# Sample input-output results

Cache Size:3

Reference String: A, B, C, A, D

Replacement Policy: FIFO

| Step | Memory Access | Hit / Miss | Action Taken | Cache Status |
|------|---------------|------------|--------------|--------------|
| 1 | A | Miss | Cache empty → Insert A | [A] |
| 2 | B | Miss | Insert B | [A, B] |
| 3 | C | Miss | Insert C | [A, B, C] |
| 4 | A | **Hit** | Block already in cache | [A, B, C] |
| 5 | B | **Hit** | Block already in cache | [A, B, C] |
| 6 | C | **Hit** | Block already in cache | [A, B, C] |
| 7 | D | Miss | Cache full → Remove oldest (A), Insert D | [B, C, D] |
| 8 | A | Miss | Cache full → Remove oldest (B), Insert A | [C, D, A] |
| 9 | B | Miss | Cache full → Remove oldest (C), Insert B | [D, A, B] |

Output after all the steps (Output of the Program):

```
FIFO Cache Simulation
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Accessing: A
Status: MISS
Cache State: ['A']

Accessing: B
Status: MISS
Cache State: ['A', 'B']

Accessing: C
Status: MISS
Cache State: ['A', 'B', 'C']
```

```
Accessing: A
Status: HIT
Cache State: ['A', 'B', 'C']

Accessing: B
Status: HIT
Cache State: ['A', 'B', 'C']

Accessing: C
Status: HIT
Cache State: ['A', 'B', 'C']

Accessing: D
Status: MISS
Removed (Oldest): A
Cache State: ['B', 'C', 'D']

Accessing: A
Status: MISS
Removed (Oldest): B
Cache State: ['C', 'D', 'A']

Accessing: B
Status: MISS
Removed (Oldest): C
Cache State: ['D', 'A', 'B']

--- Simulation Summary ---
Reference String: ['A', 'B', 'C', 'A', 'B', 'C', 'D', 'A', 'B']
Cache Size: 3
Total Hits : 3
Total Misses : 6
Hit Ratio : 0.33
Final Cache : ['D', 'A', 'B']
```