

Cache Mapping (1C)

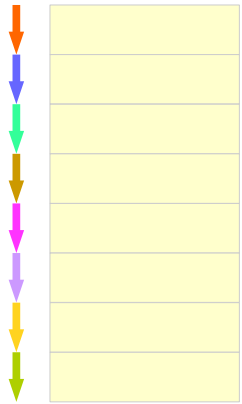
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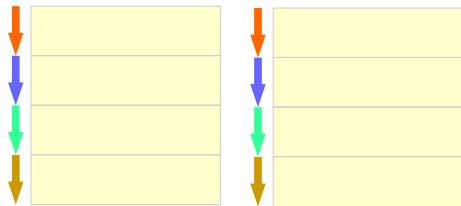
Please send corrections (or suggestions) to youngwlim@hotmail.com.

This document was produced by using OpenOffice.

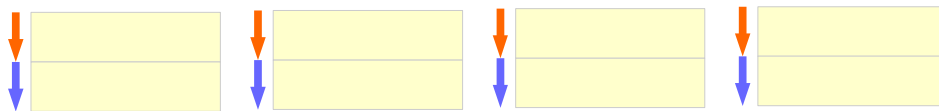
Cache Organization



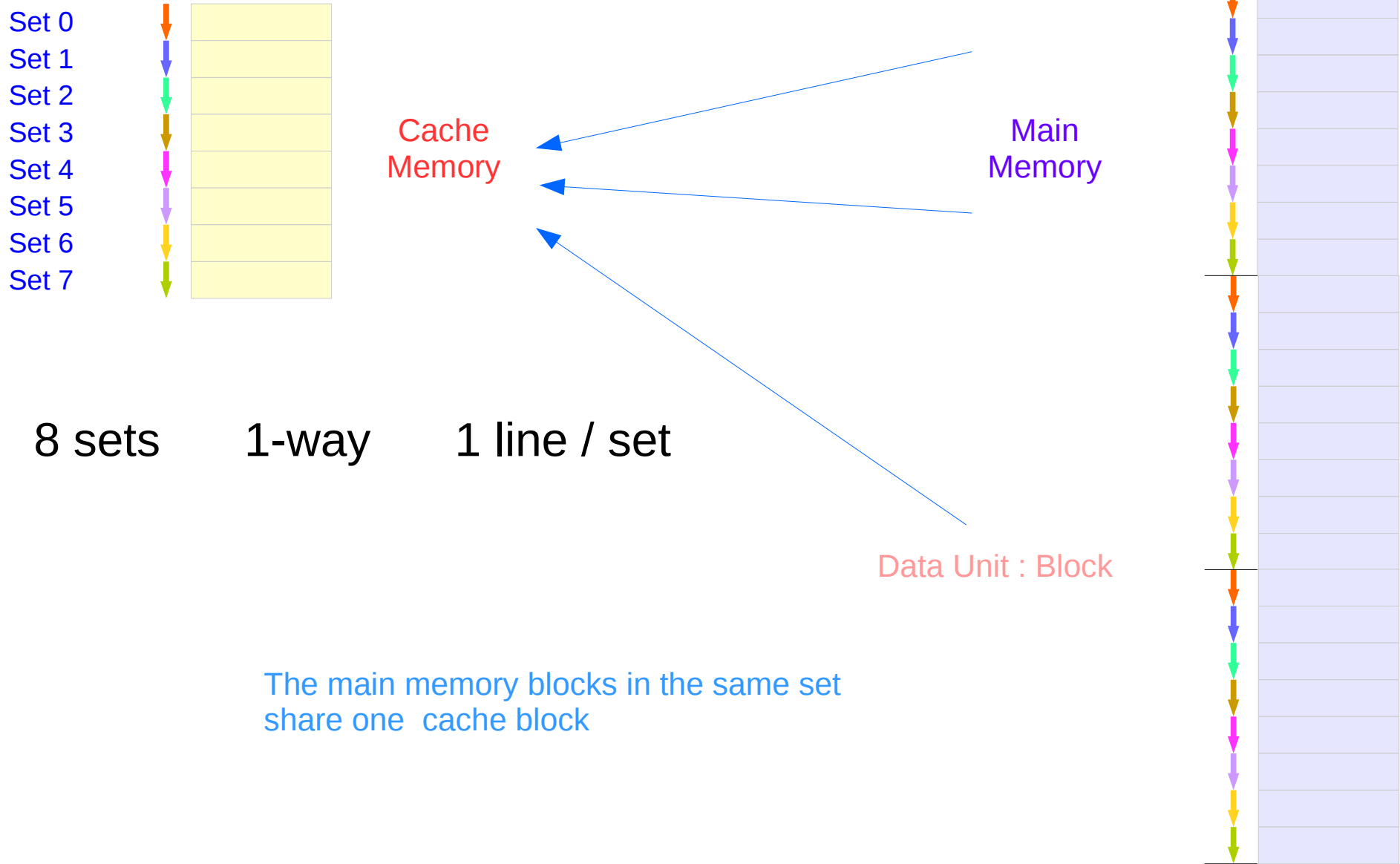
8 sets	1-way	1 line / set
4 sets	2-way	2 lines / set
2 sets	4-way	4 lines / set
1 set	8-way	8 lines / set



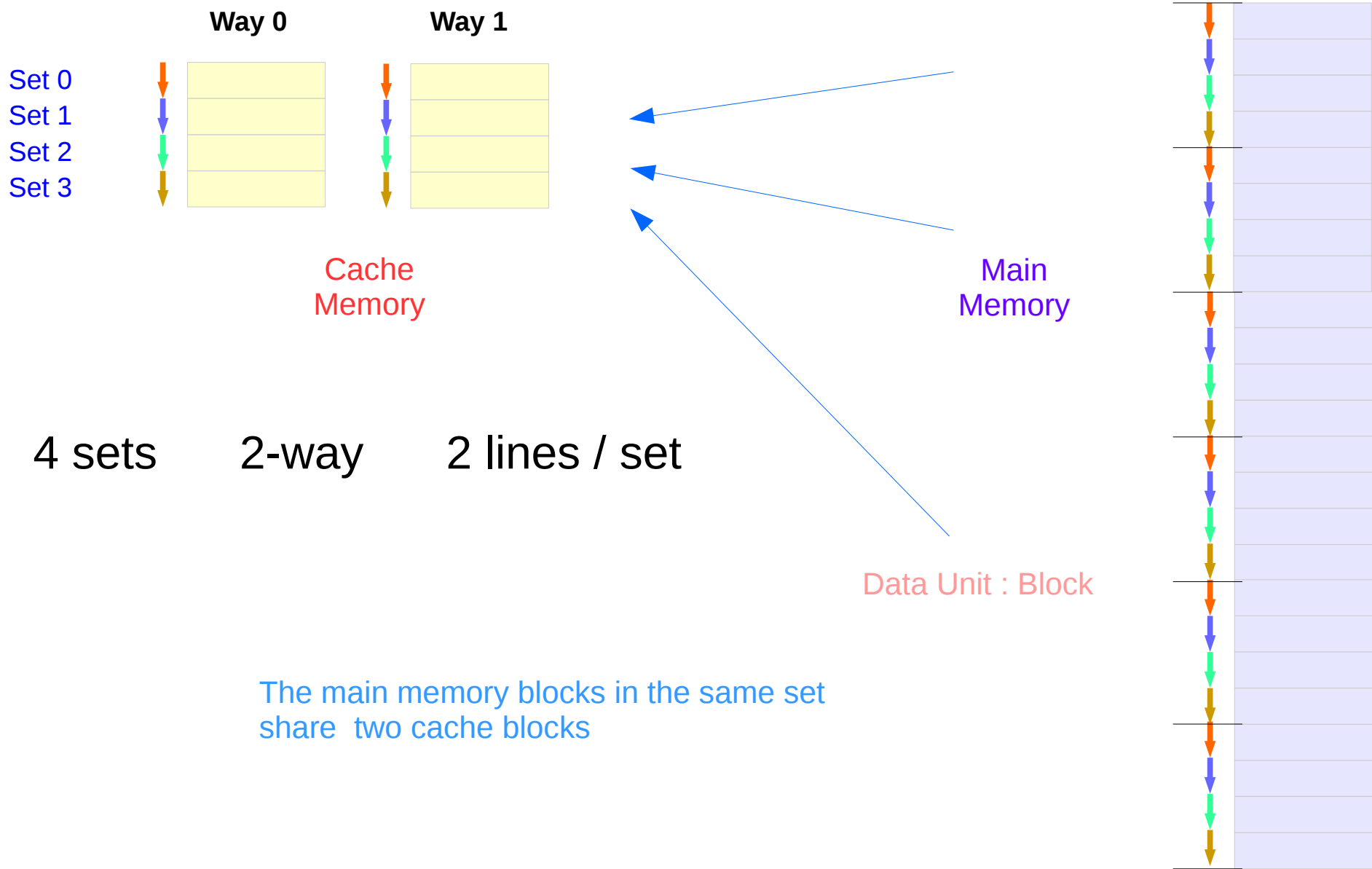
Data Unit : Block



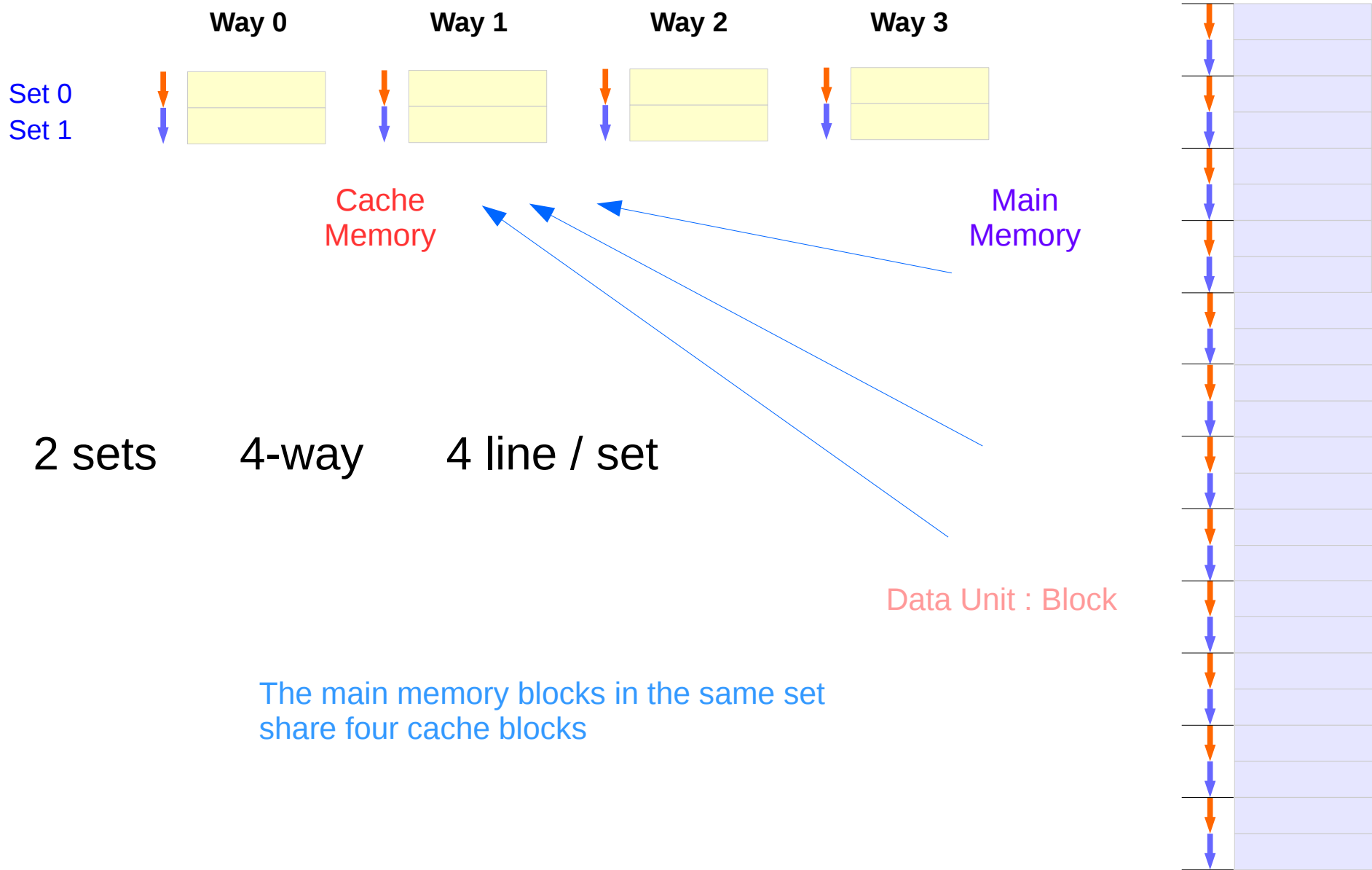
Direct Mapping



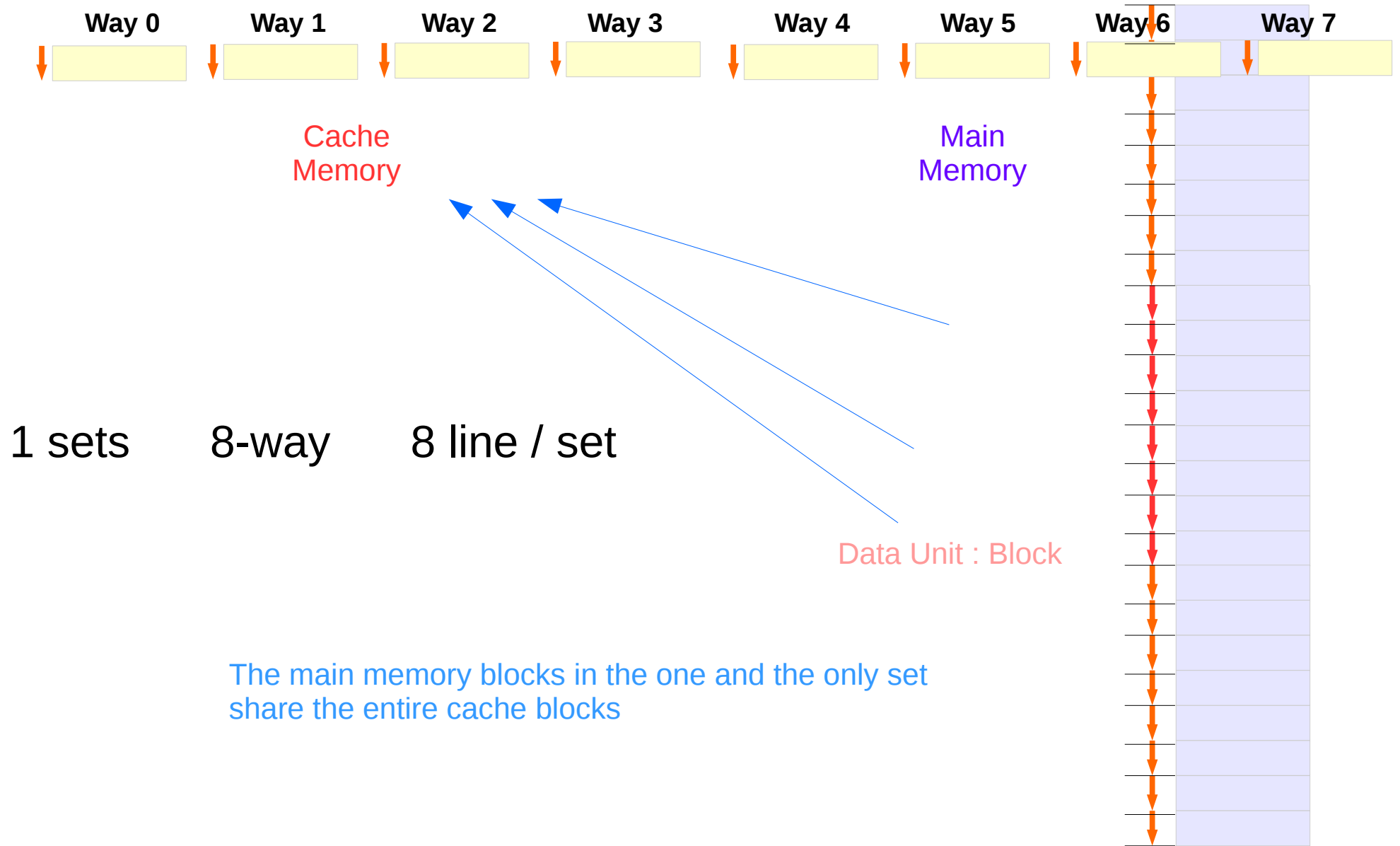
2-Way Set Associative Mapping



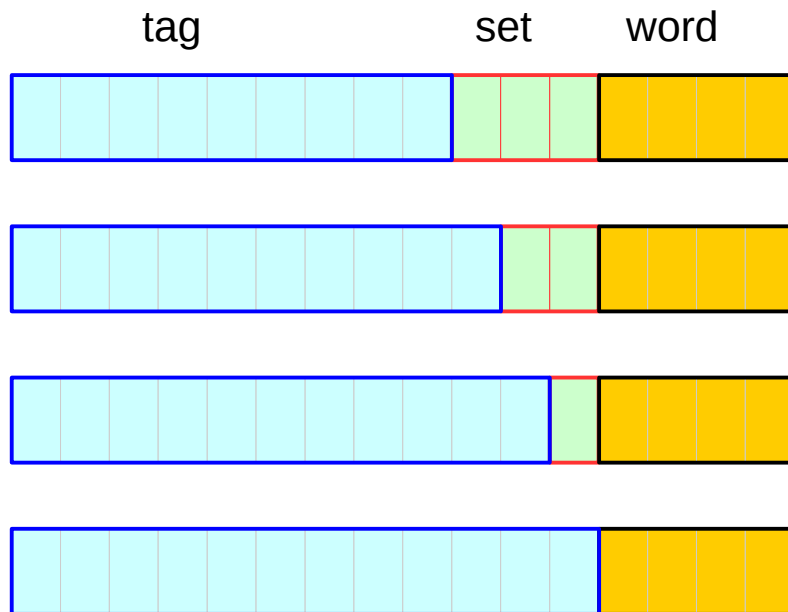
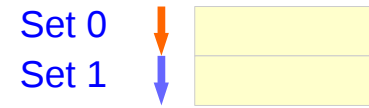
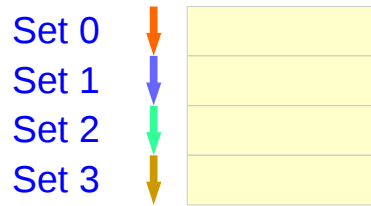
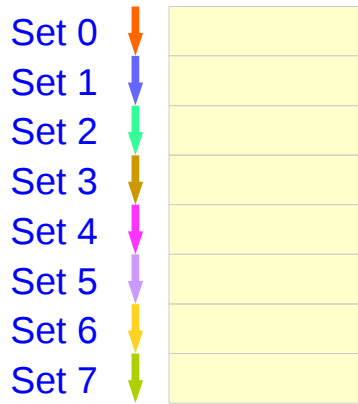
4-way Set Associative Mapping



Fully Associative Mapping

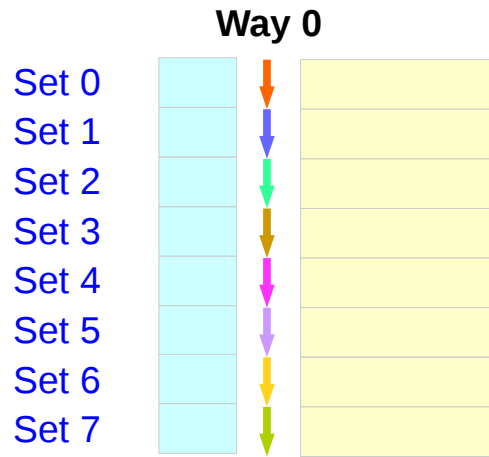


Tag Field



8 sets	1-way	1 line / set
4 sets	2-way	2 lines / set
2 sets	4-way	4 lines / set
1 set	8-way	8 lines / set

Cache Mapping Method (set-view)



8 sets

1-way

1 line / set

4 sets

2-way

2 lines / set

2 sets

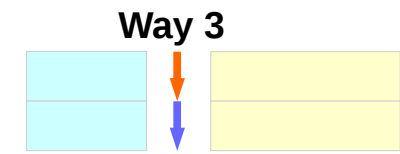
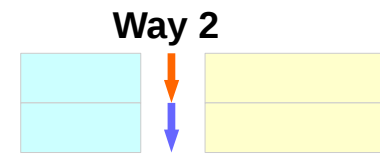
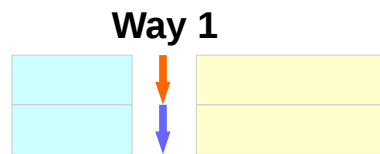
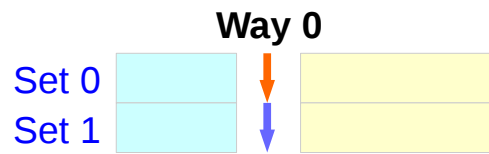
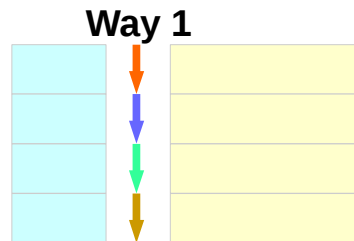
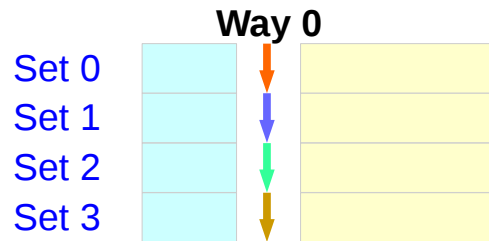
4-way

4 lines / set

1 set

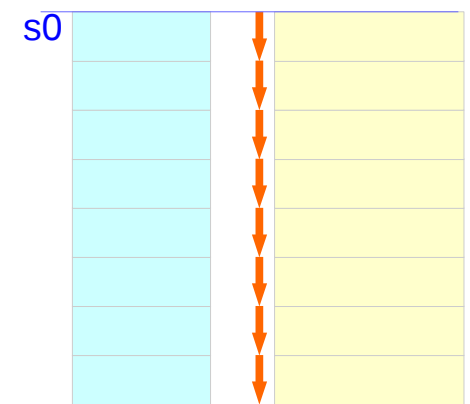
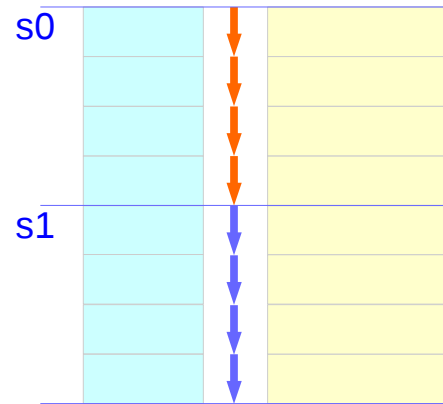
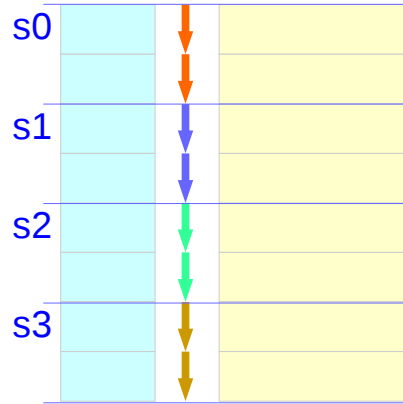
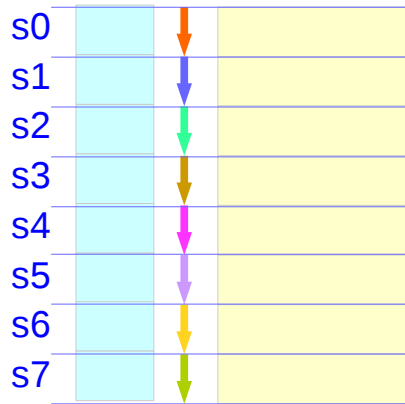
8-way

8 lines / set



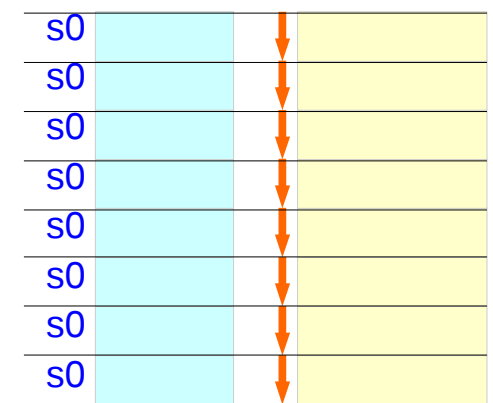
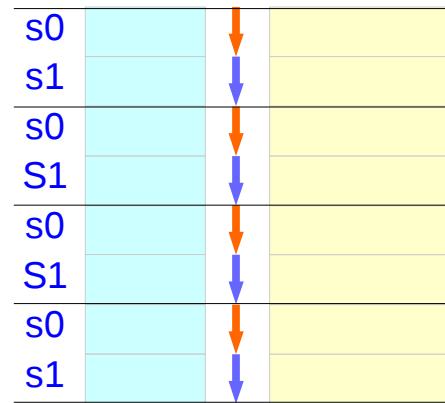
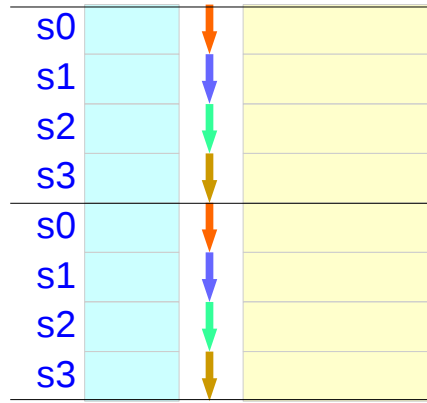
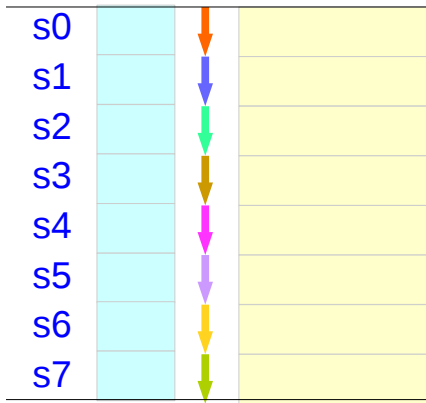
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Cache Mapping Method (set-view)



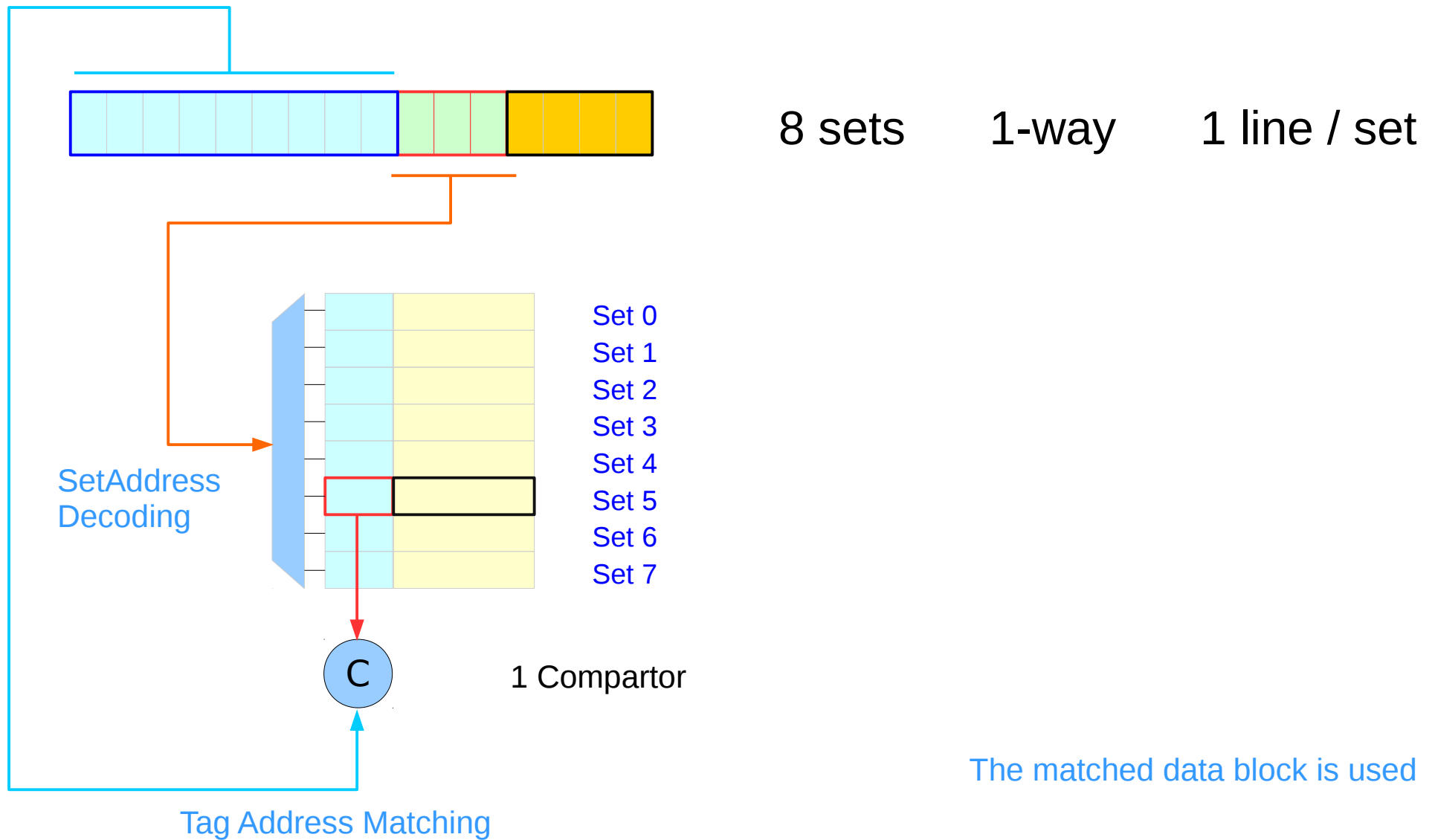
8 sets	1-way	1 line / set
4 sets	2-way	2 lines / set
2 sets	4-way	4 lines / set
1 set	8-way	8 lines / set
		• • •

Cache Mapping Method (way-view)

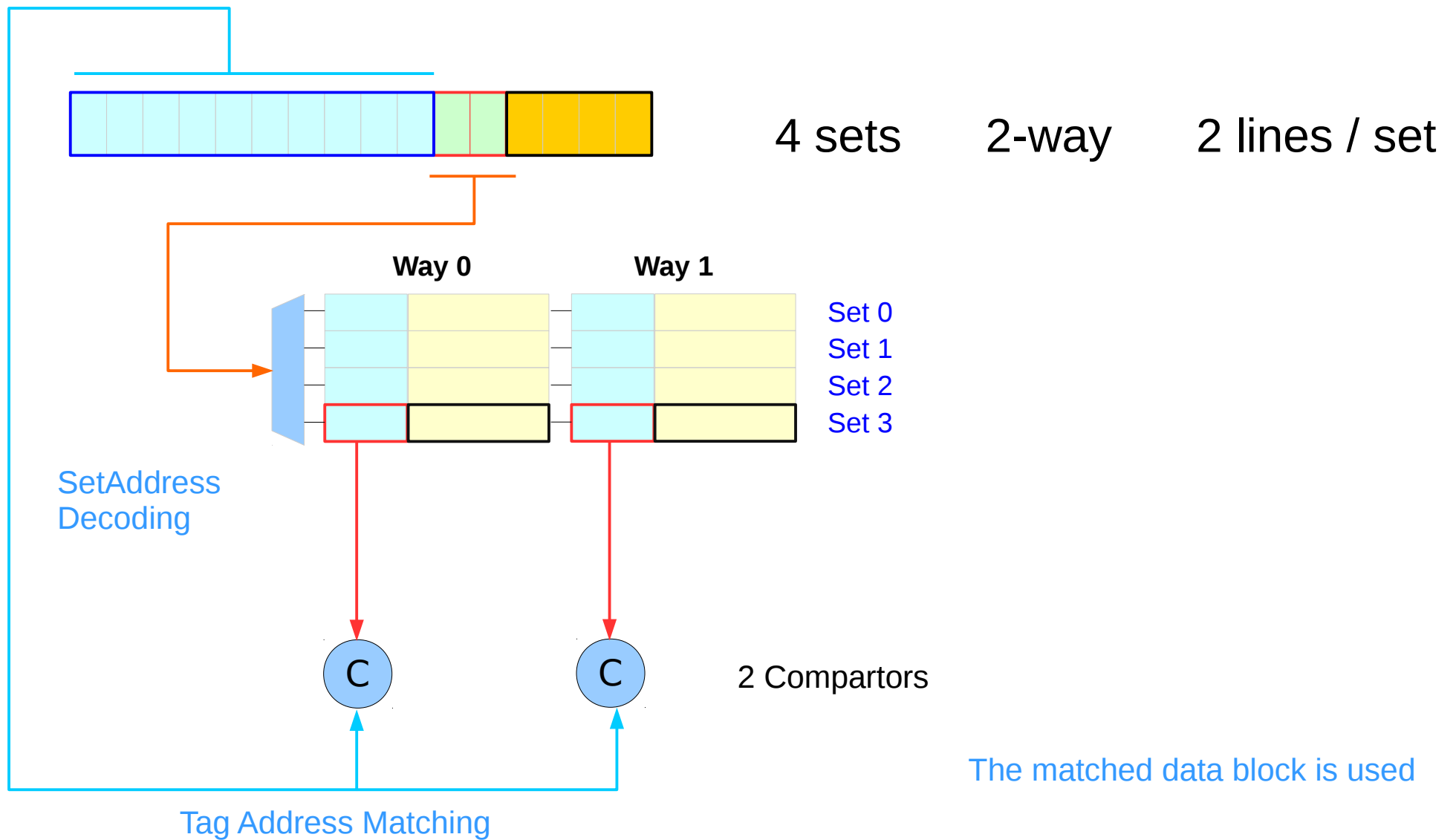


8 sets	1-way	1 line / set
4 sets	2-way	2 lines / set
2 sets	4-way	4 lines / set
1 set	8-way	8 lines / set

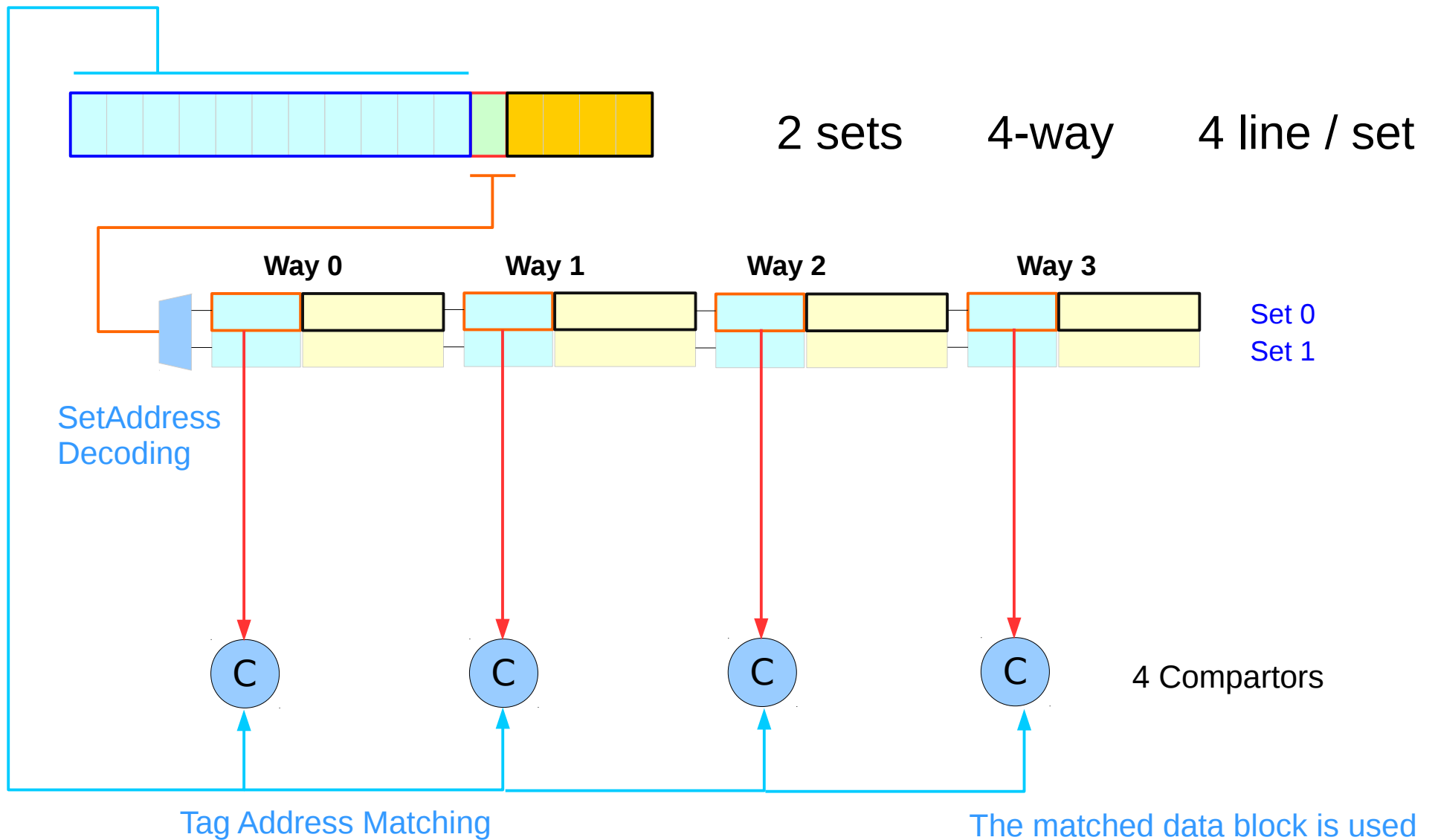
Direct Mapping



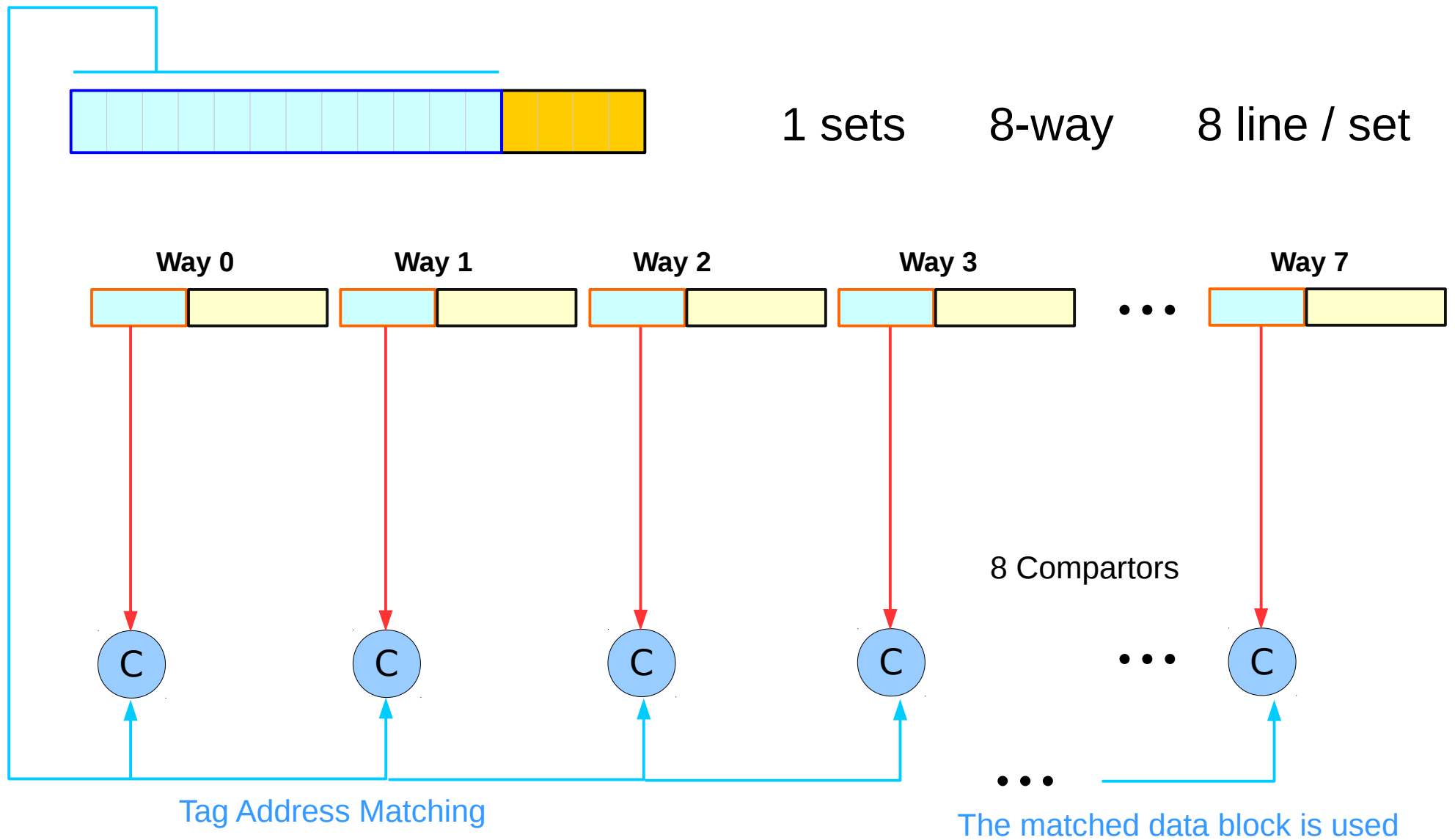
2-Way Set Associative Mapping



4-way Set Associative Mapping



Fully Associative Mapping



CAM (Content Addressable Memory)

CAM (Content Addressable Memory)

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CAM (Content Addressable Memory)

References

- [1] <http://en.wikipedia.org/>
- [2] https://en.wikiversity.org/wiki/The_necessities_in_SOC_Design
- [3] https://en.wikiversity.org/wiki/The_necessities_in_Digital_Design
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- [8] Digital Systems, Hill, Peterson, 1987