

## 4. LRU Policy

consider frequency, recency --> Least-Frequently-Used (LFU), Least-Recently-Used (LRU)

| Access | Hit/Miss? | Evict | Resulting<br>Cache State |
|--------|-----------|-------|--------------------------|
| 0      | Miss      |       | LRU→ 0                   |
| 1      | Miss      |       | LRU→ 0, 1                |
| 2      | Miss      |       | LRU→ 0, 1, 2             |
| 0      | Hit       |       | LRU→ 1, 2, 0             |
| 1      | Hit       |       | LRU→ 2, 0, 1             |
| 3      | Miss      | 2     | LRU→ 0, 1, 3             |
| 0      | Hit       |       | LRU→ 1, 3, 0             |
| 3      | Hit       |       | LRU→ 1, 0, 3             |
| 1      | Hit       |       | LRU→ 0, 3, 1             |
| 2      | Miss      | 0     | LRU→ 3, 1, 2             |
| 1      | Hit       |       | LRU→ 3, 2, 1             |

Figure 22.5: Tracing The LRU Policy

6 hits, 5 misses, hit rate =  $6/(6+5) = 54.5\%$

Excluding compulsory misses: 6 hits, 1 miss, hit rate =  $6/(6+1) = 85.7\%$

Same hit rate as optimal for this example.