

Algorithm: FIFO Cache Simulation

Step-by-Step Algorithm

1. Start

2. Initialize

- Create an empty list cache.
- Set hits = 0.
- Set misses = 0.
- Set replace_index = 0 (FIFO pointer).

3. For each block in the reference string:

1. Check if the block is already in the cache.
2. **If the block is found (HIT):**
 - Increment hits by 1.
3. **Else (MISS):**
 - Increment misses by 1.
 - If cache is not full:
 - Insert the block at the end of the cache.
 - Else:
 - Replace the block at position replace_index with the new block.
 - Update $\text{replace_index} = (\text{replace_index} + 1) \bmod \text{cache_size}$ (move FIFO pointer).

4. After processing all references:

- Compute $\text{hit_ratio} = \text{hits} / (\text{hits} + \text{misses})$.

5. Display

- Total hits
- Total misses
- Hit ratio
- Final cache content

6. End

OUTPUT

Reference: 1

Status: MISS

Cache: [1]

Reference: 2

Status: MISS

Cache: [1, 2]

Reference: 3

Status: MISS

Cache: [1, 2, 3]

Reference: 2

Status: HIT

Cache: [1, 2, 3]

Reference: 4

Status: MISS

Cache: [4, 2, 3]

Reference: 1

Status: MISS

Cache: [4, 1, 3]

Reference: 5

Status: MISS

Cache: [4, 1, 5]

Reference: 2

Status: MISS

Cache: [2, 1, 5]

Reference: 3

Status: MISS

Cache: [2, 3, 5]

--- Final Results ---

Total Hits: 1

Total Misses: 8

Hit Ratio: 0.11