

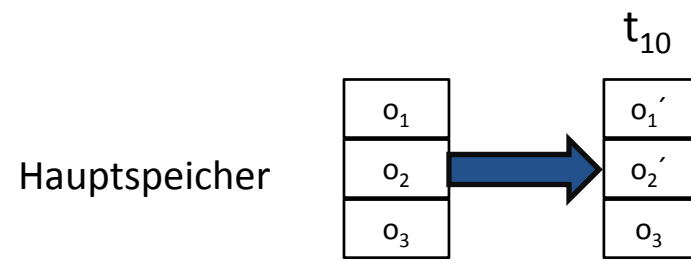
Aufgabe 4-1: Naïve Snapshot

Hauptspeicher

o_1
o_2
o_3

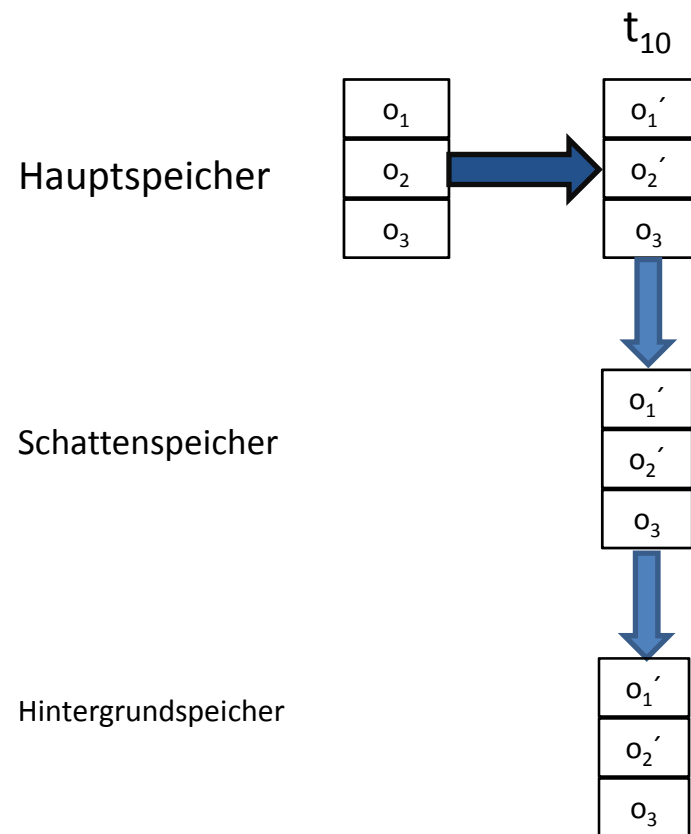
Schattenspeicher

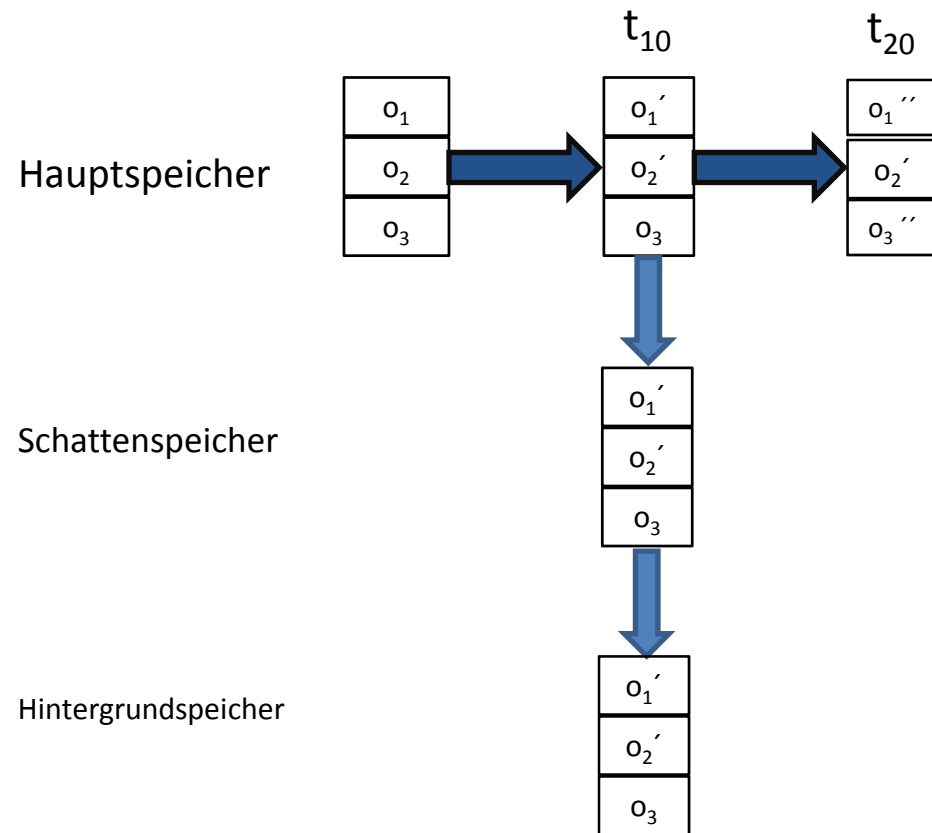
Hintergrundspeicher

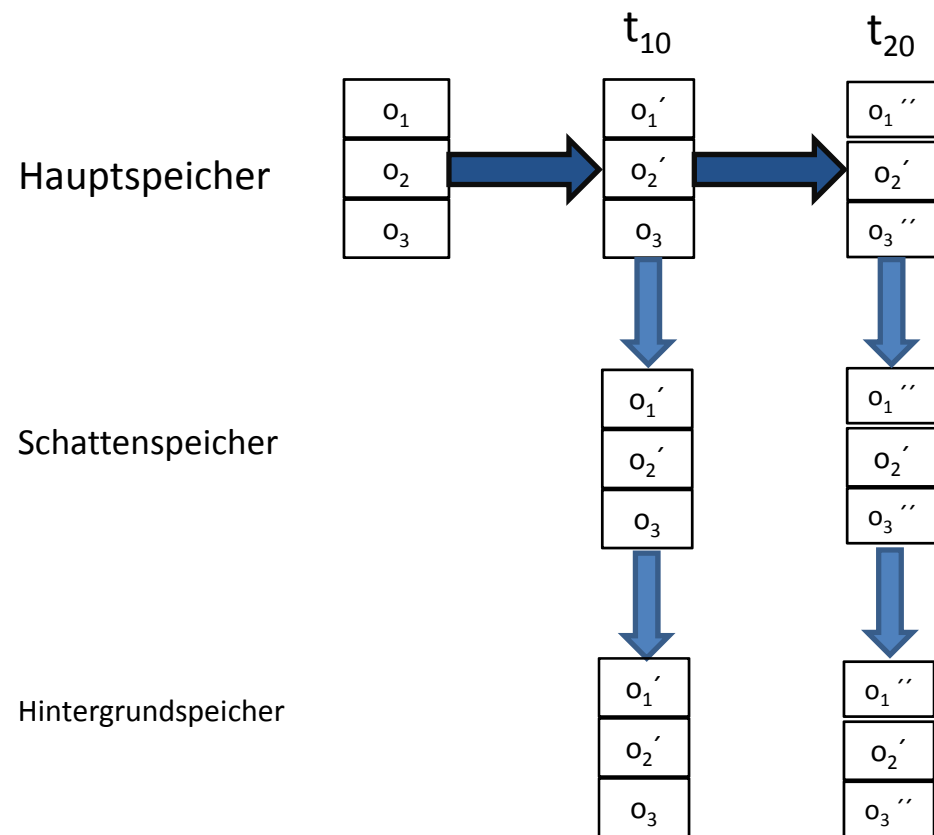


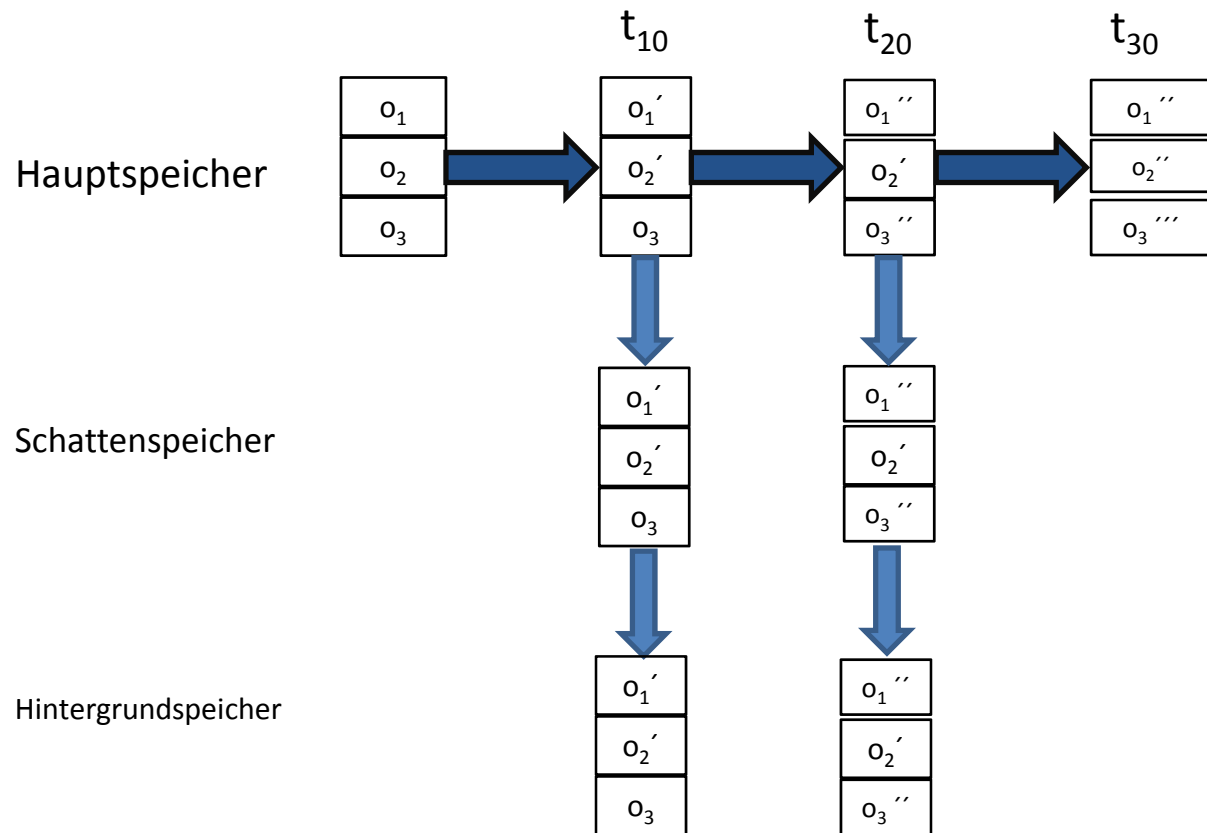
Schattenspeicher

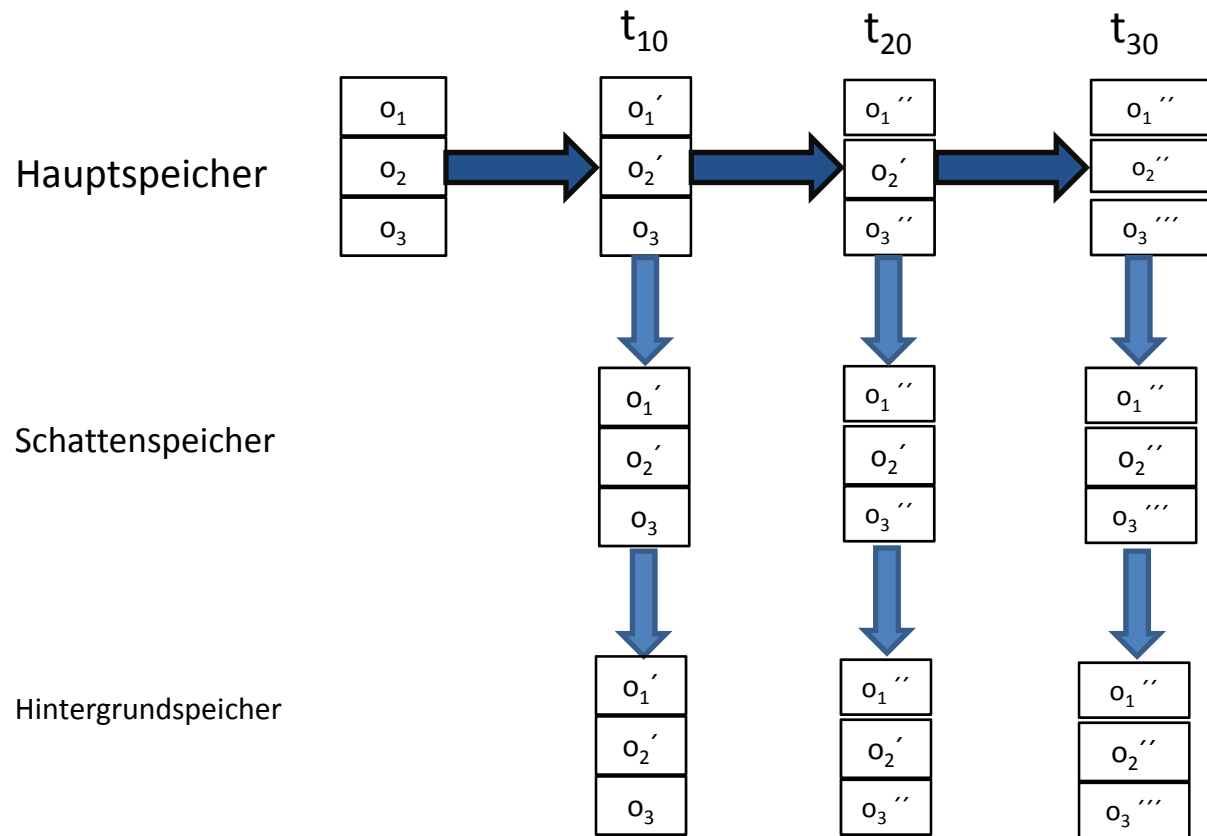
Hintergrundspeicher



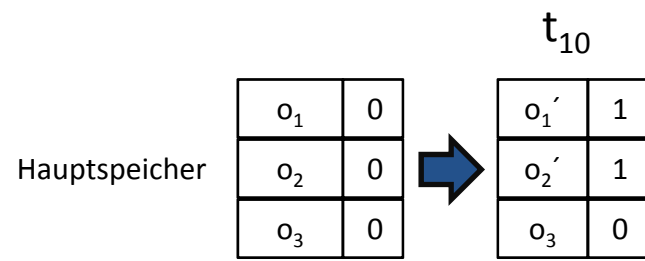






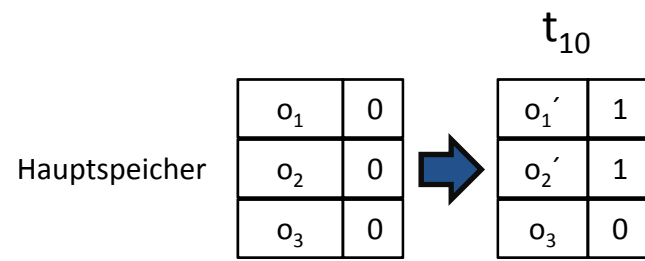


Aufgabe 4-1: Copy-On-Update



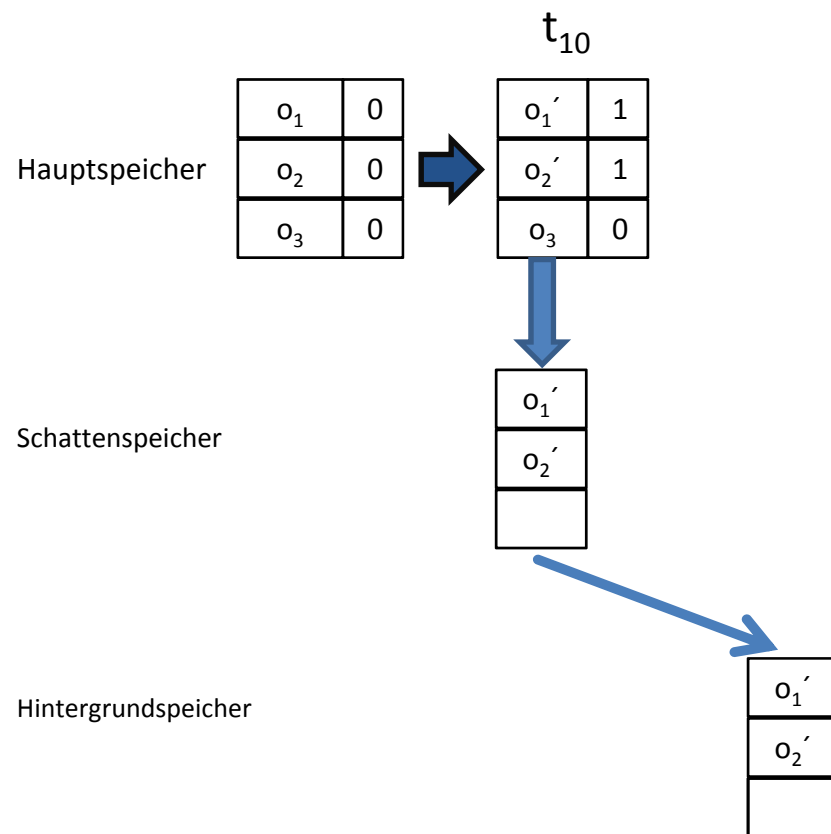
Schattenspeicher

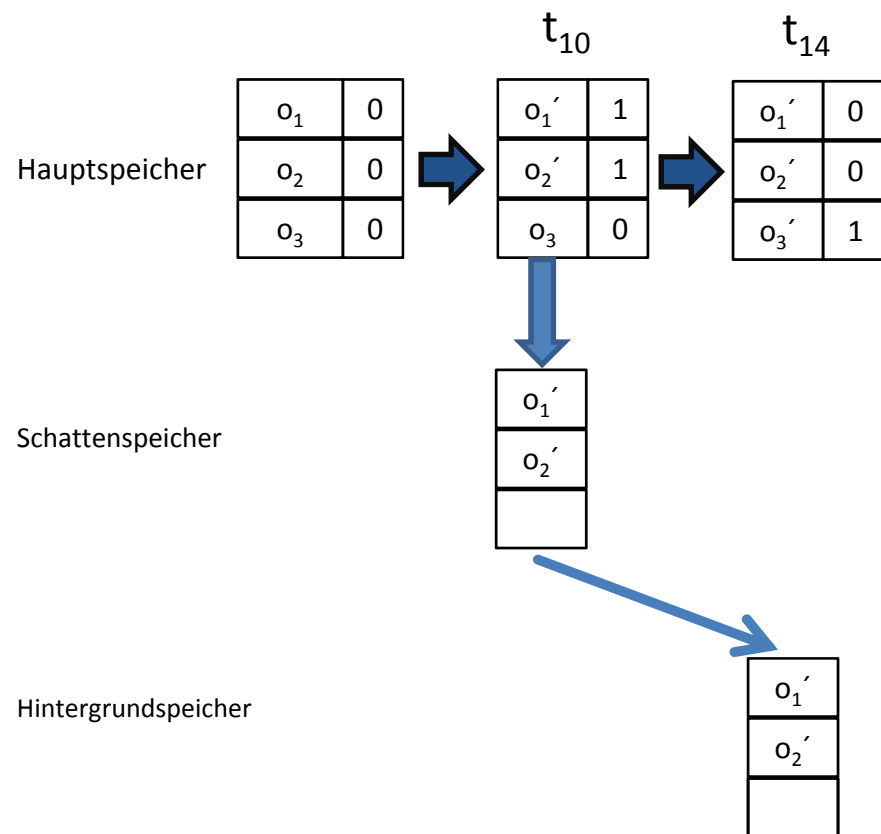
Hintergrundspeicher

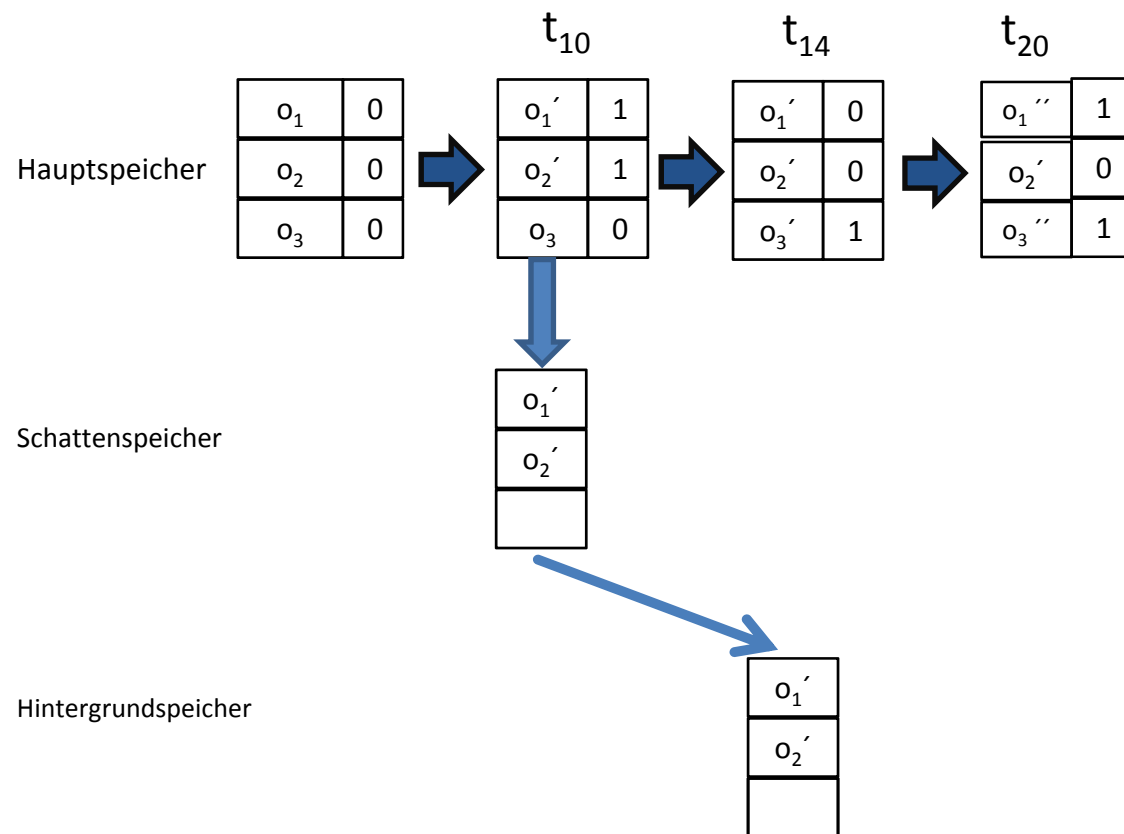


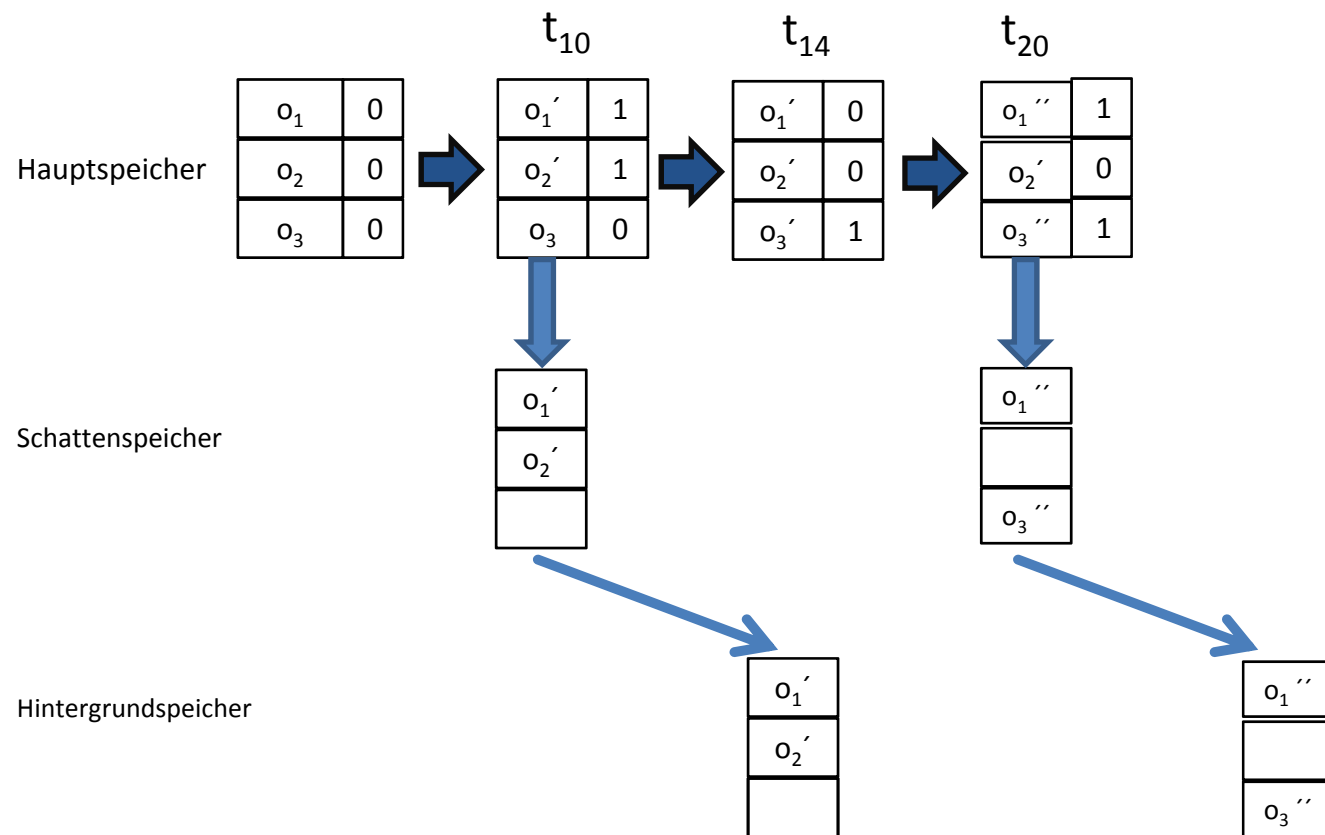
Schattenspeicher

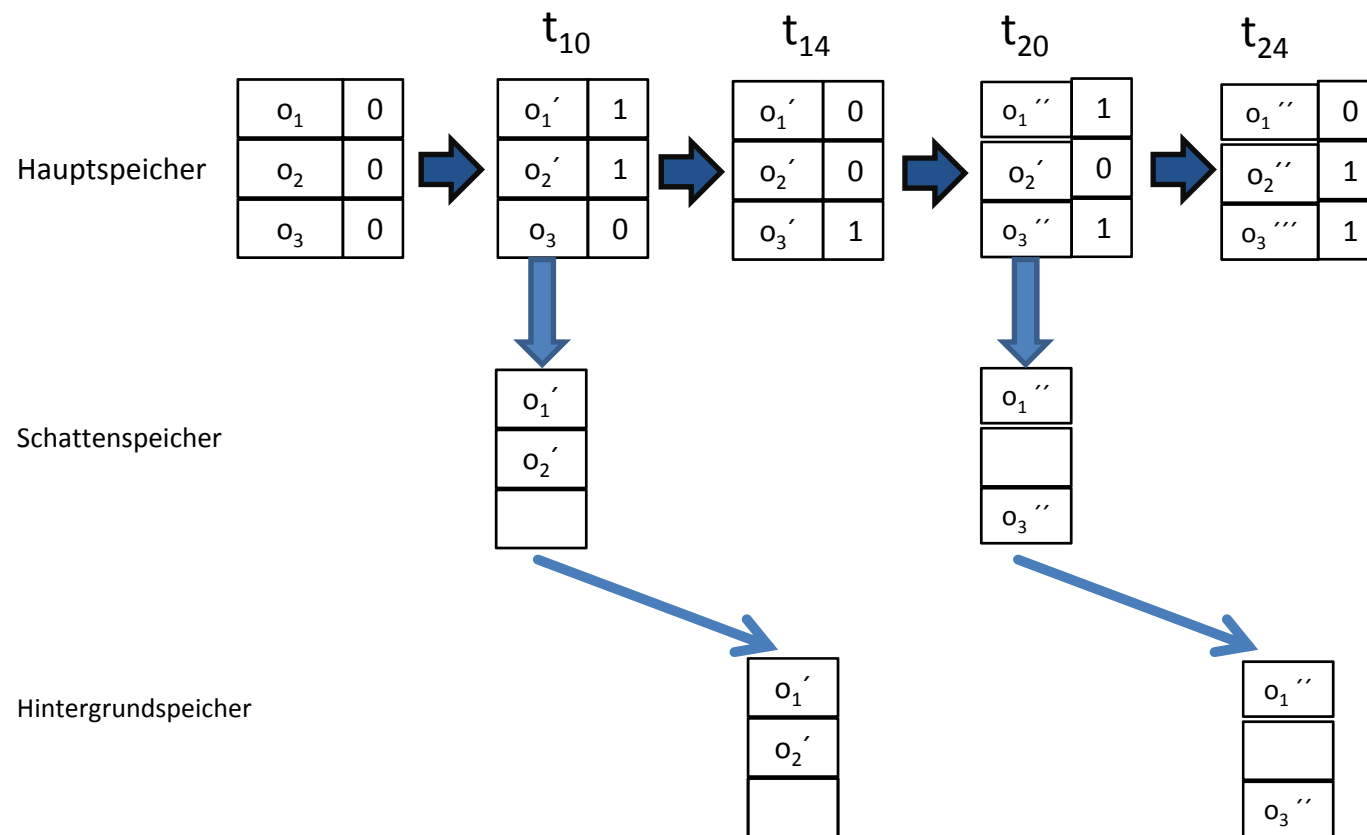
Hintergrundspeicher

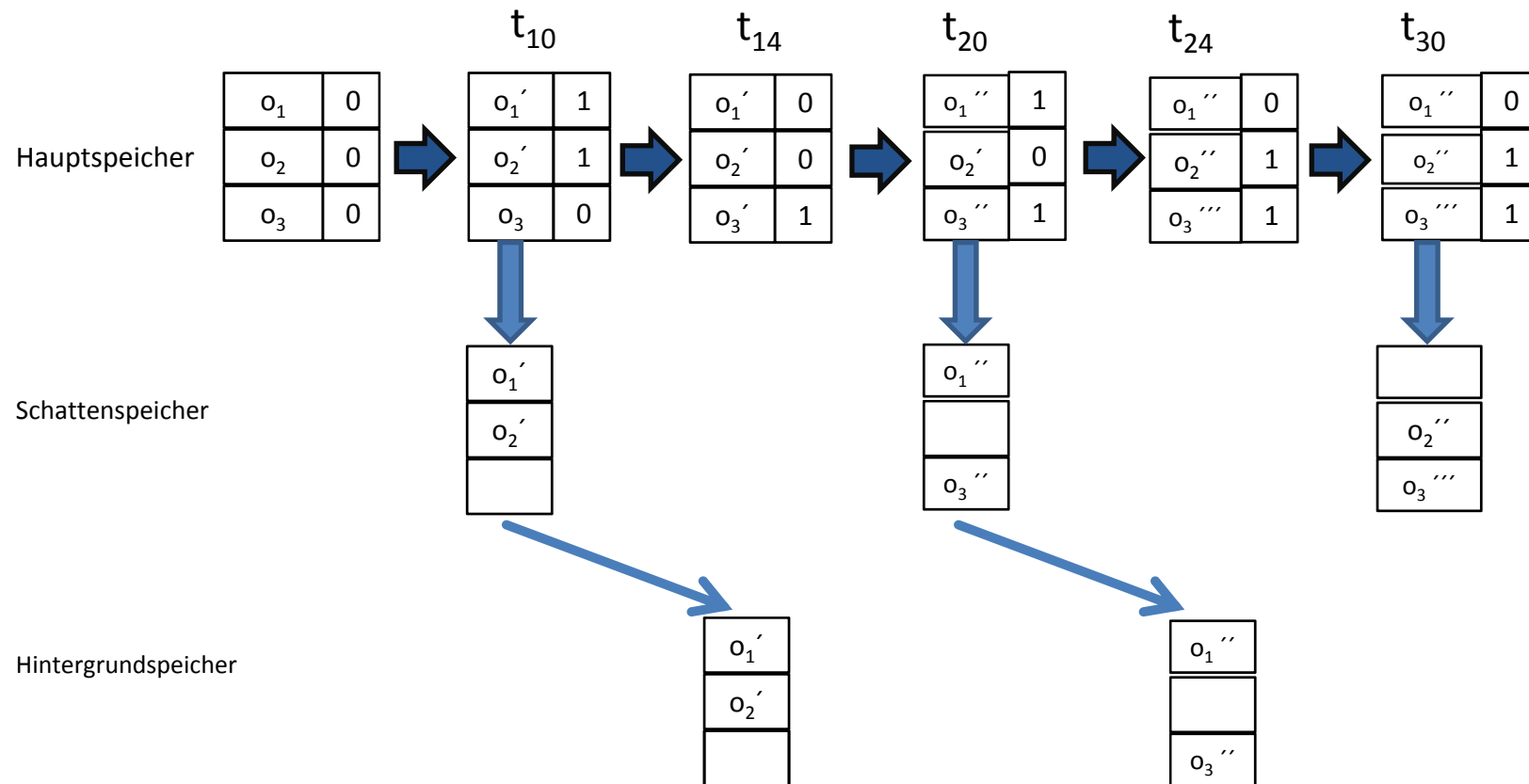


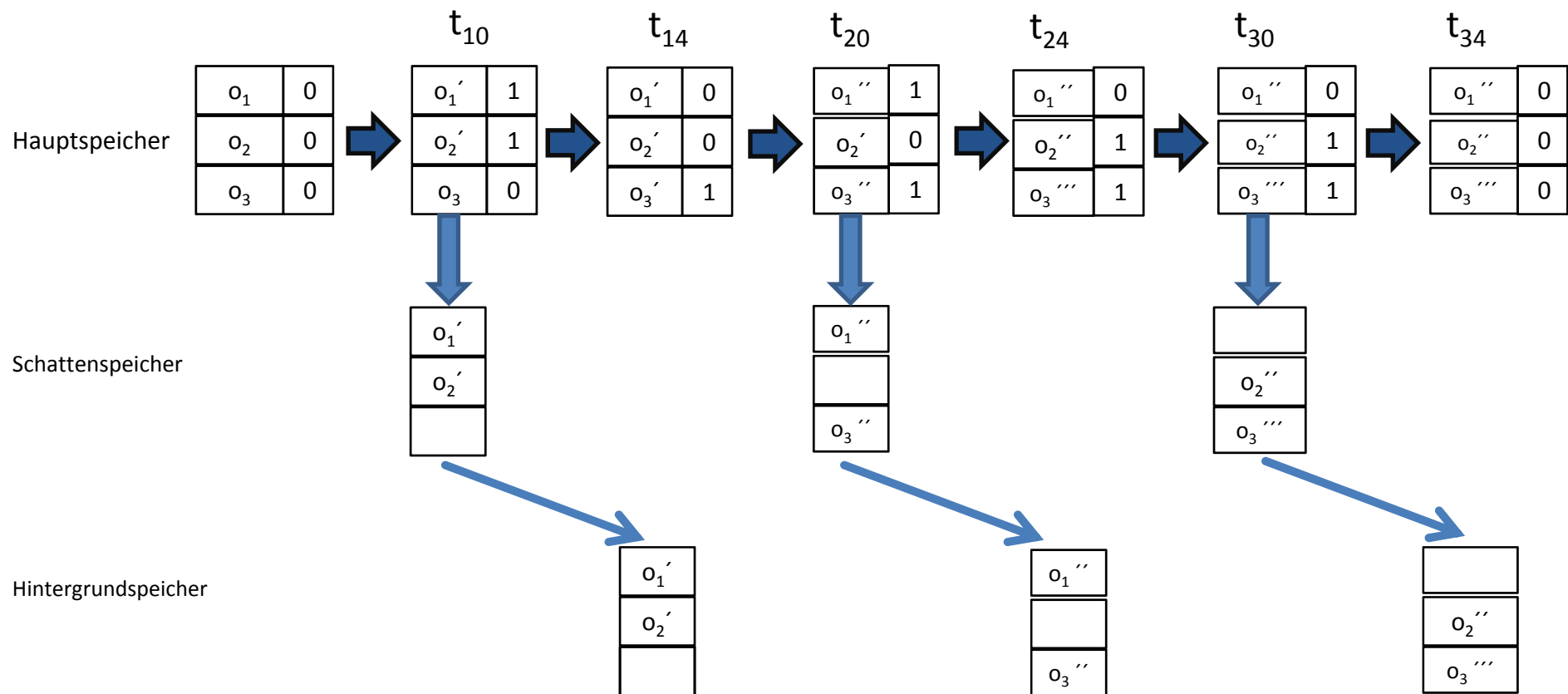












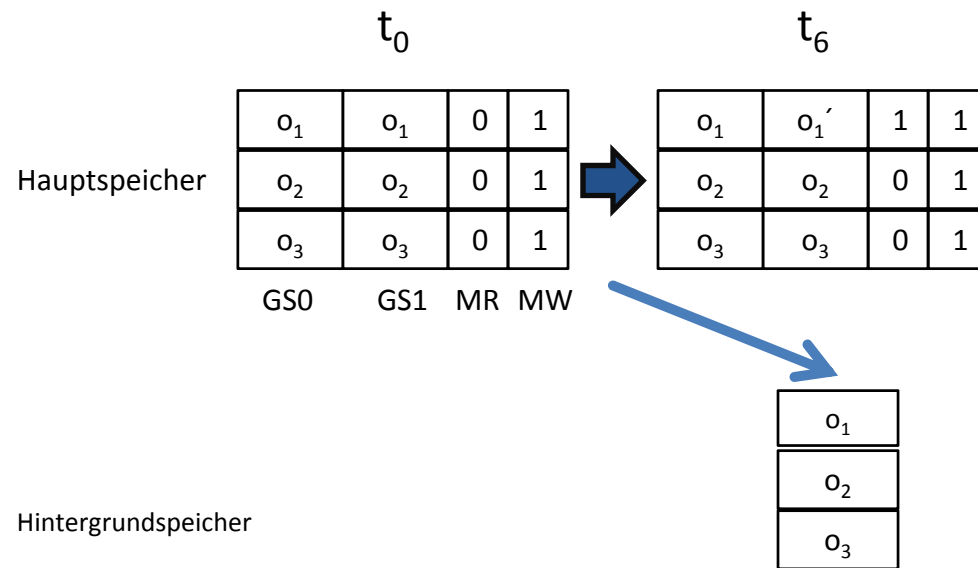
Aufgabe 4-1: Wait-Free Zigzag

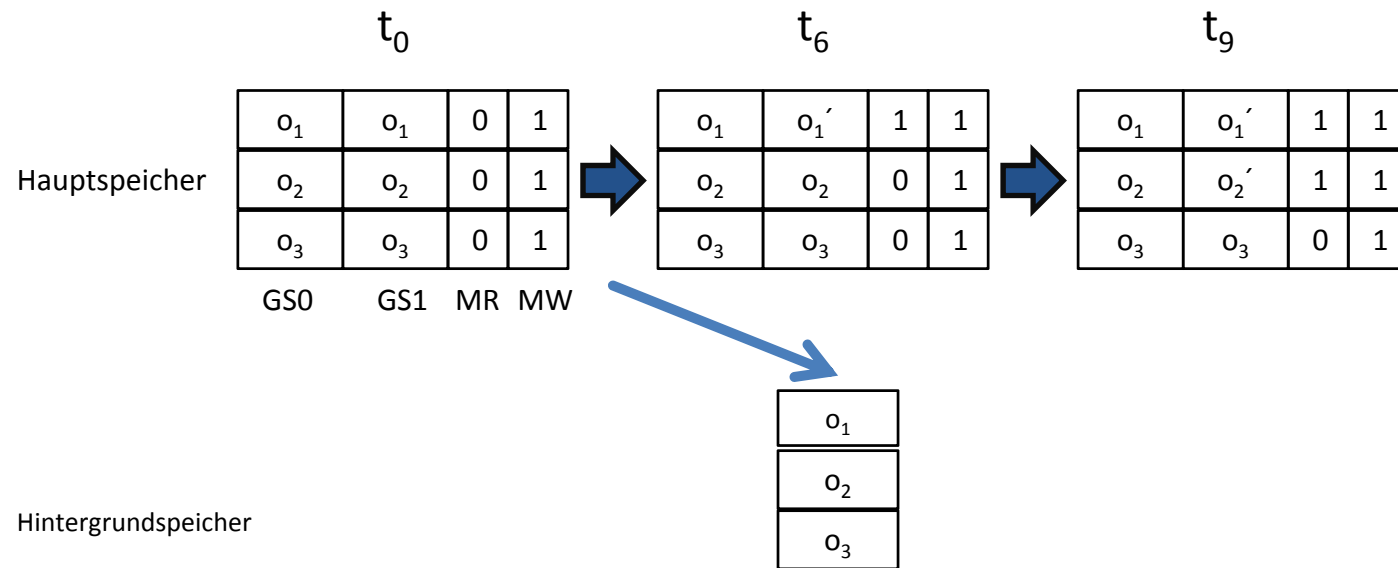
t_0

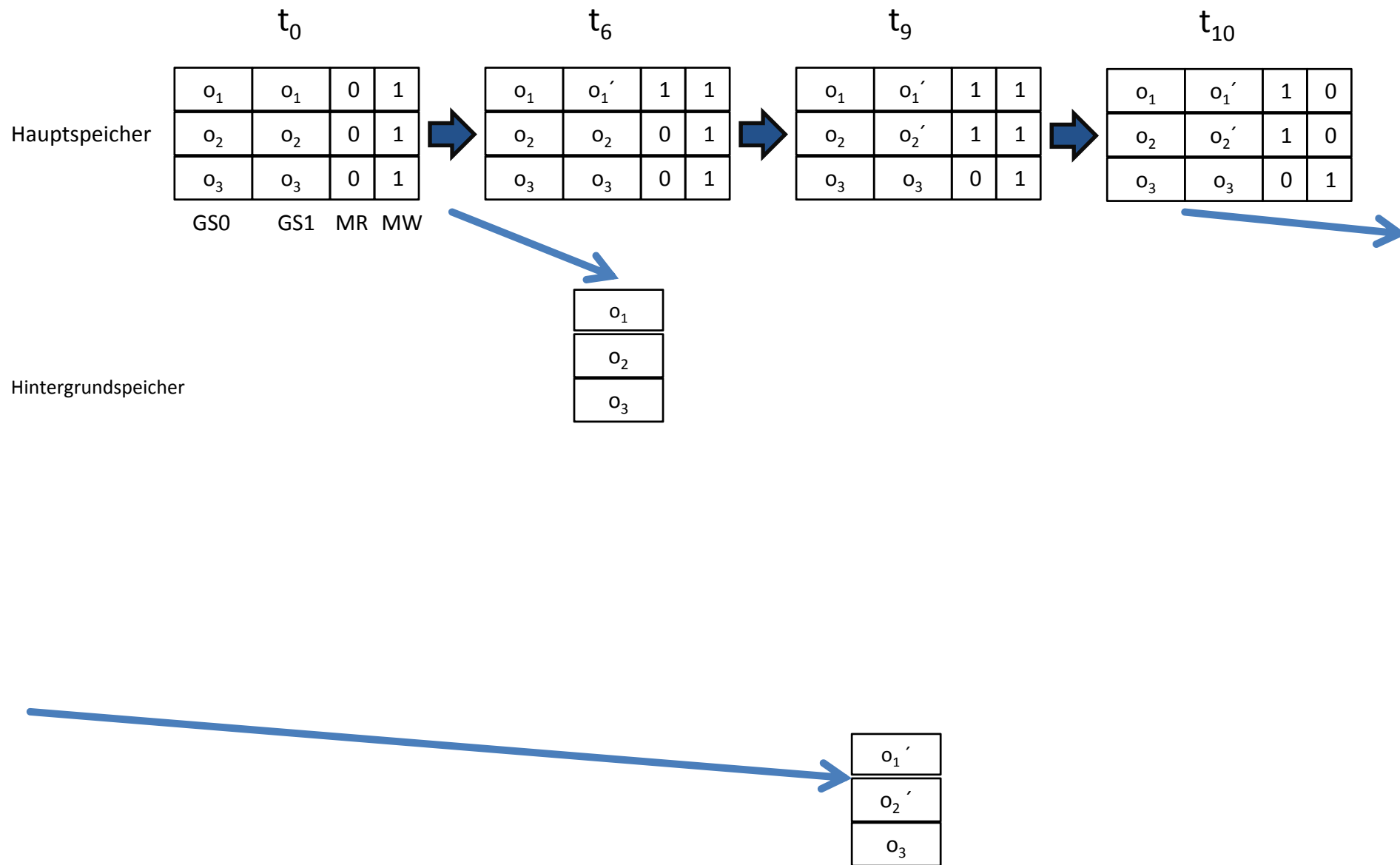
Hauptspeicher

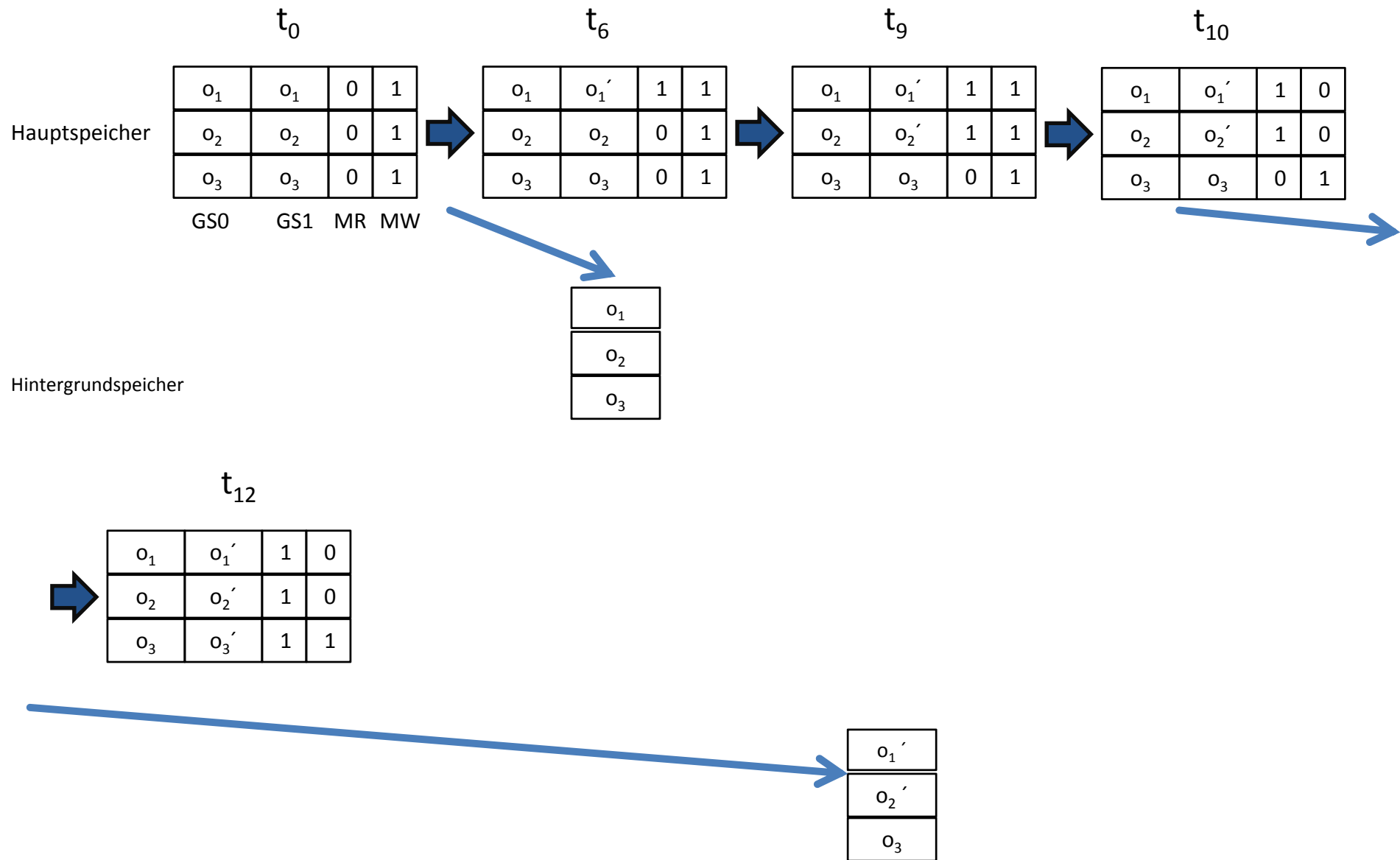
o_1	o_1	0	1
o_2	o_2	0	1
o_3	o_3	0	1
GS0	GS1	MR	MW

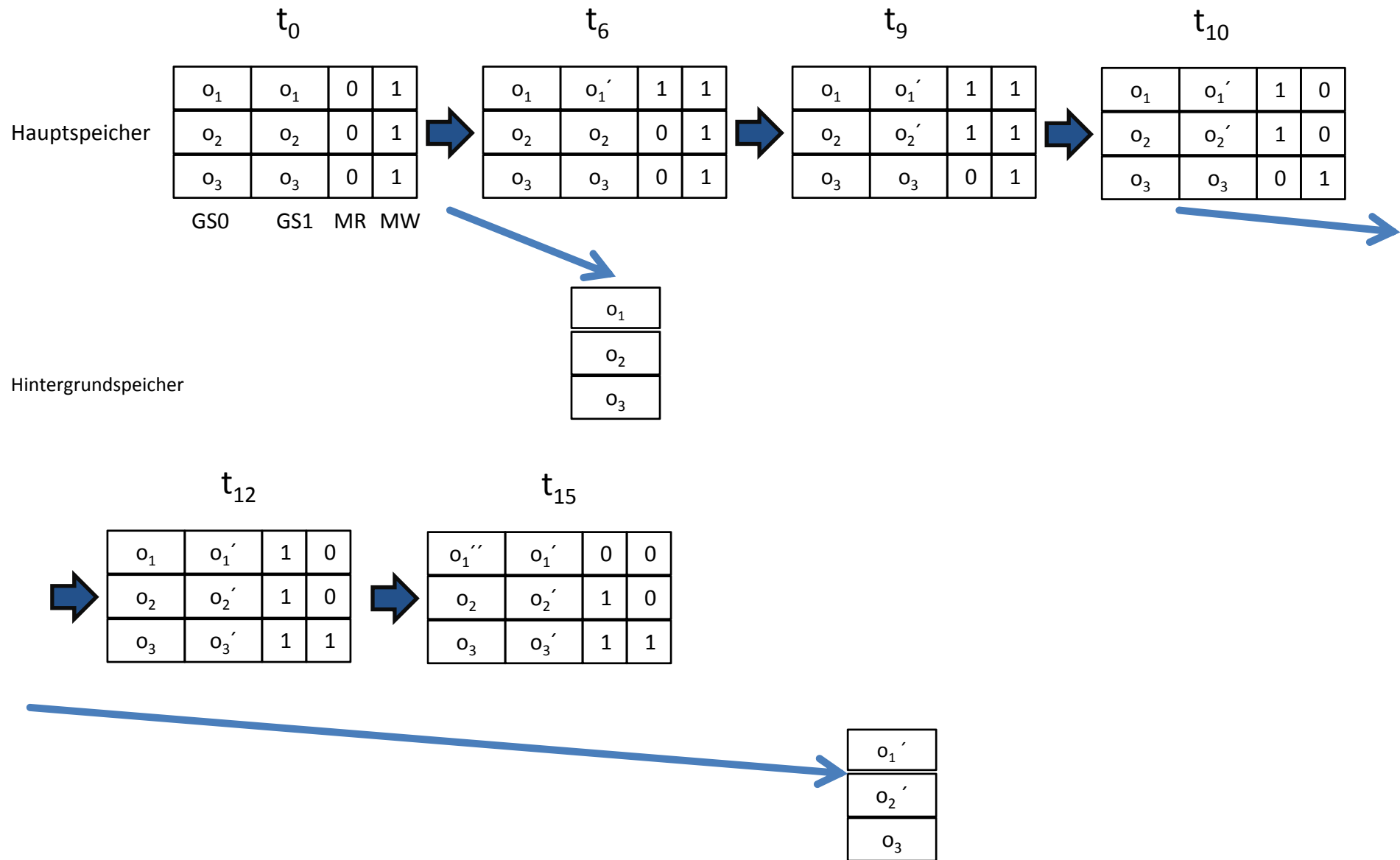
Hintergrundspeicher

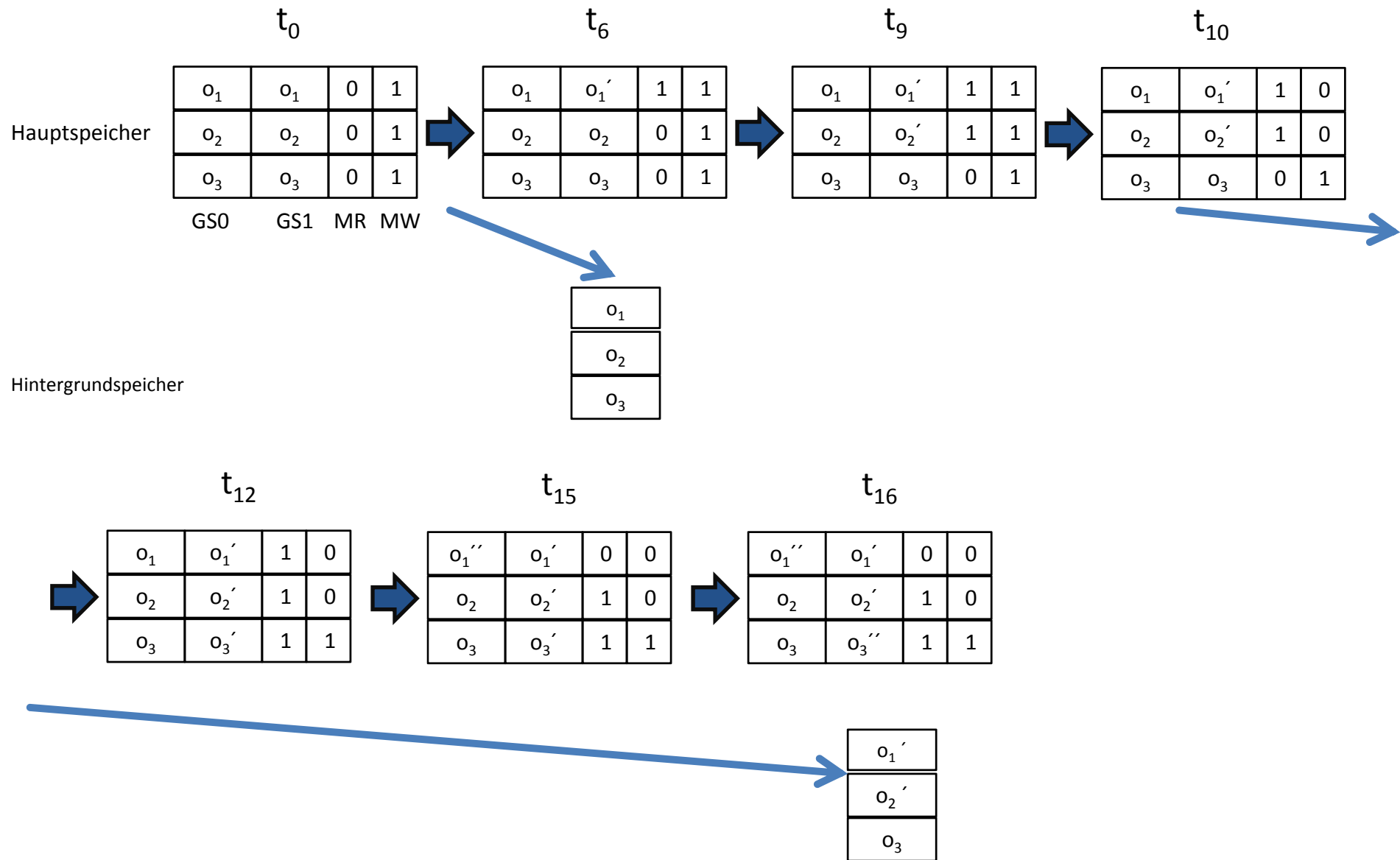


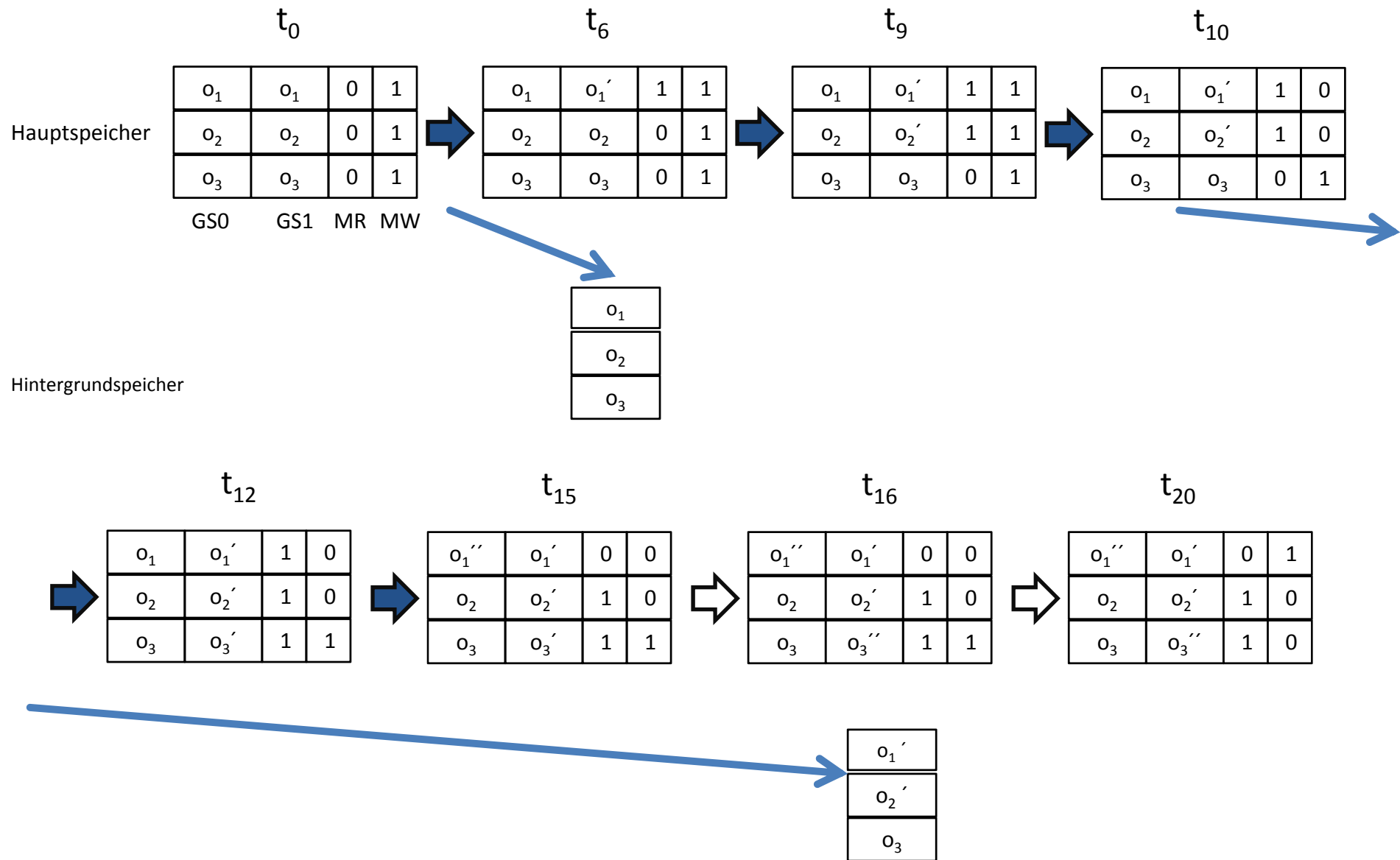










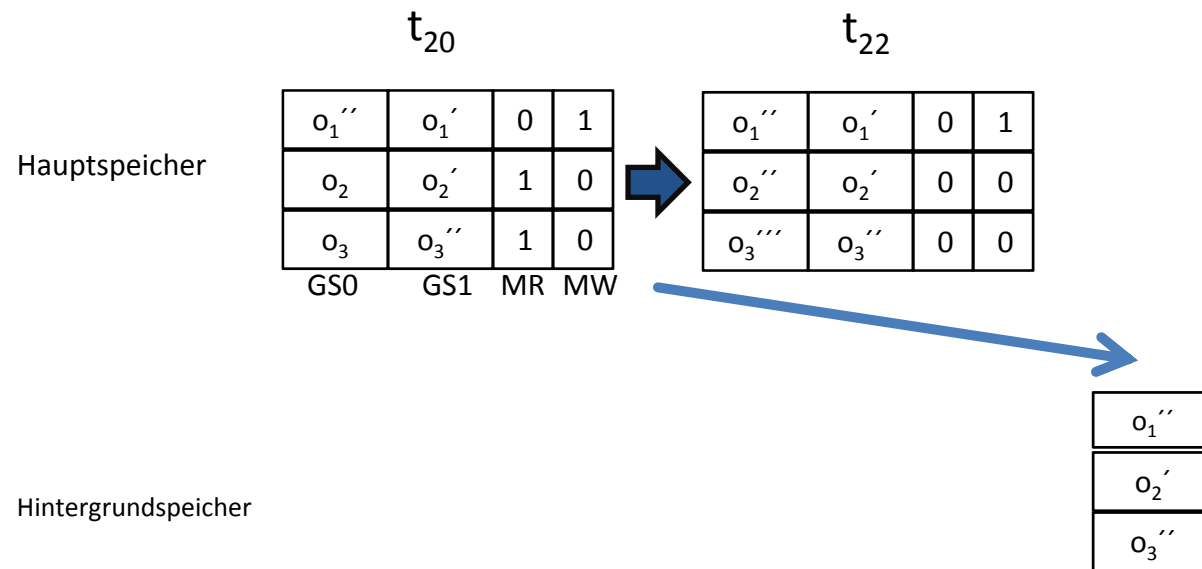


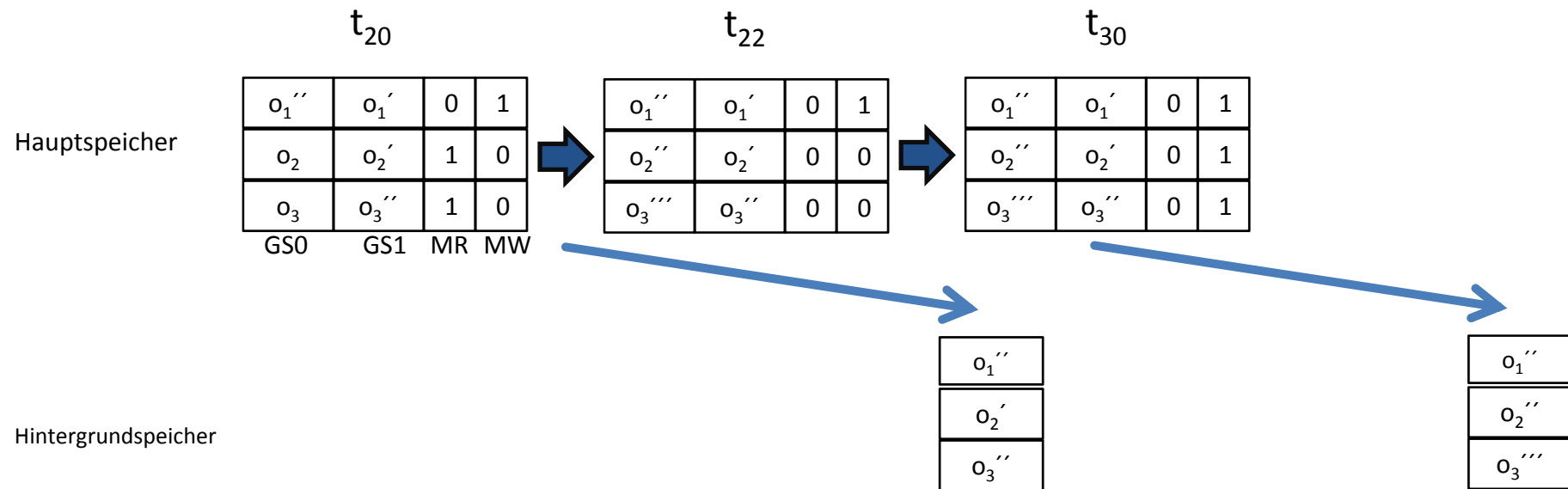
t_{20}

Hauptspeicher

o_1''	o_1'	0	1
o_2	o_2'	1	0
o_3	o_3''	1	0
GS0	GS1	MR	MW

Hintergrundspeicher





Aufgabe 4-1: Wait-Free PingPong

t_0

o_1	0	-	1	o_1
o_2	0	-	1	o_2
o_3	0	-	1	o_3

GS

odd

even

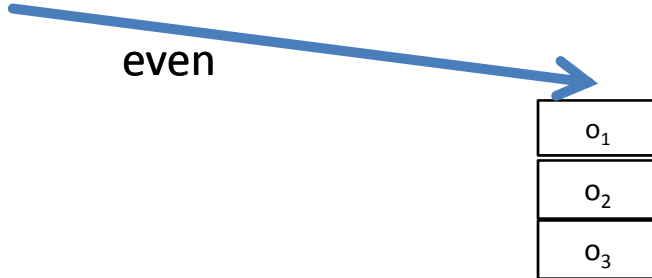
t_0

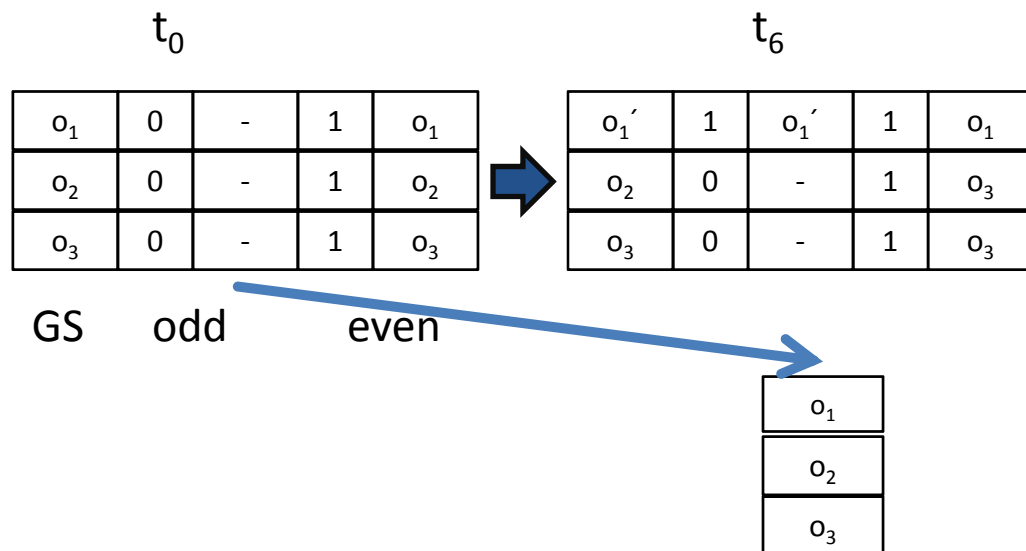
o_1	0	-	1	o_1
o_2	0	-	1	o_2
o_3	0	-	1	o_3

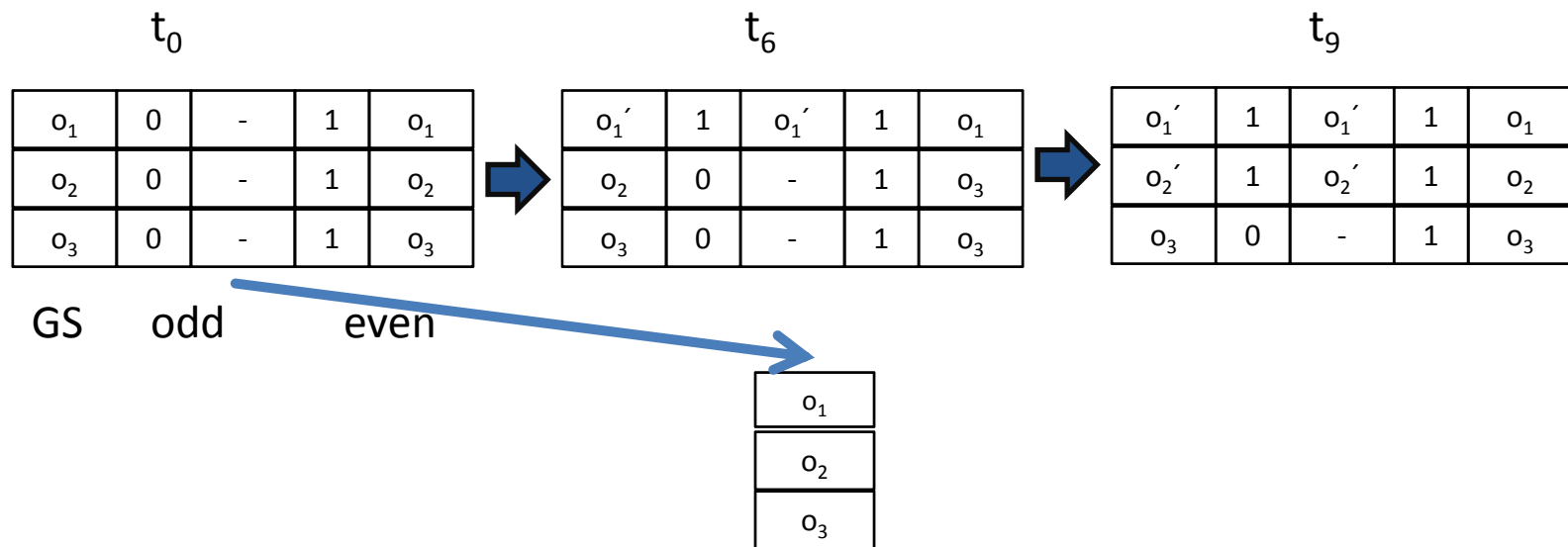
GS

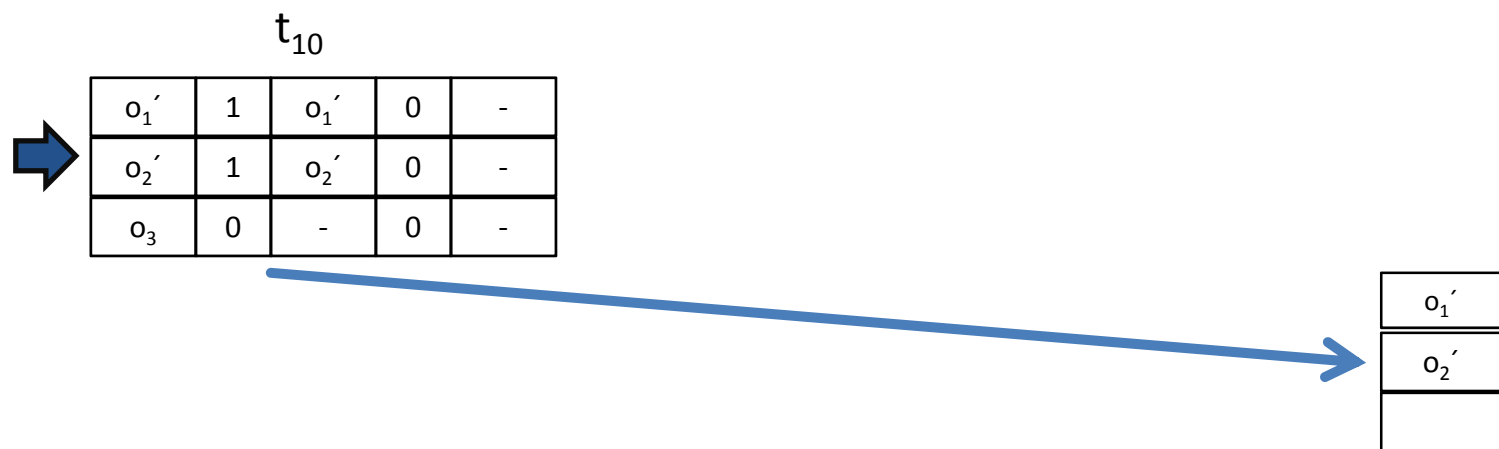
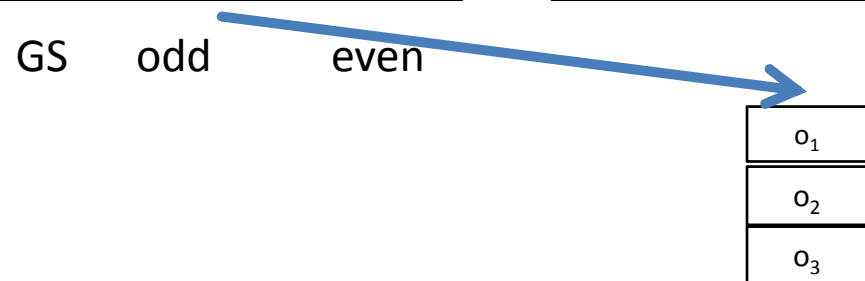
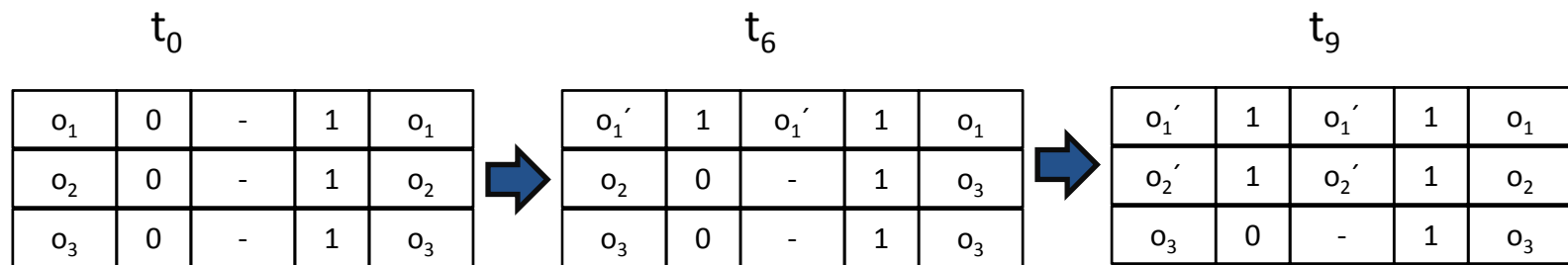
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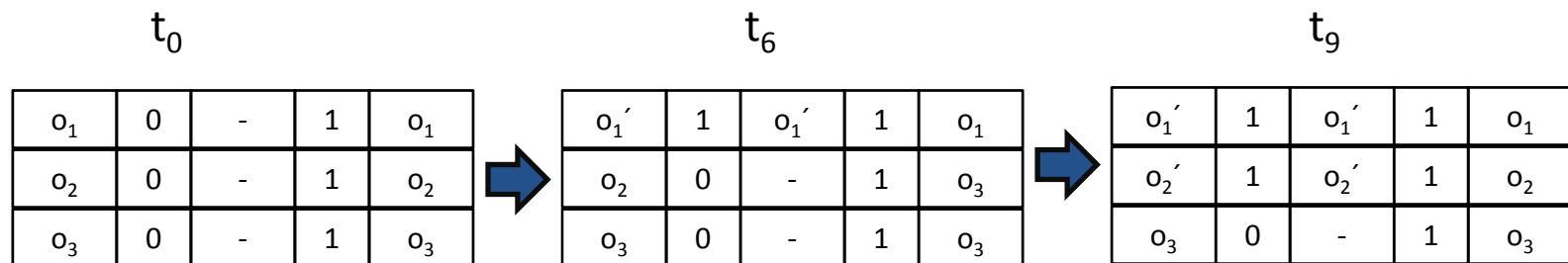
even







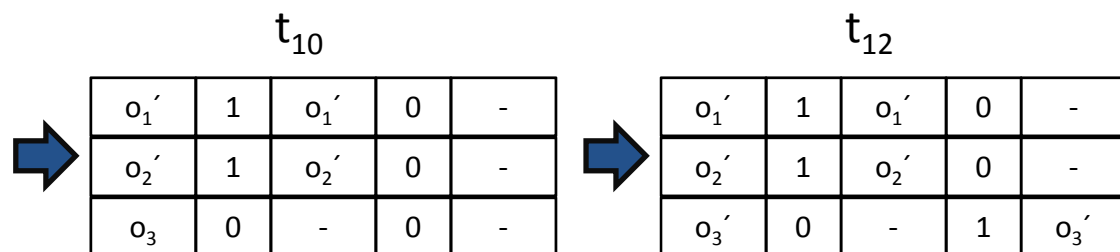




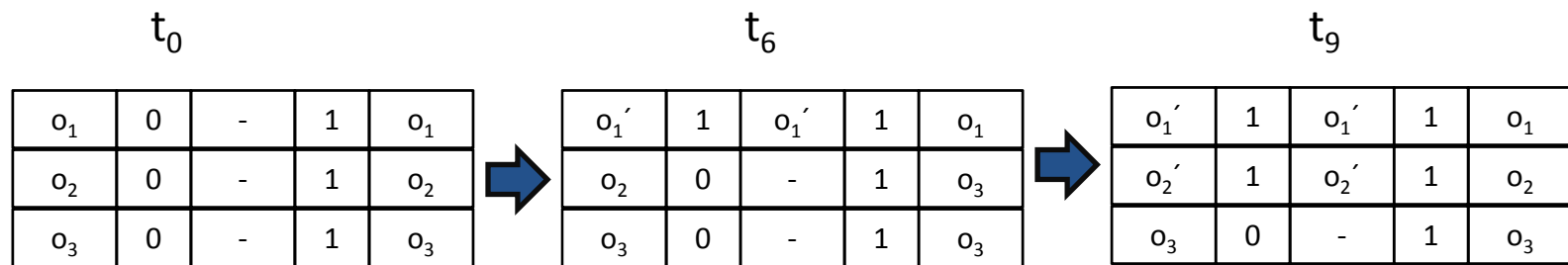
GS odd even



o_1
o_2
o_3




o_1'
o_2'



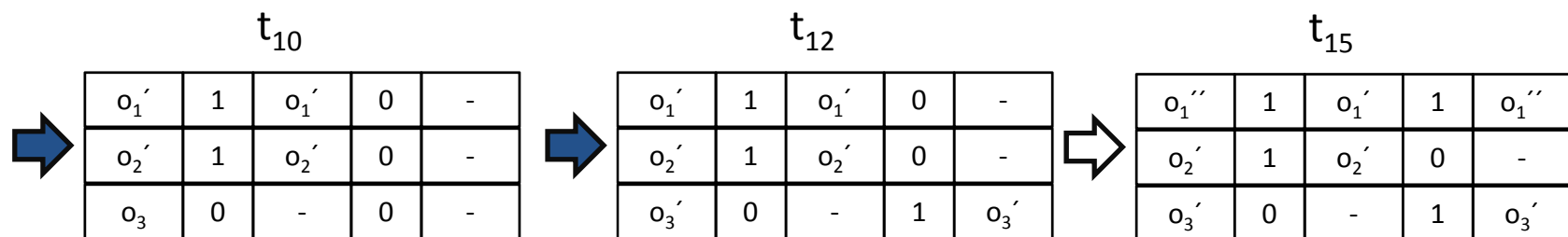
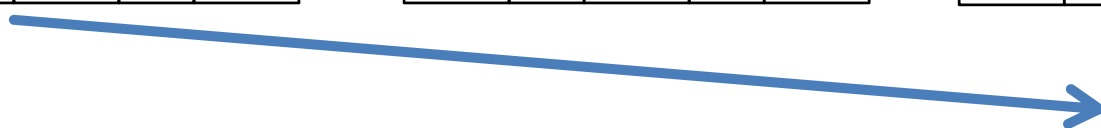
GS

odd

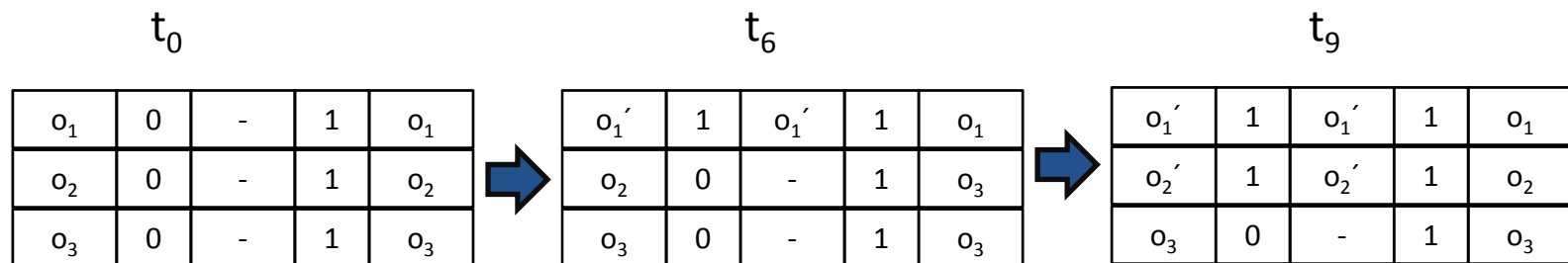
even



o_1
o_2
o_3

o_1'
o_2'



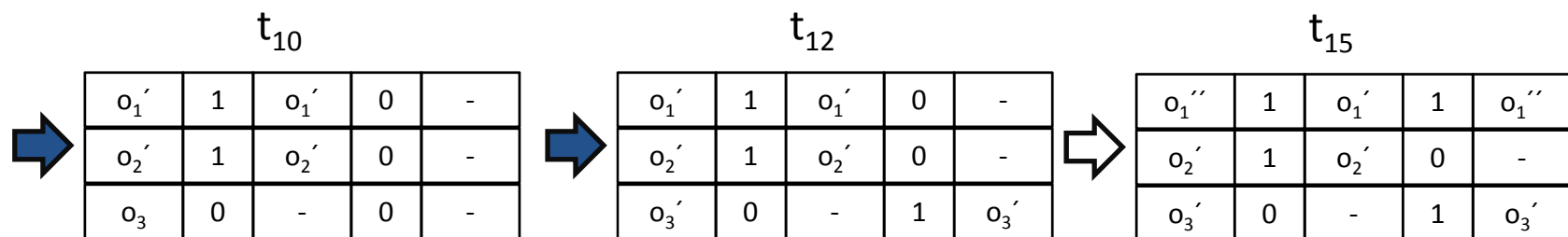
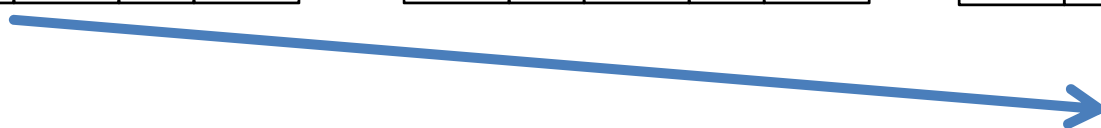
GS

odd

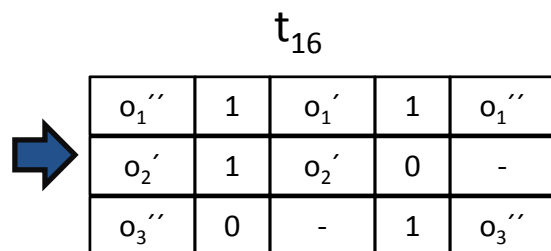
even

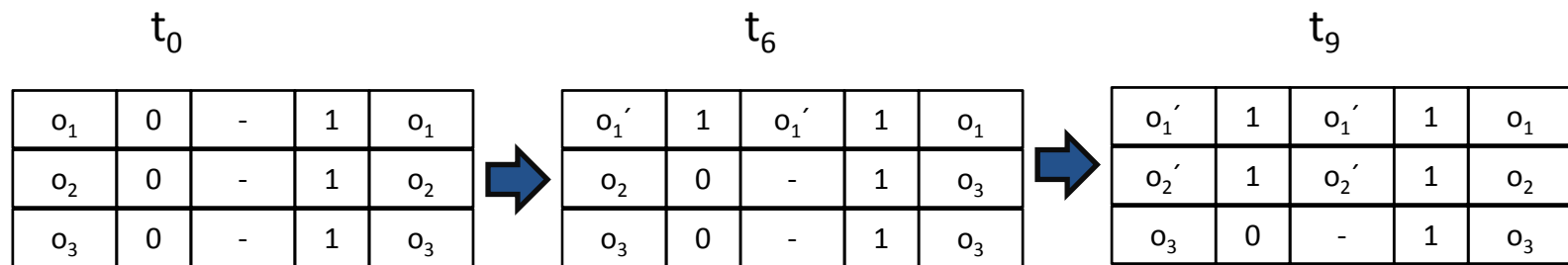


o_1
o_2
o_3

o_1'
o_2'



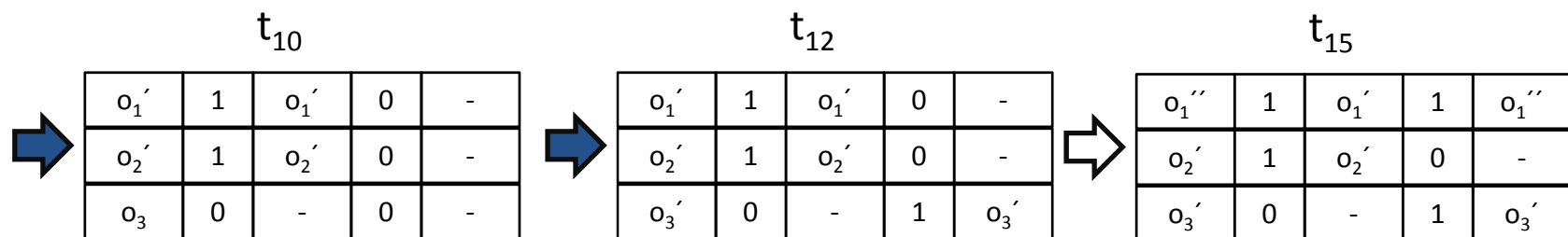


GS

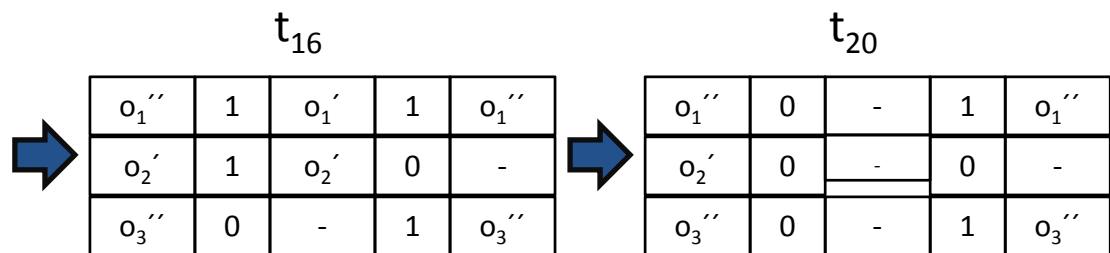
odd

even

o_1
o_2
o_3



o_1'
o_2'



t_{20}

o_1''	0	-	1	o_1''
o_2'	0	-	0	-
o_3''	0	-	1	o_3''

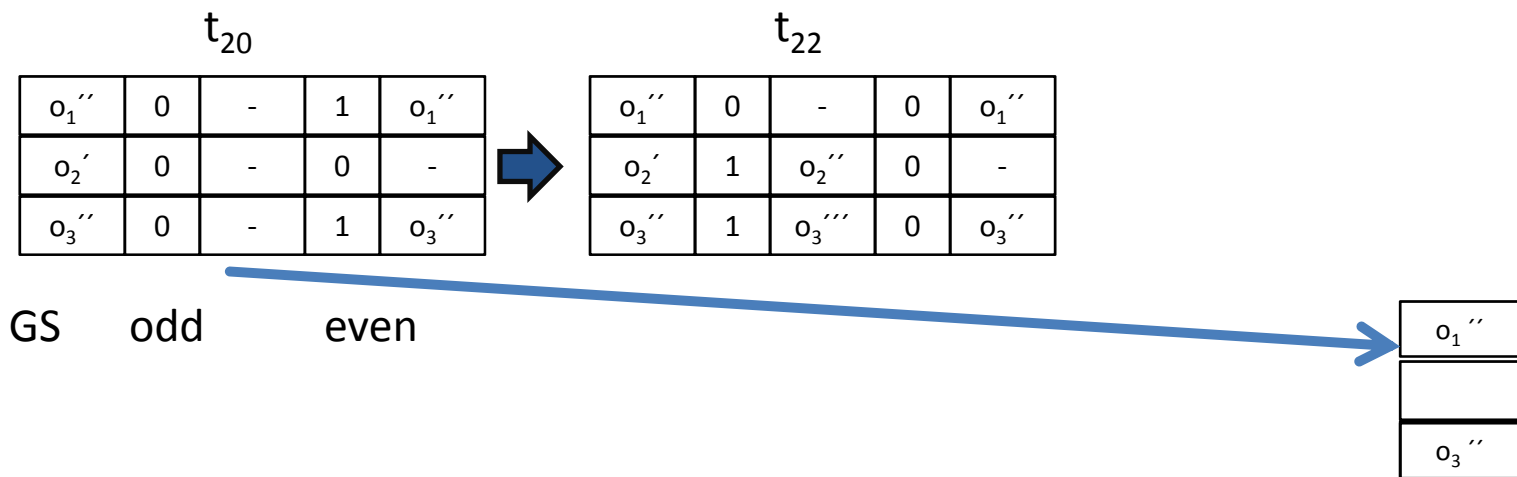
GS

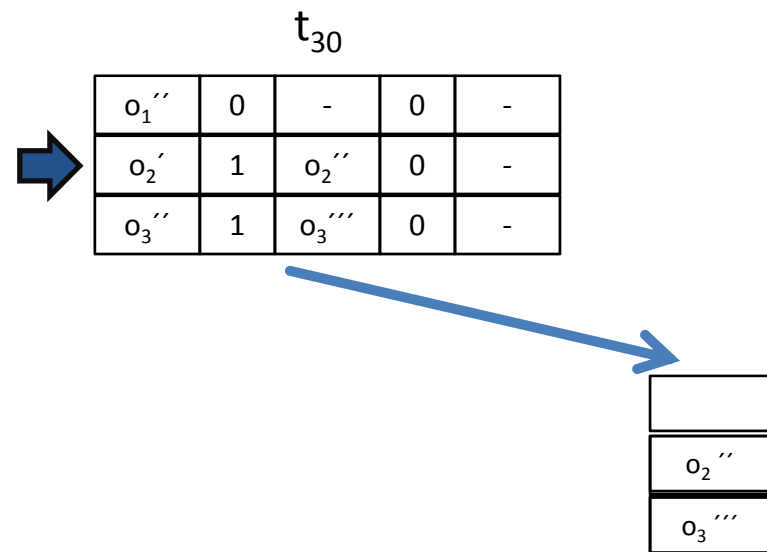
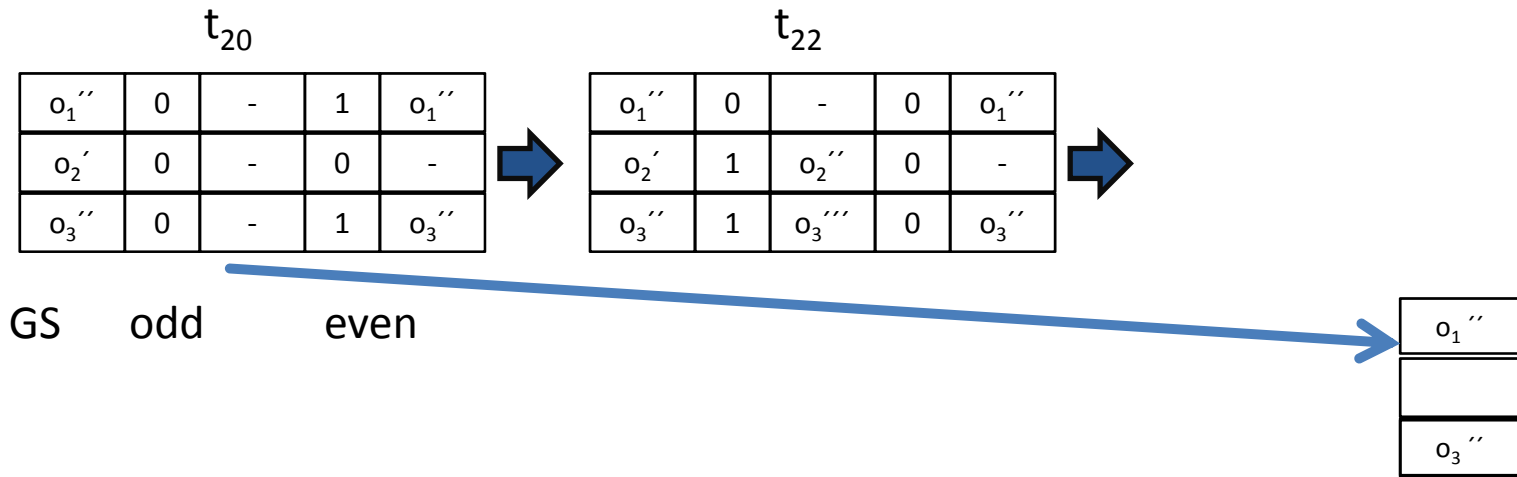
odd

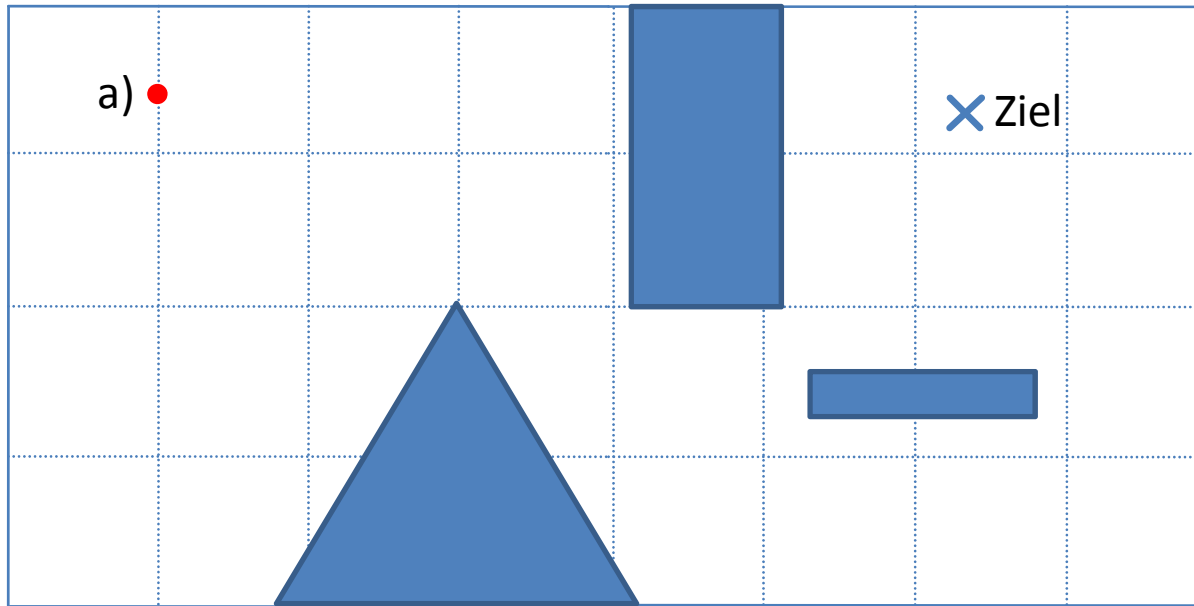
even



o_1''
o_3''

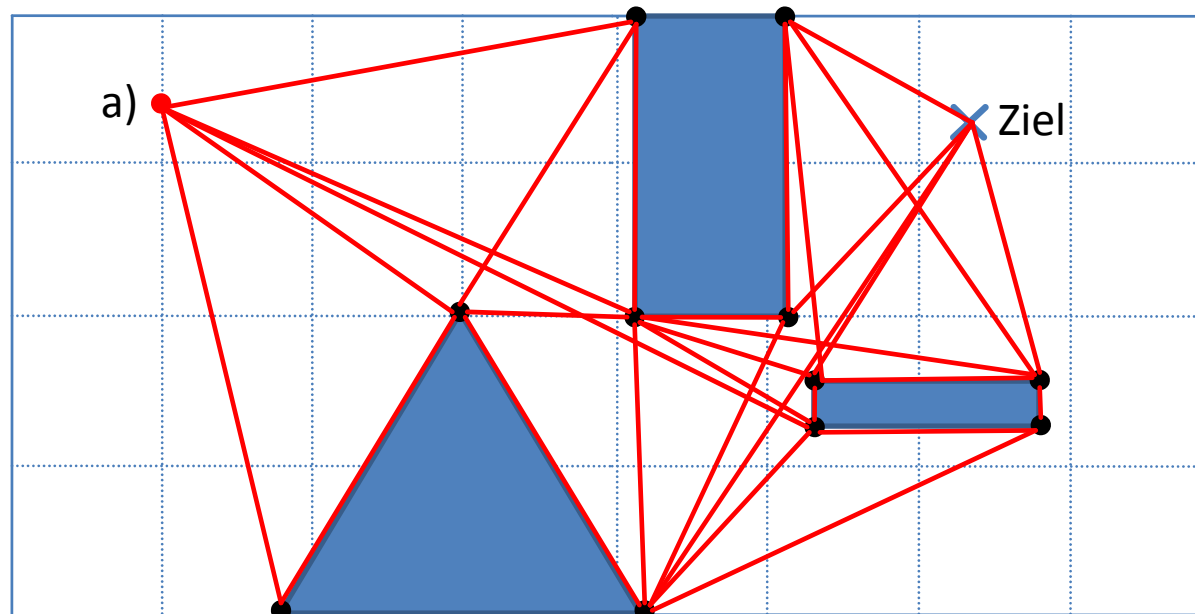






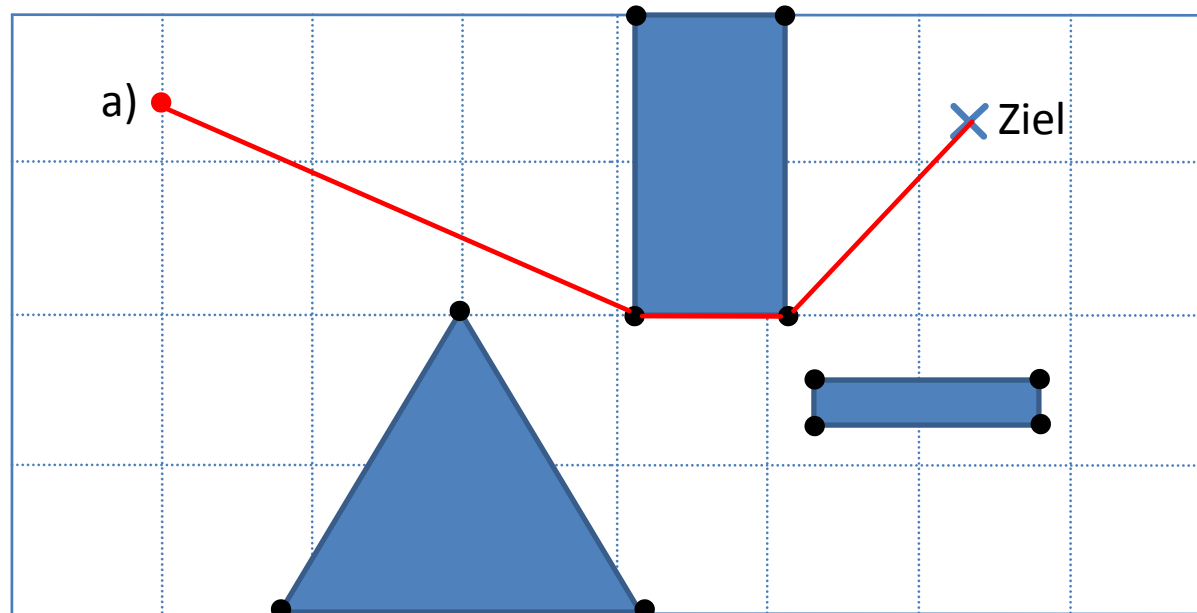
Sichtbarkeitsgraph:

- Knoten sind die Eckpunkte aller Hindernisse, Start und Ziel
 - Eine Kante zwischen einem Paar von Knoten (a,b) existiert genau dann, wenn a und b sich gegenseitig sehen, d.h. wenn die Strecke $[a,b]$ nicht von einem Hindernis unterbrochen wird.
- Kanten der Poligone sind auch Kanten im Sichtbarkeitsgraph



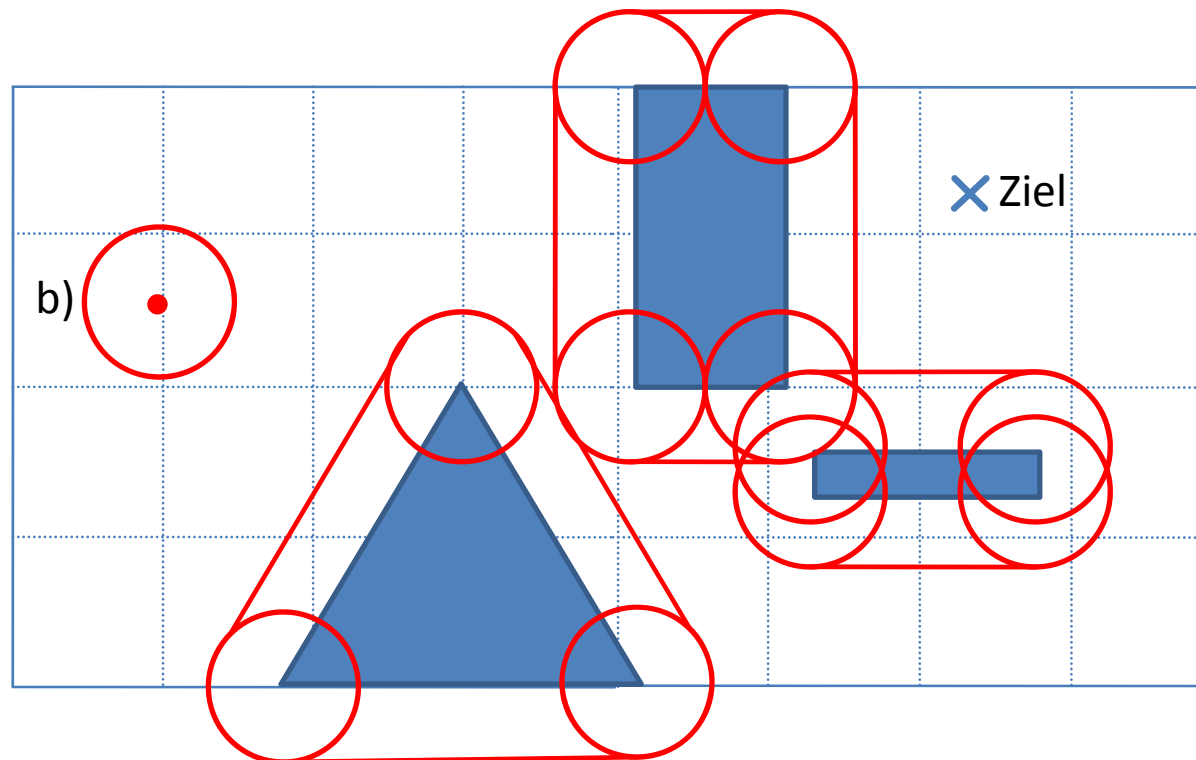
Sichtbarkeitsgraph:

- Gewichte der Kanten entsprechen der euklidischen Distanz
- Kürzeste Weg Suche (z.B. mittels Dijkstra) liefert kürzesten Weg im Raum



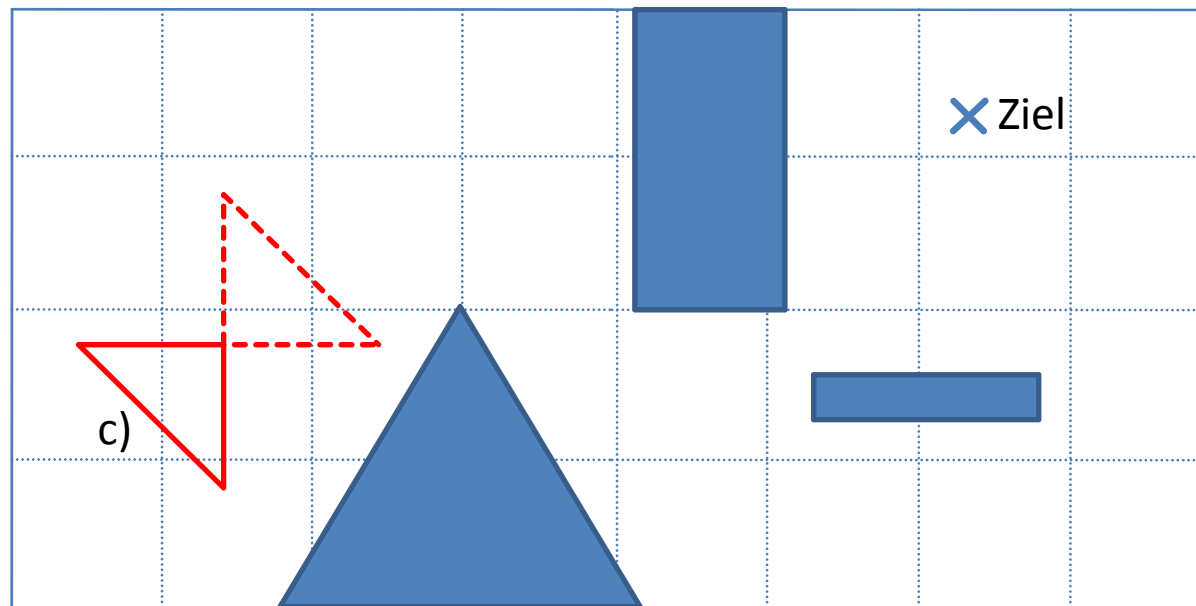
Bei ausgedehnten beweglichen Objekten:

- Wähle einen Punkt im Ausgedehnten Objekt, und erweitere alle Hindernisse um die entsprechende Minkowski Summe.
- Für einen Kreis eignet sich der Mittelpunkt am Besten
- Jetzt entspricht der kürzeste Weg des Kreises dem kürzesten Weg des Mittelpunkt des Kreises durch die erweiterten Hindernisse.
- Hier: Kein Möglicher Weg.

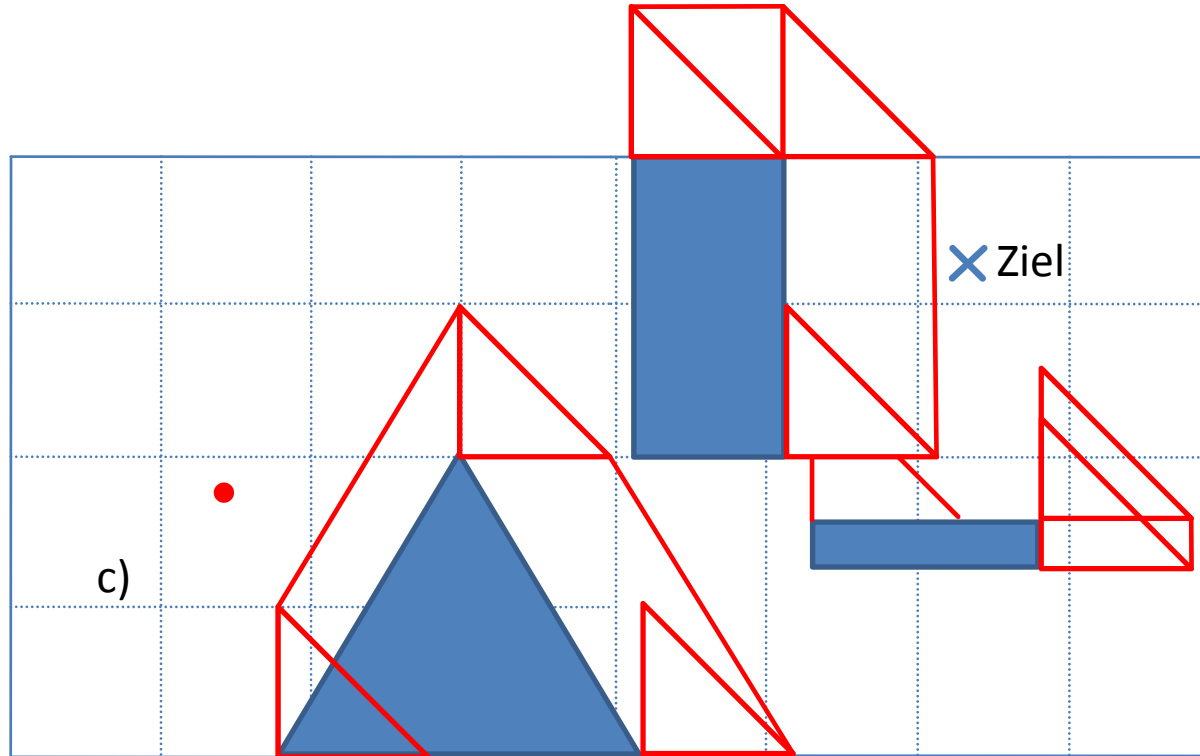


Bei polygonalen beweglichen Objekten (ohne Rotation):

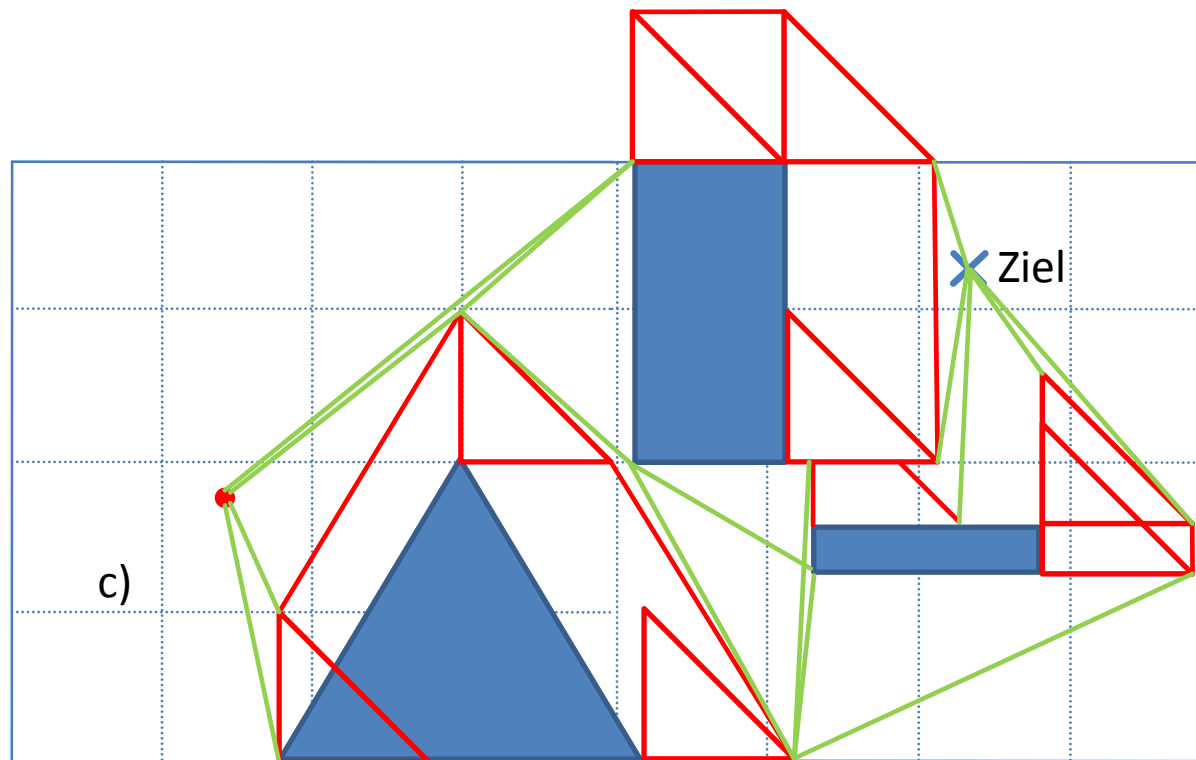
- Bei polygonalen beweglichen Objekten, wähle ein Eck für die Minkowski Summe. (welches Eck ist egal, der gewählte Punkt ändert nichts am Ergebnis)
- Bilde Minkowski Summe mit der Punktspiegelung des Objekts



- Kürzester Weg zum Ziel, wieder als kürzester Weg im Sichtbarkeitsgraphen



- Kürzester Weg zum Ziel, wieder als kürzester Weg im Sichtbarkeitsgraphen



- Kürzester Weg zum Ziel, wieder als kürzester Weg im Sichtbarkeitsgraphen

