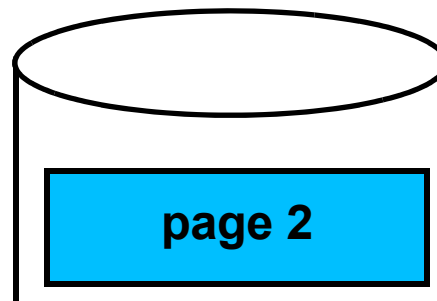
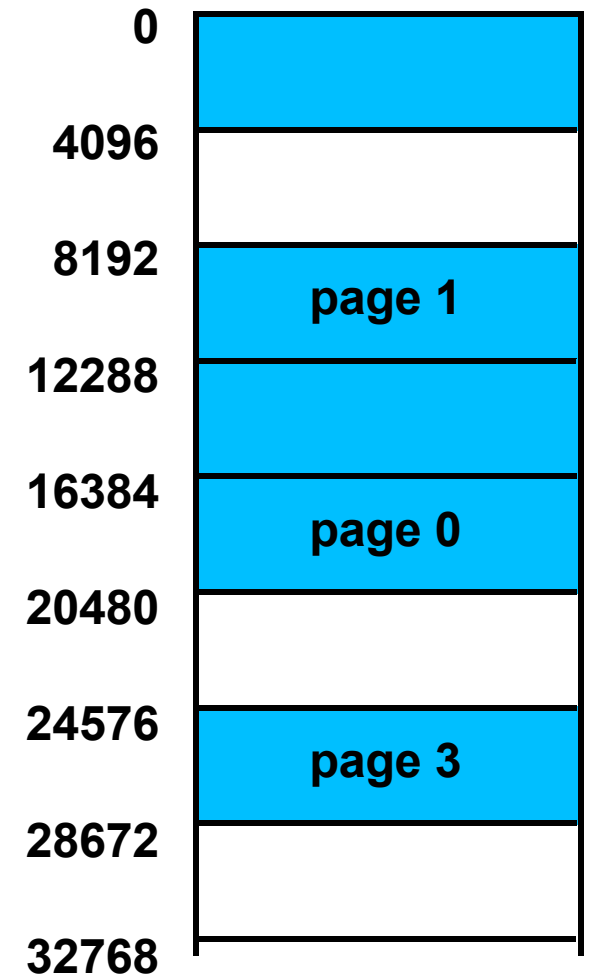


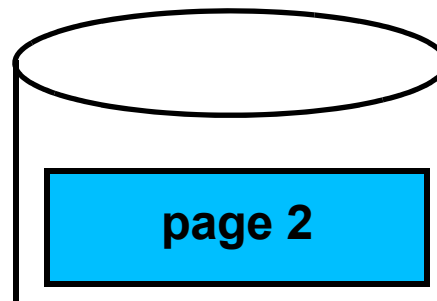
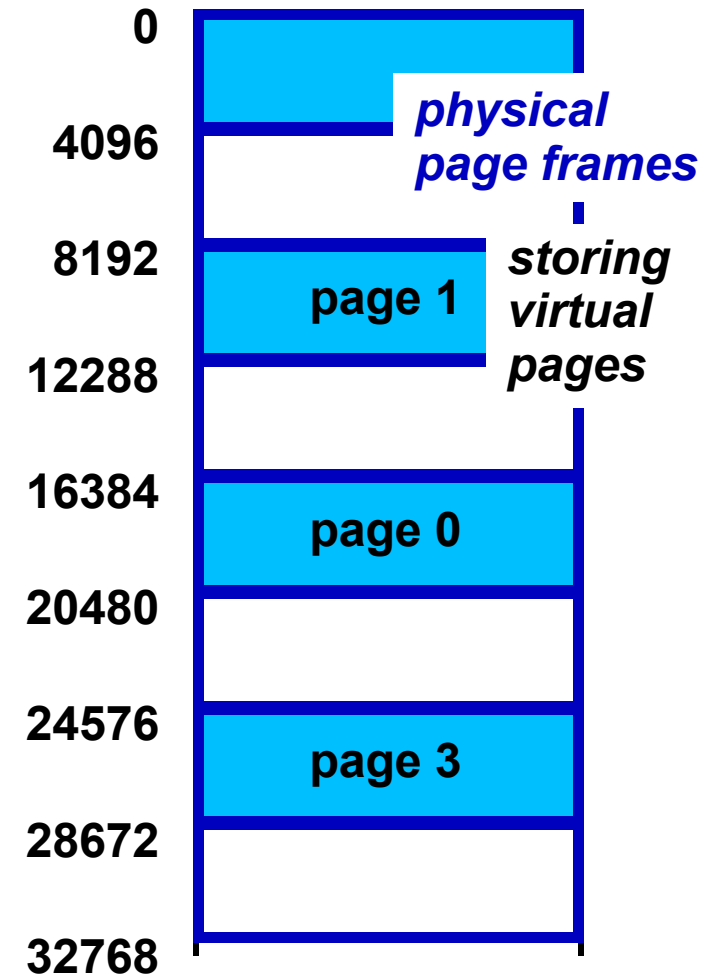
Paged Virtual Memory: Address Mapping

Main Memory:

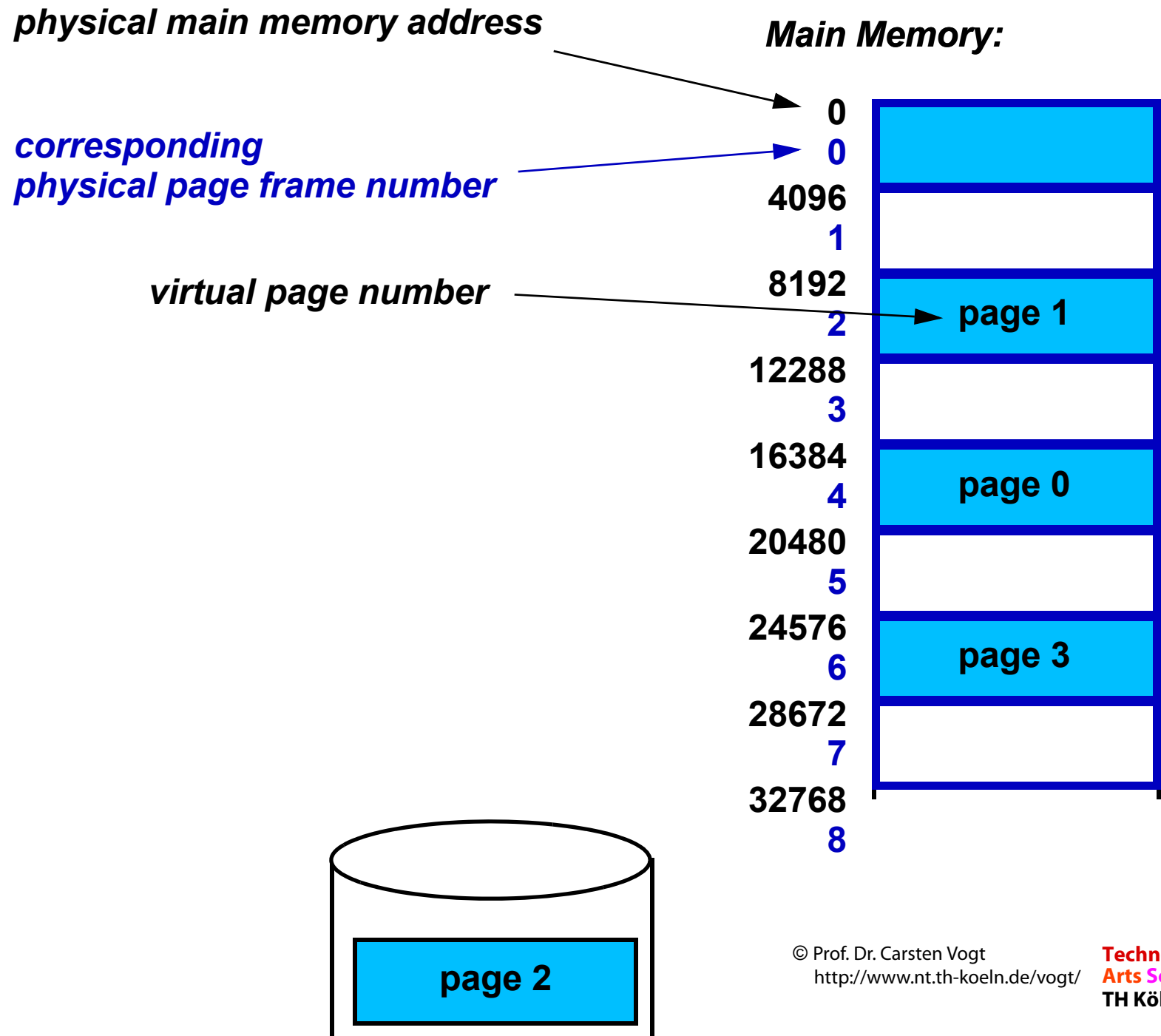


Paged Virtual Memory: Address Mapping

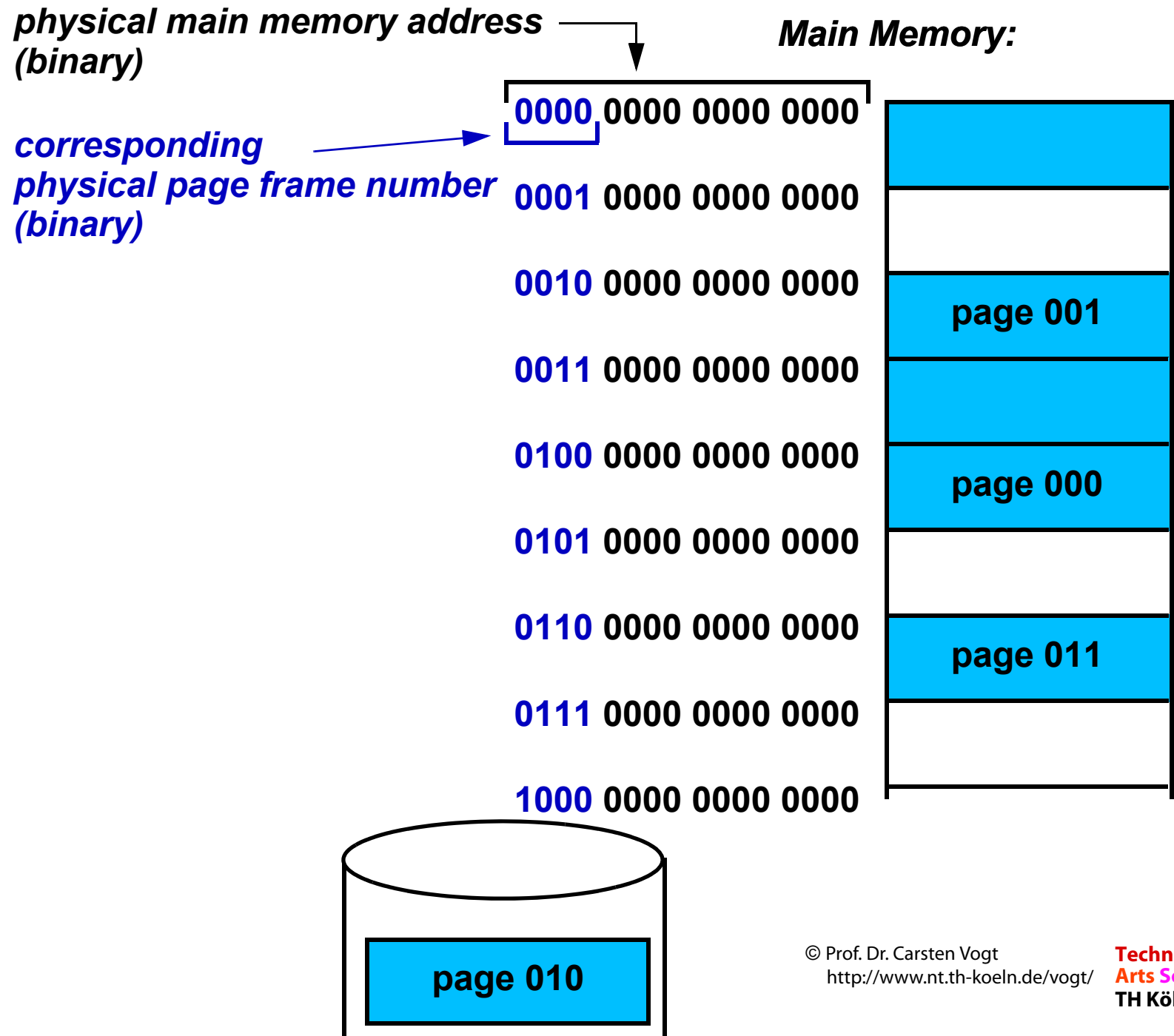
Main Memory:



Paged Virtual Memory: Address Mapping



Paged Virtual Memory: Address Mapping

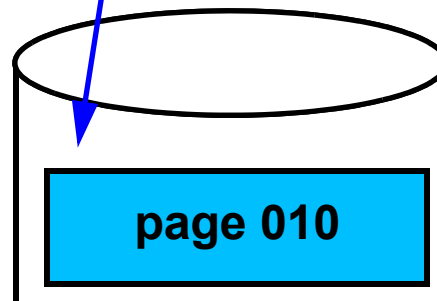
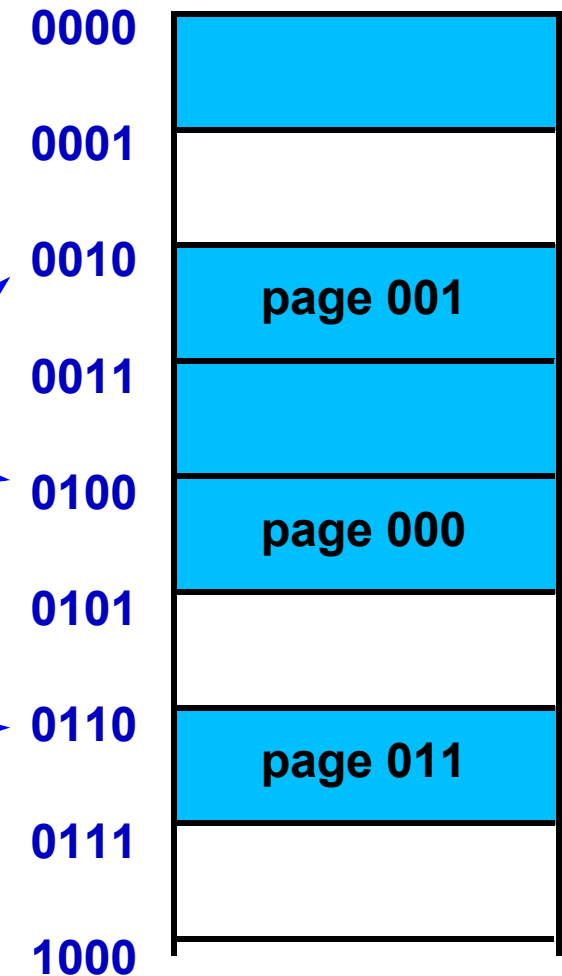


Paged Virtual Memory: Address Mapping

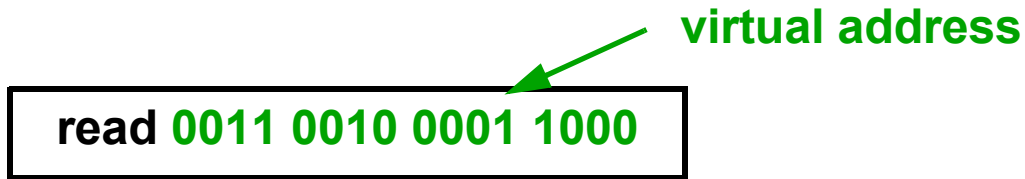
Page Table:

virtual page number	valid bit	physical page frame no.
0000	1	0100
0001	1	0010
0010	0	disk xyz
0011	1	0110
...		

Main Memory:



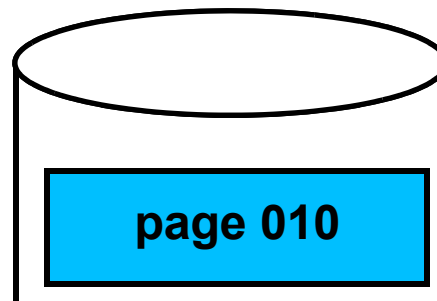
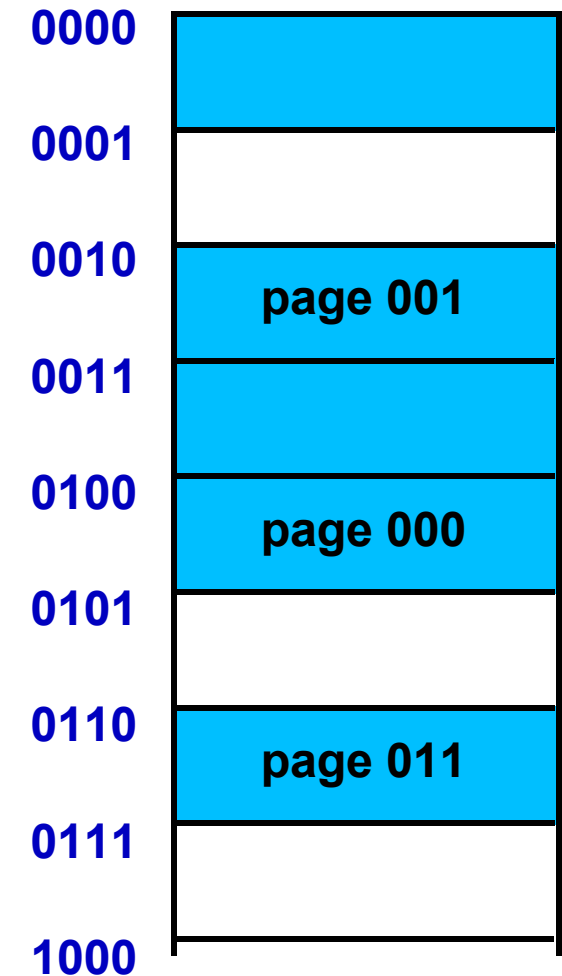
Paged Virtual Memory: Address Mapping – Calculation Example (Binary)



Page Table:

virtual page number	valid bit	physical page frame no.
0000	1	0100
0001	1	0010
0010	0	disk xyz
0011	1	0110
...		

Main Memory:



Paged Virtual Memory: Address Mapping – Calculation Example (Binary)

read **0011 0010 0001 1000**

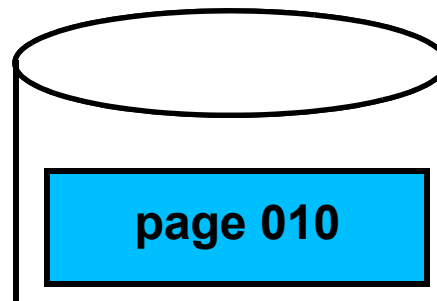
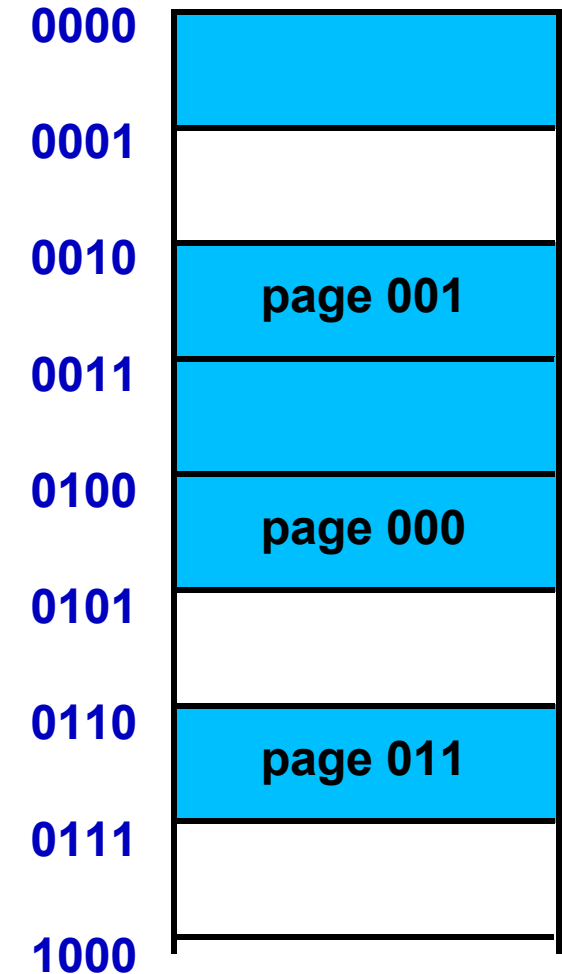
virtual page number

offset in page
(page length = $2^{12} \rightarrow 12$ bits)

Page Table:

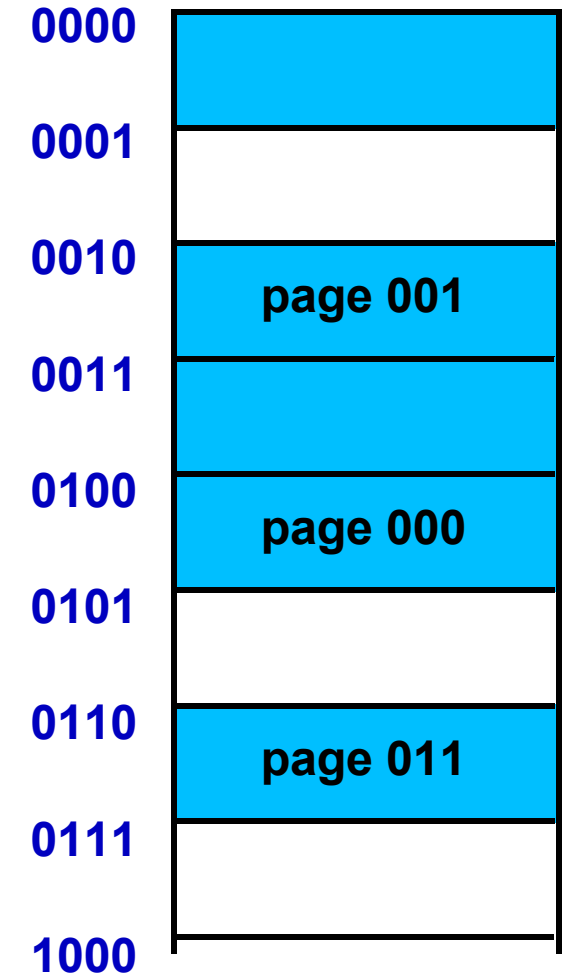
virtual page number	valid bit	physical page frame no.
0000	1	0100
0001	1	0010
0010	0	disk xyz
0011	1	0110
...		

Main Memory:



Paged Virtual Memory: Address Mapping – Calculation Example (Binary)

Main Memory:



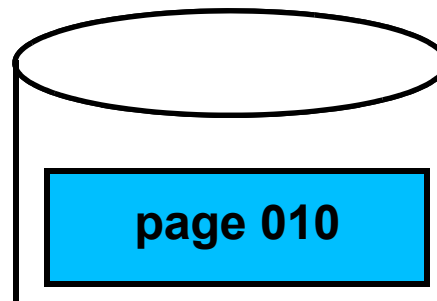
read 0011 0010 0001 1000

Page Table:

virtual page number	valid bit	physical page frame no.
0000	1	0100
0001	1	0010
0010	0	disk xyz
0011	1	0110
...		

virtual page number as index

physical page frame number



Paged Virtual Memory: Address Mapping – Calculation Example (Binary)

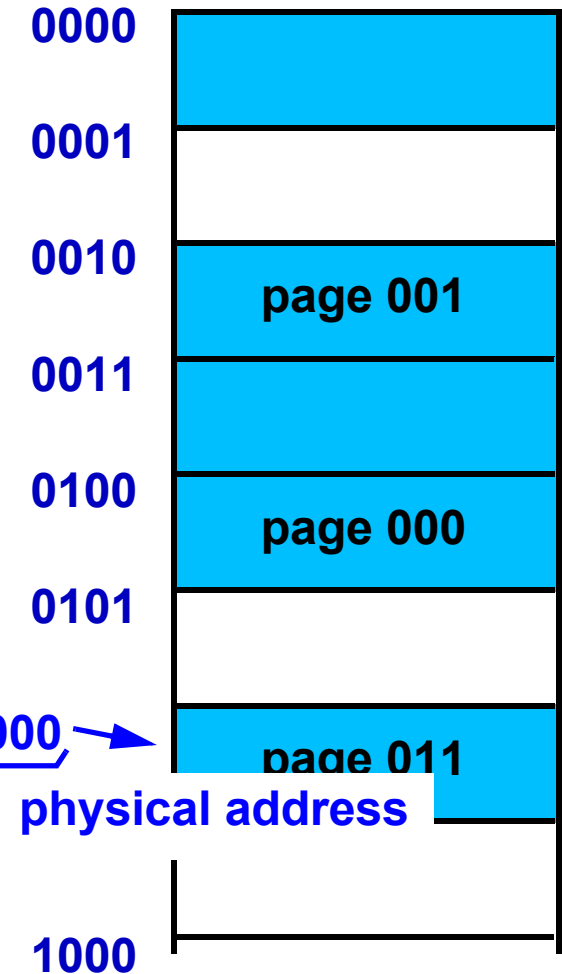
read 0011 0010 0001 1000

concatenation with offset

Page Table:

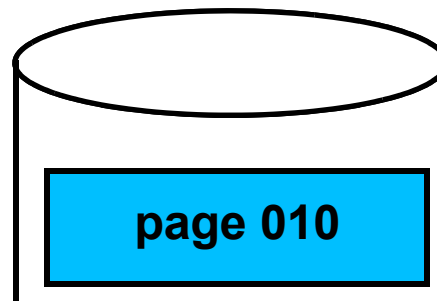
virtual page number	valid bit	physical page frame no.
0000	1	0100
0001	1	0010
0010	0	disk xyz
0011	1	0110
...		

Main Memory:

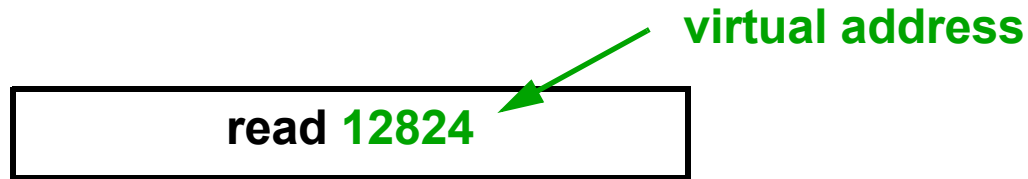


0110 0010 0001 1000

physical address



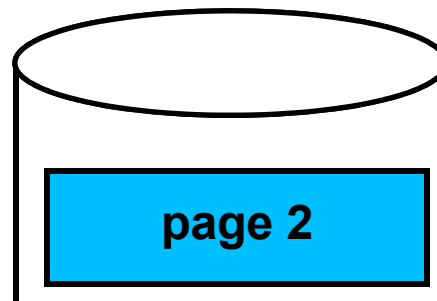
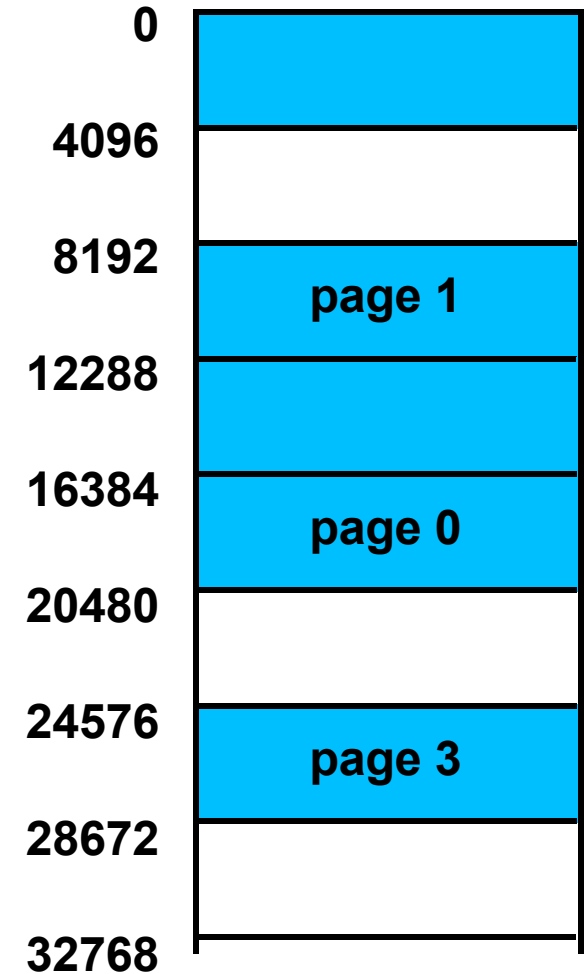
Paged Virtual Memory: Address Mapping – Calculation Example (Decimal)



Page Table:

virtual page number	valid bit	physical page frame no.
0	1	4
1	1	2
2	0	disk xyz
3	1	6
...		

Main Memory:

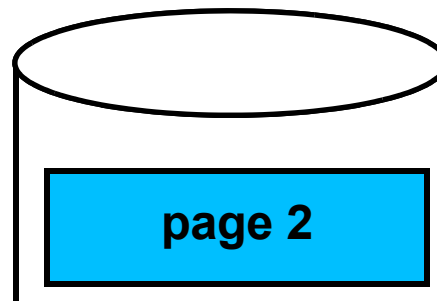
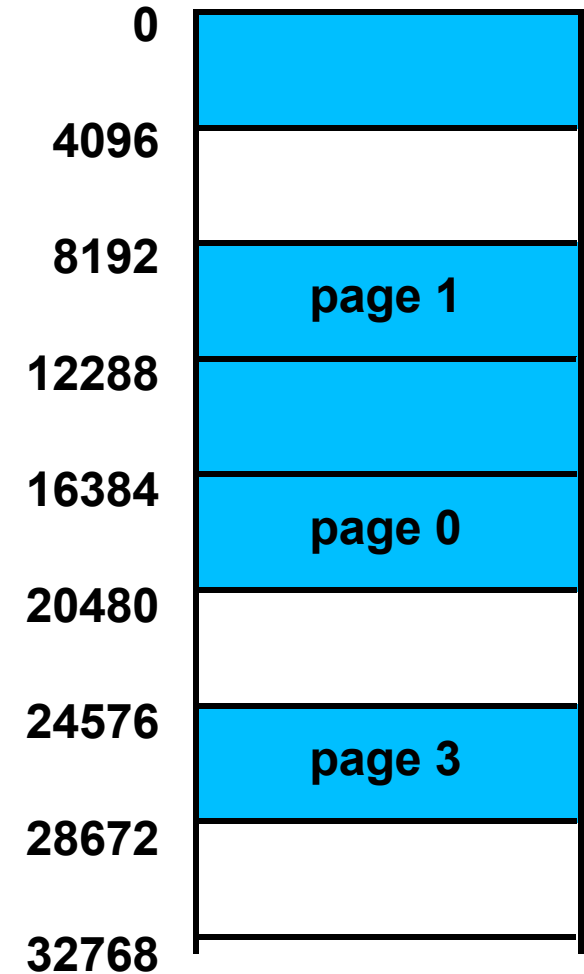


Paged Virtual Memory: Address Mapping – Calculation Example (Decimal)

virtual address
page size
 $12824 \div 4096 = 3$ with remainder 536
virtual page number offset in page

		valid bit	physical page frame no.
0		1	4
1		1	2
2		0	disk xyz
3		1	6
...			

Main Memory:



Paged Virtual Memory: Address Mapping – Calculation Example (Decimal)

$$12824 \div 4096 = 3 \text{ with remainder } 536$$

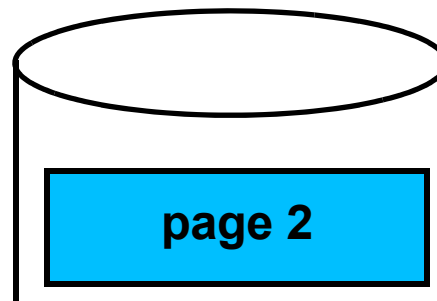
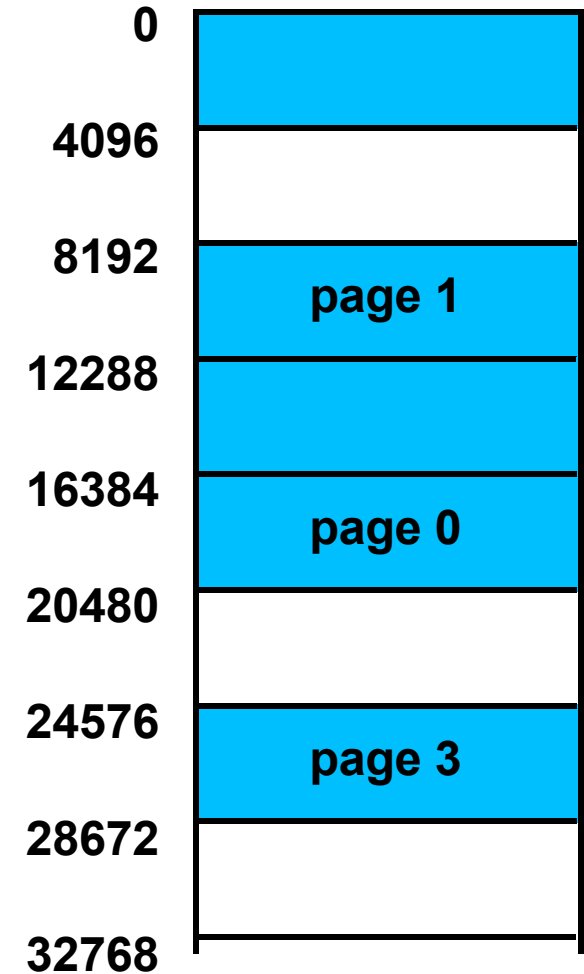
Page Table:

virtual page number	valid bit	physical page frame no.
0	1	4
1	1	2
2	0	disk xyz
3	1	6
...		

virtual page number as index

physical page frame number

Main Memory:



Paged Virtual Memory: Address Mapping – Calculation Example (Decimal)

12824 ÷ 4096 = 3 with remainder 536

	e	valid bit	physical page frame no.
0		1	4
1		1	2
2		0	disk xyz
3		1	
...			

offset added

$$6 \cdot 4096 + 536 = 25122$$

multiplied with page size

Main Memory:

