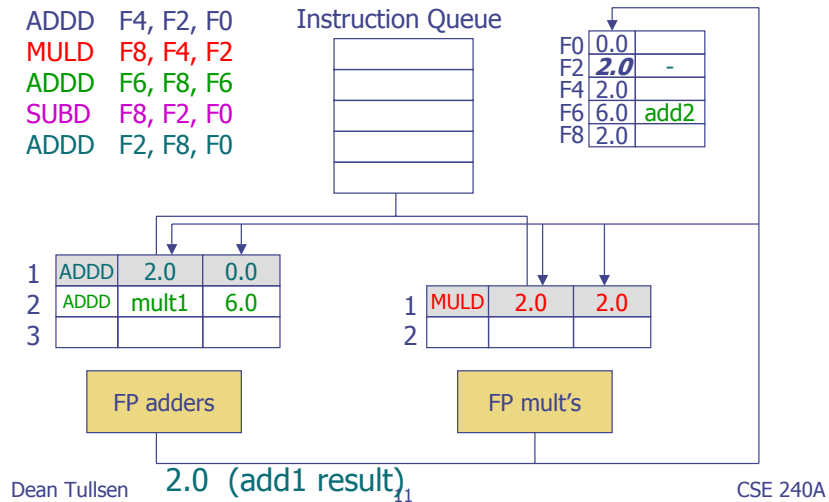
Tomasulo – cycle 8



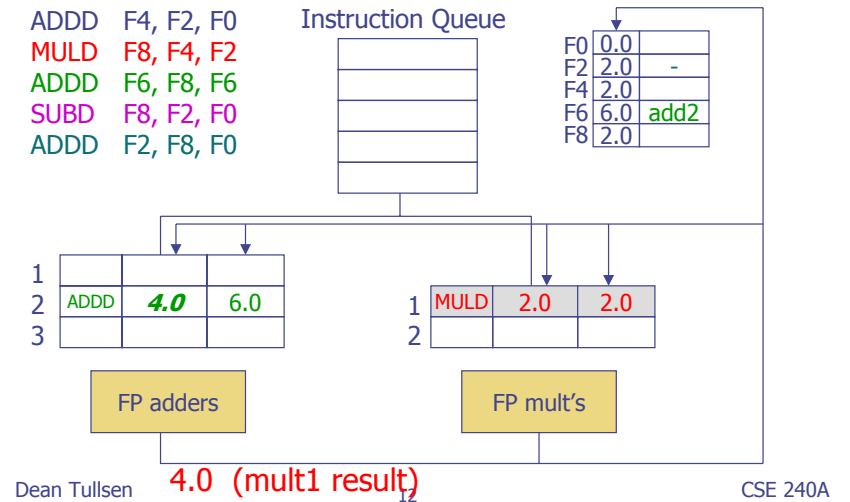
Tomasulo – cycle 9



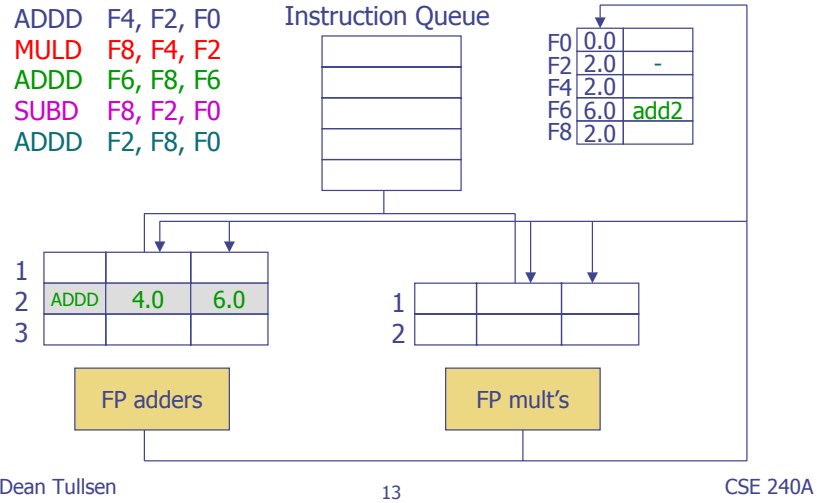
Tomasulo – cycle 12



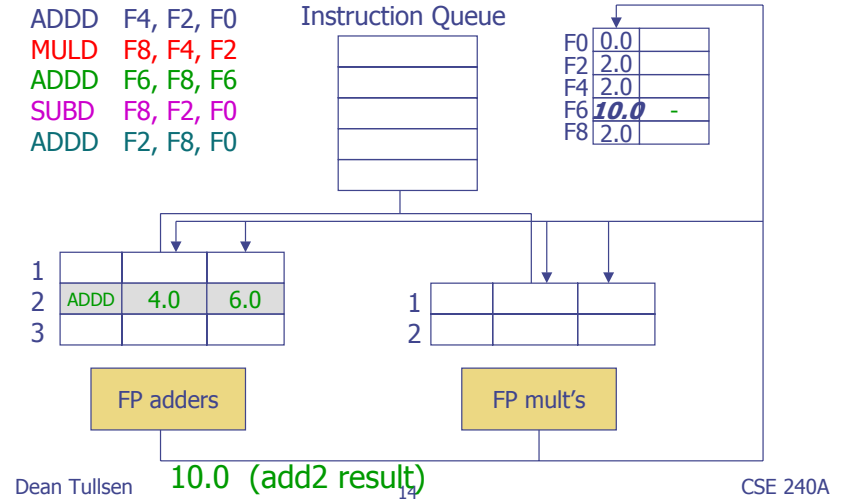
Tomasulo – cycle 15



Tomasulo – cycle 16



Tomasulo – cycle 19

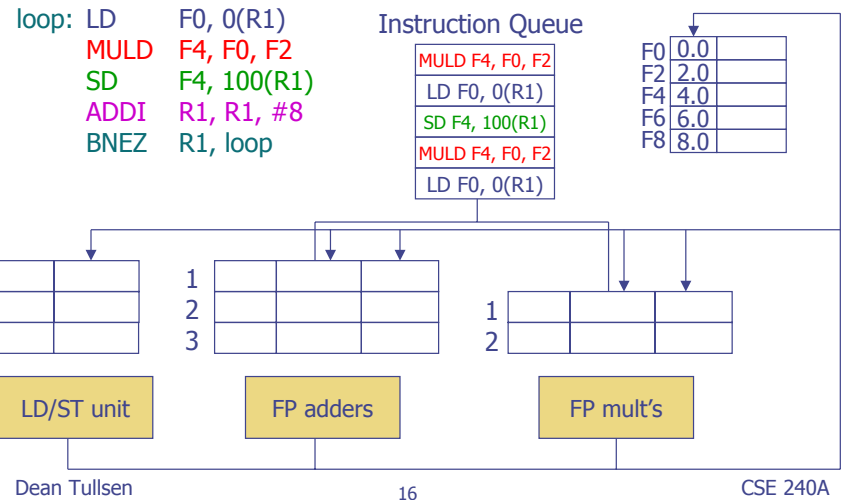


Loop Example

```

loop: LD    F0, 0(R1)
      MULD F4, F0, F2
      SD    F4, 100(R1)
      ADDI R1, R1, #8
      BNEZ R1, loop
    
```

Loop Example – Cycle 0



Loop Example – Cycle 1

R1 = addr1

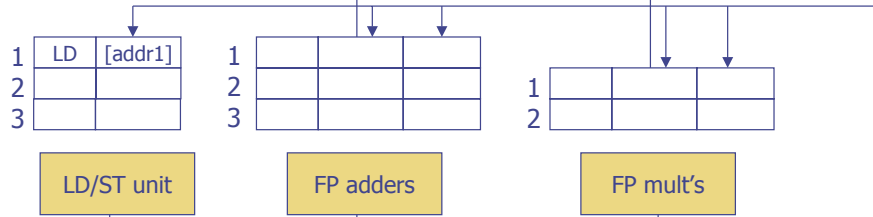
```

loop: LD    F0, 0(R1)
      MULF  F4, F0, F2
      SDF   F4, 100(R1)
      ADDI  R1, R1, #8
      BNEZ  R1, loop
    
```

Instruction Queue

SD F4, 100(R1)
MULF F4, F0, F2
LD F0, 0(R1)
SD F4, 100(R1)
MULF F4, F0, F2

F0	0.0
F2	2.0
F4	4.0
F6	6.0
F8	8.0



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Loop Example – Cycle 2

R1 = addr1

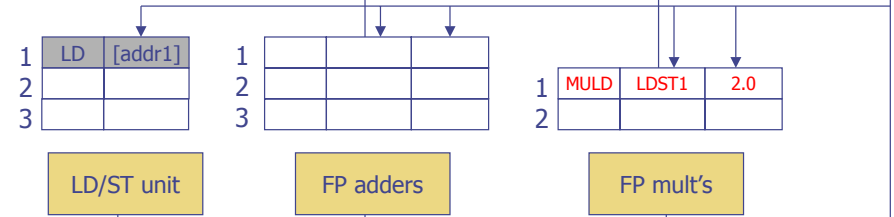
```

loop: LD    F0, 0(R1)
      MULF  F4, F0, F2
      SDF   F4, 100(R1)
      ADDI  R1, R1, #8
      BNEZ  R1, loop
    
```

Instruction Queue

SD F4, 100(R1)
MULF F4, F0, F2
LD F0, 0(R1)
SD F4, 100(R1)

F0	0.0
F2	2.0
F4	4.0
F6	6.0
F8	8.0



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Loop Example – Cycle 3

R1 = addr1+8

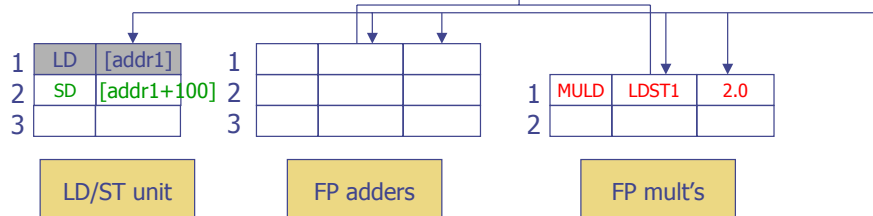
```

loop: LD    F0, 0(R1)
      MULF  F4, F0, F2
      SDF   F4, 100(R1)
      ADDI  R1, R1, #8
      BNEZ  R1, loop
    
```

Instruction Queue

SD F4, 100(R1)
MULF F4, F0, F2
LD F0, 0(R1)

F0	0.0
F2	2.0
F4	4.0
F6	6.0
F8	8.0



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Loop Example – Cycle 4

R1 = addr1+8

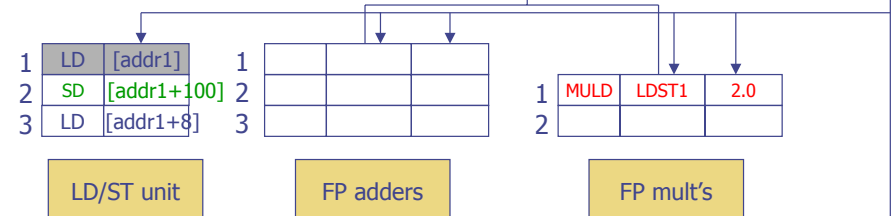
```

loop: LD    F0, 0(R1)
      MULF  F4, F0, F2
      SDF   F4, 100(R1)
      ADDI  R1, R1, #8
      BNEZ  R1, loop
    
```

Instruction Queue

SD F4, 100(R1)
MULF F4, F0, F2

F0	0.0
F2	2.0
F4	4.0
F6	6.0
F8	8.0



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