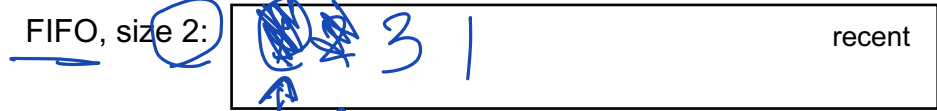


# DS5110/CS5501 Caching Policy Worksheet

## Problem 1



Data. Hit?

1	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>
1	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>
1	<input checked="" type="checkbox"/>

Hit ratio:  $\frac{1}{5} = 0.2$

## Problem 2



Data. Hit?

A	<input checked="" type="checkbox"/>
B	<input checked="" type="checkbox"/>
A	<input checked="" type="checkbox"/>
C	<input checked="" type="checkbox"/>
A	<input checked="" type="checkbox"/>

Hit ratio:  $\frac{2}{5} = 0.4$

## Problem 3



Data. Hit?

W	<input checked="" type="checkbox"/>
W	<input checked="" type="checkbox"/>
X	<input checked="" type="checkbox"/>
Y	<input checked="" type="checkbox"/>
Y	<input checked="" type="checkbox"/>
Z	<input checked="" type="checkbox"/>
Y	<input checked="" type="checkbox"/>
X	<input checked="" type="checkbox"/>

Hit ratio:  $\frac{4}{8} = 0.5$

Miss latency: 20 ms

Hit latency: 0.1 ms

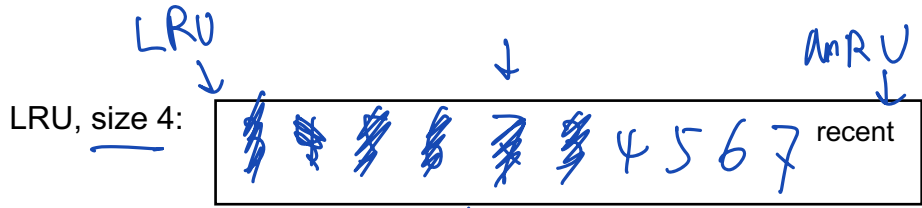
Average latency:  $\text{Hit ratio} \times \text{Hit latency} + \text{Miss ratio} \times \text{Miss lat.}$

$$0.5 \times 0.1 + 0.5 \times 20 = 10.05 \text{ (ms)}$$

**Problem 4**

Data. Hit?

→ 3	X
→ 4	X
→ 5	X
→ 6	X
→ 7	X
→ 3	X
→ 4	X
→ 5	X
→ 6	X
→ 7	X



full cache.

Hit ratio:  $0/10 = 0\%$

temporal locality.

Belady's Anomaly.

Working Set: <sup>Size</sup>

# unique items accessed

{3, 4, 5, 6, 7}

WSS:  $5 > 4$

**Problem 5**

Data. Hit?

3	X
→ 4	X
5	X
6	X
7	X
→ 3	✓
→ 4	✓
→ 5	✓
→ 6	✓
→ 7	✓



full.

Hit ratio:  $5/10 = 0.5$