

66666666	MGT123	F1994	4.0	page 0
123454321	CS305	S1996	4.0	
987654321	CS305	F1995	2.0	
111111111	MGT123	F1997	3.0	
123454321	CS315	S1997	4.0	page 1
666666666	EE101	S1991	3.0	
123454321	MAT123	S1996	2.0	
234567890	EE101	F1995	3.0	
234567890	CS305	S1996	4.0	page 2
111111111	EE101	F1997	4.0	
111111111	MAT123	F1997	3.0	
987654321	MGT123	F1994	3.0	
425360777	CS305	S1996	3.0	page 3
666666666	MAT123	F1997	3.0	

FIGURE 9.3 TRANSCRIPT table stored as a heap file. At most four rows can fit in a page.

66666666	MGT123	F1994	4.0	page 0
123454321	CS305	S1996	4.0	
987654321	CS305	F1995	2.0	
123454321	CS315	S1997	4.0	page 1
666666666	EE101	S1991	3.0	
123454321	MAT123	S1996	2.0	
234567890	EE101	F1995	3.0	
234567890	CS305	S1996	4.0	page 2
987654321	MGT123	F1994	3.0	
425360777	CS305	S1996	3.0	
666666666	MAT123	F1997	3.0	page 3
666666666	CS305	S1998	3.0	

FIGURE 9.4 TRANSCRIPT table of Figure 9.3 after insertion and deletion of some rows.

111111111	MGT123	F1997	3.0	page 0
111111111	EE101	F1997	4.0	
111111111	MAT123	F1997	3.0	
123454321	CS305	S1996	4.0	page 1
123454321	CS315	S1997	4.0	
123454321	MAT123	S1996	2.0	
234567890	EE101	F1995	3.0	page 2
234567890	CS305	S1996	4.0	
425360777	CS305	S1996	3.0	
666666666	MGT123	F1994	4.0	page 3
666666666	MAT123	F1997	3.0	
666666666	EE101	S1991	3.0	
987654321	MGT123	F1994	3.0	page 4
987654321	CS305	F1995	2.0	

FIGURE 9.5 TRANSCRIPT table stored as a sorted file. At most four rows fit in a page.

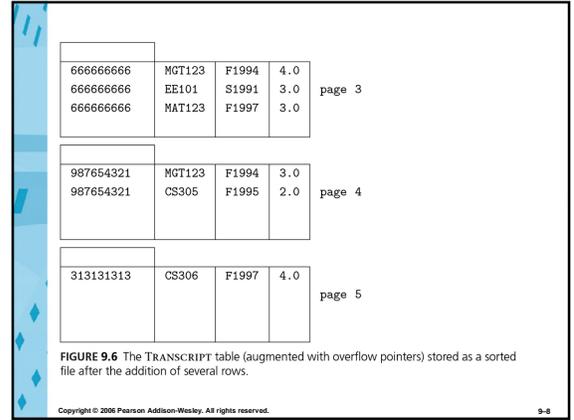
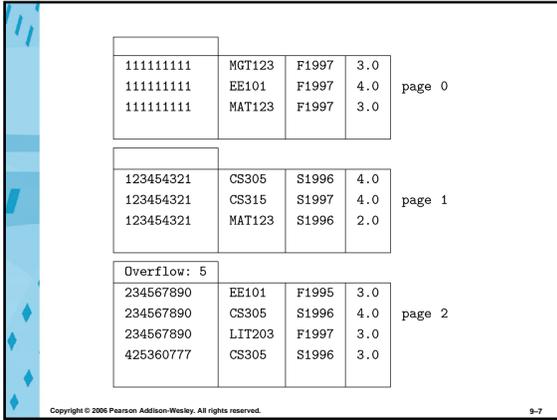


FIGURE 9.6 The TRANSCRIPT table (augmented with overflow pointers) stored as a sorted file after the addition of several rows.

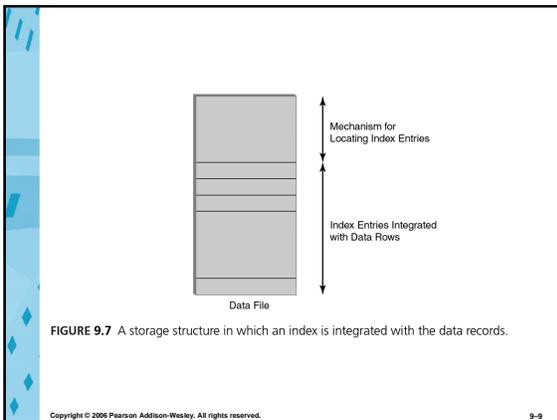


FIGURE 9.7 A storage structure in which an index is integrated with the data records.

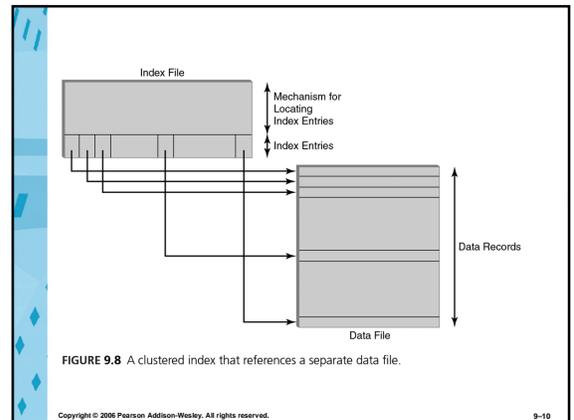


FIGURE 9.8 A clustered index that references a separate data file.

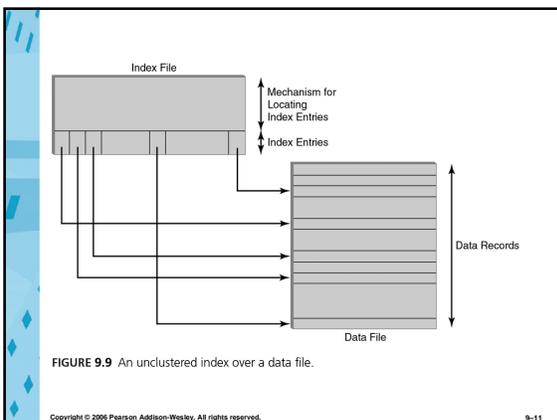


FIGURE 9.9 An unclustered index over a data file.

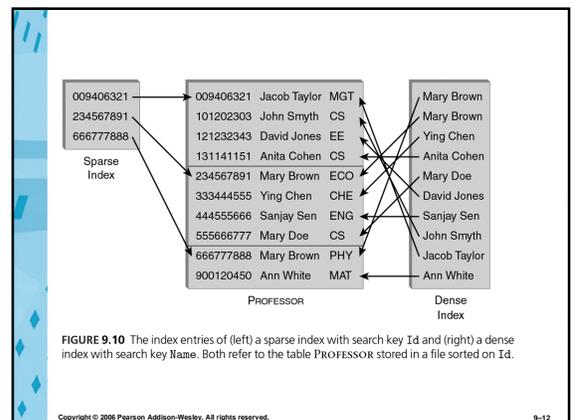
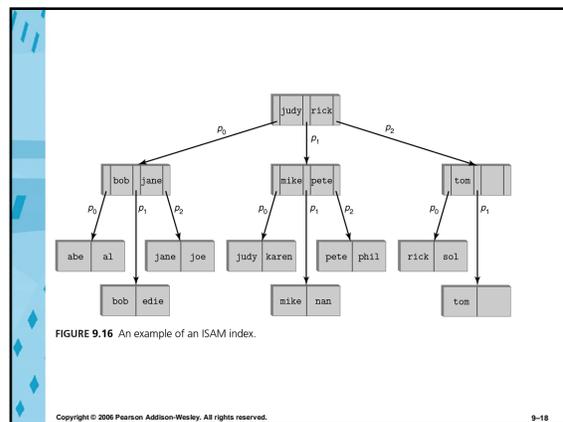
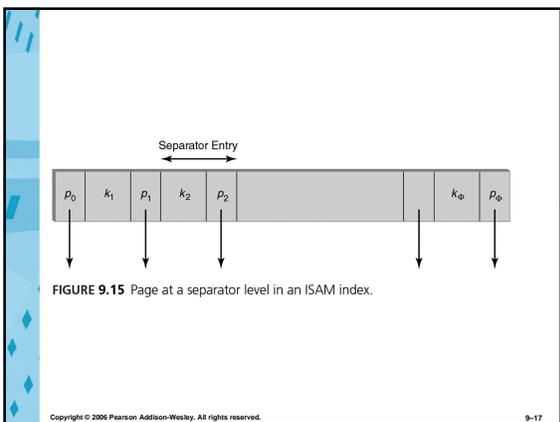
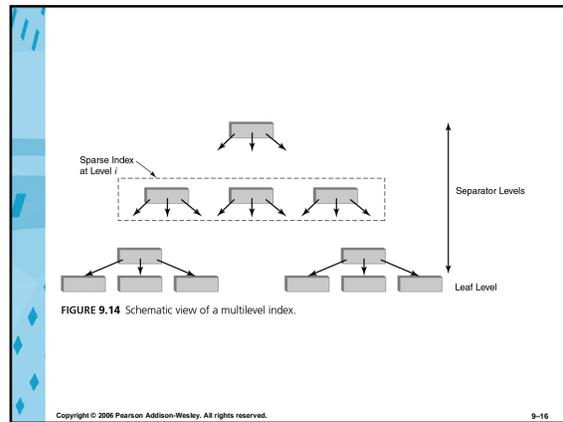
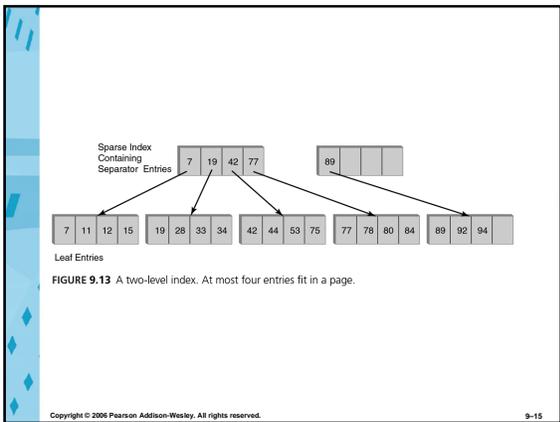
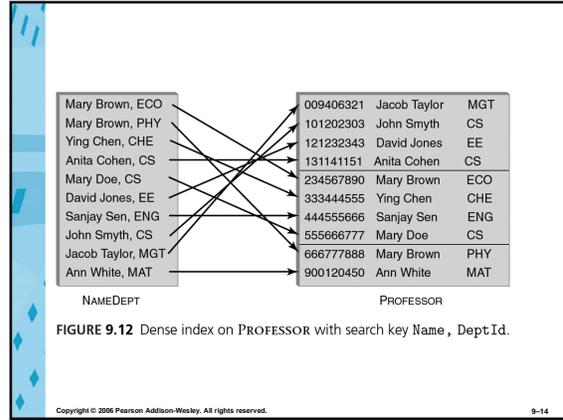
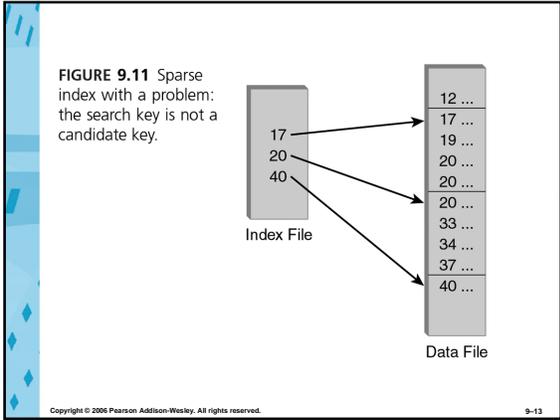
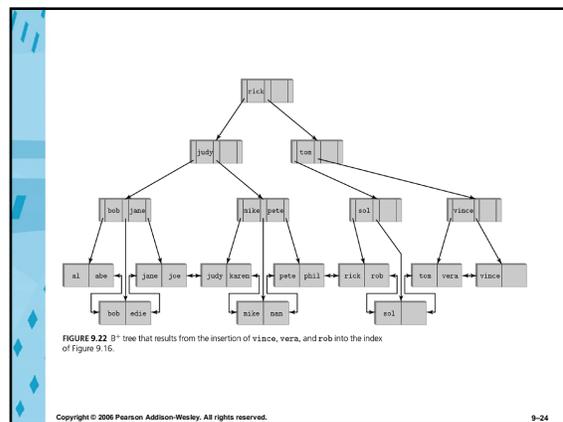
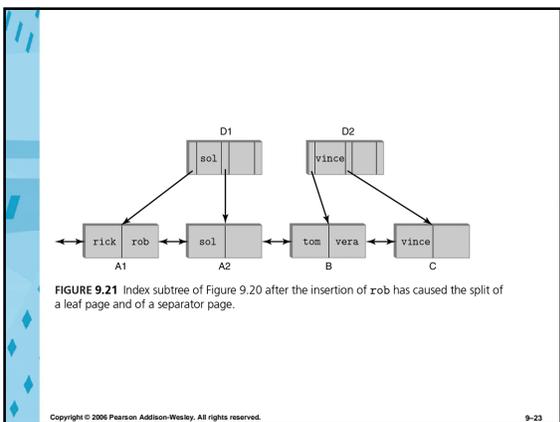
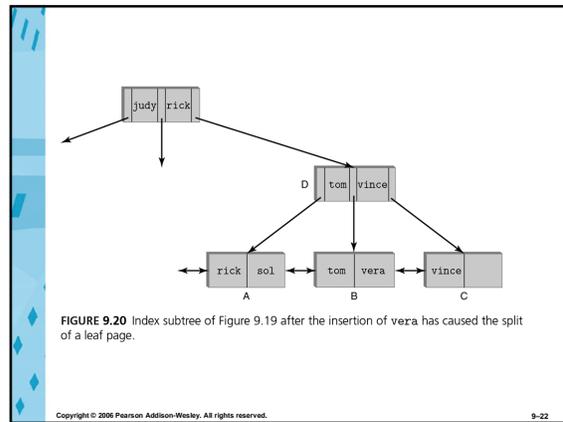
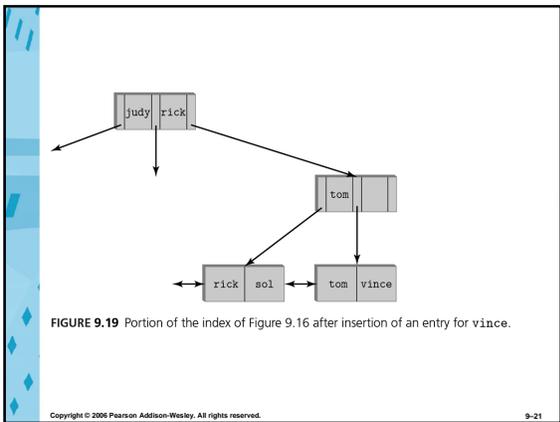
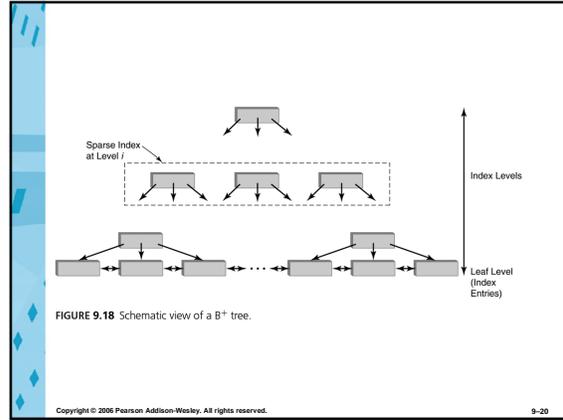
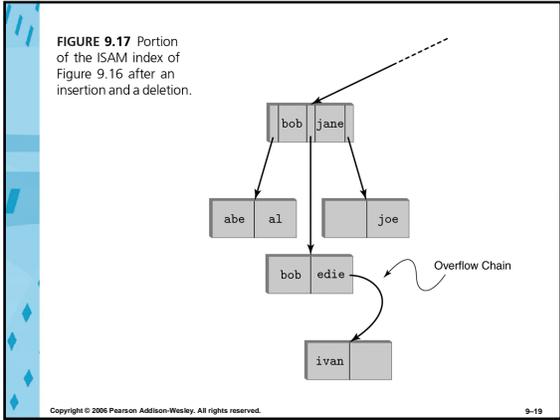
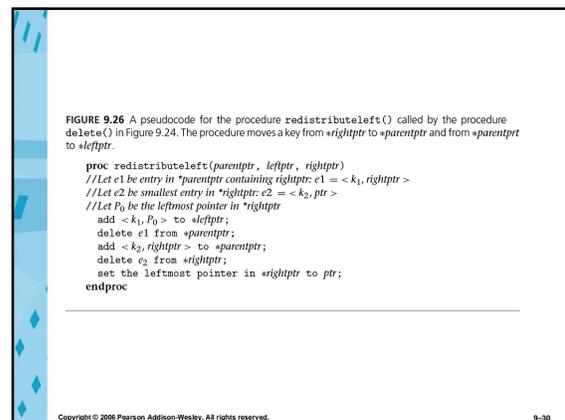
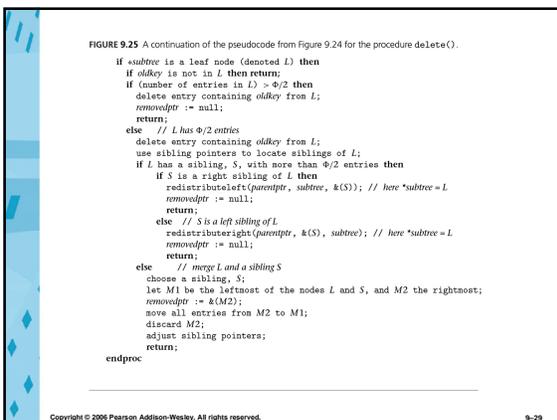
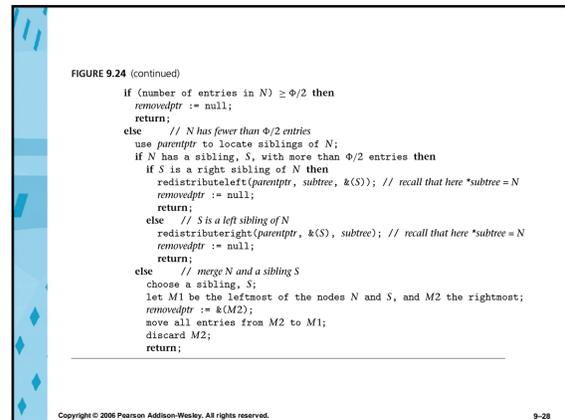
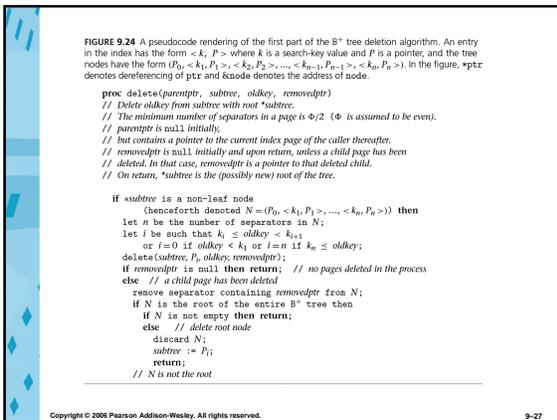
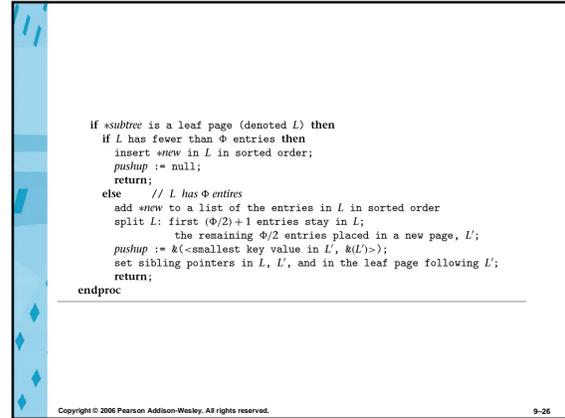
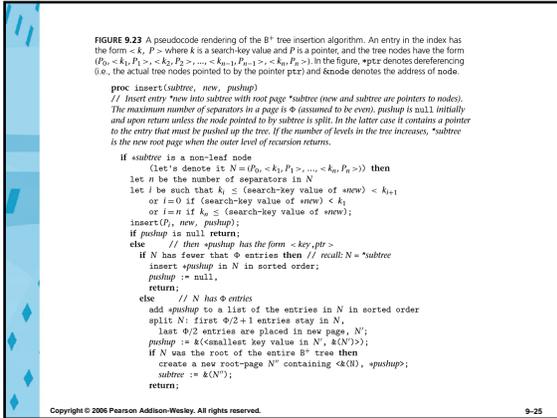
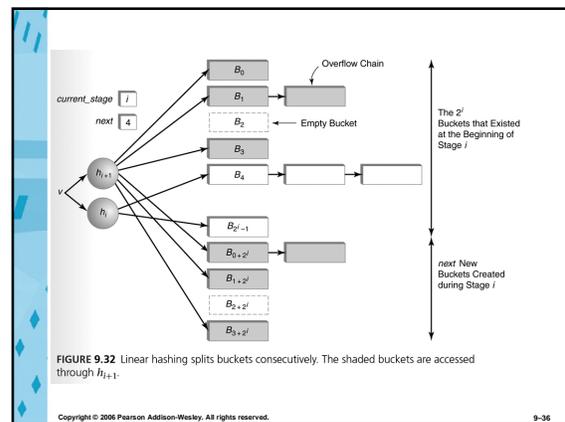
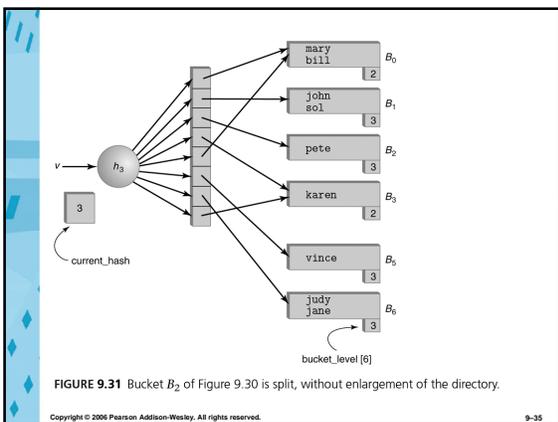
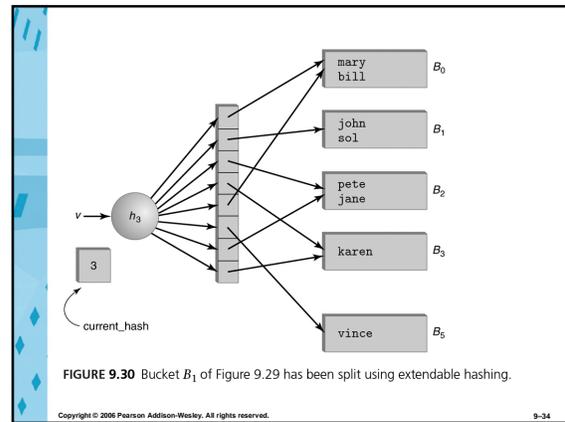
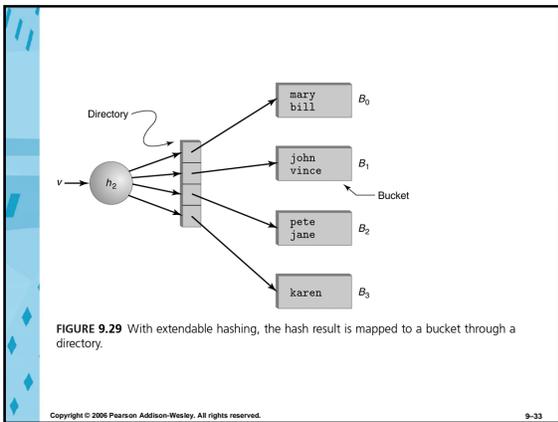
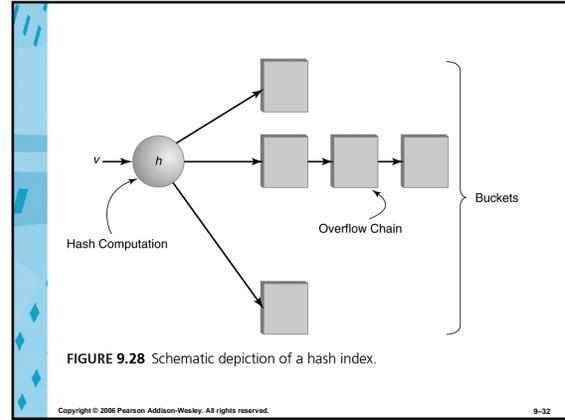
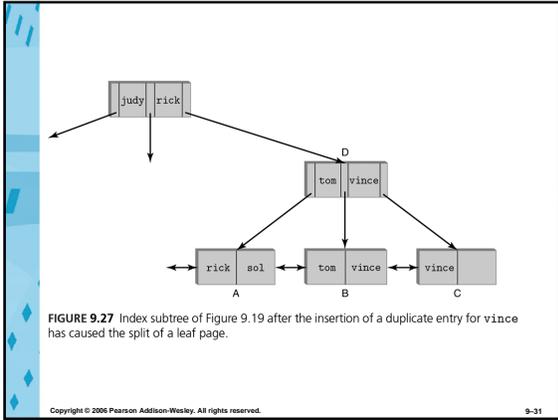


FIGURE 9.10 The index entries of (left) a sparse index with search key Id and (right) a dense index with search key Name. Both refer to the table PROFESSOR stored in a file sorted on Id.









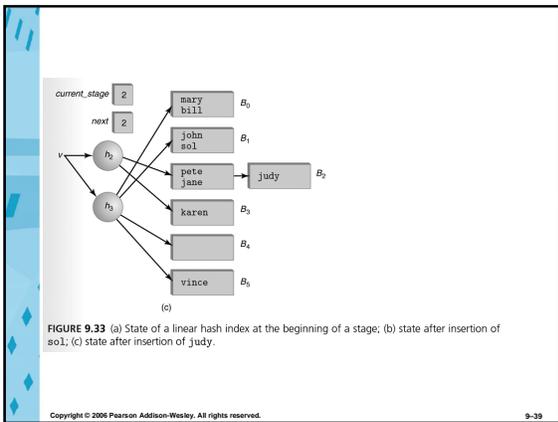
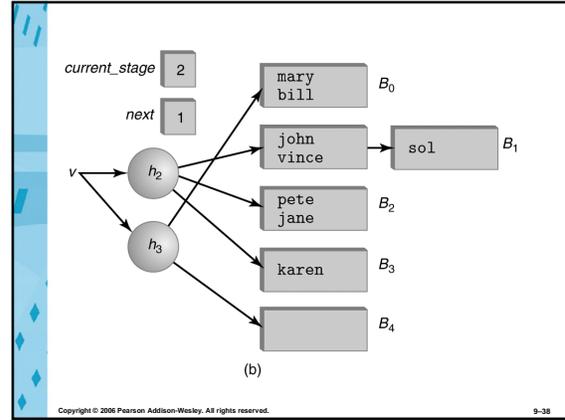
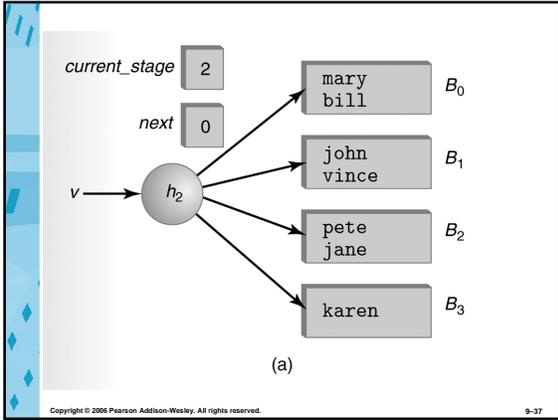


FIGURE 9.33 (a) State of a linear hash index at the beginning of a stage; (b) state after insertion of sol; (c) state after insertion of judy.

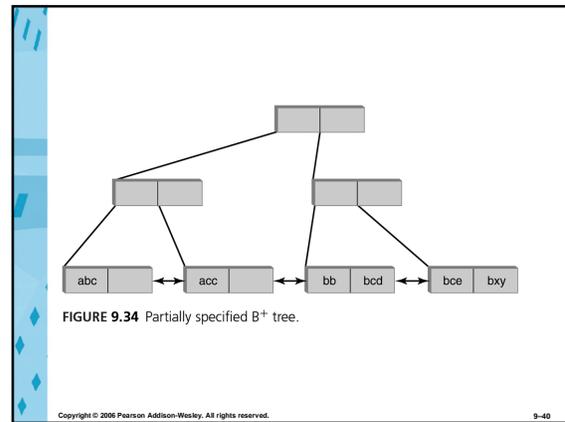


FIGURE 9.34 Partially specified B⁺ tree.

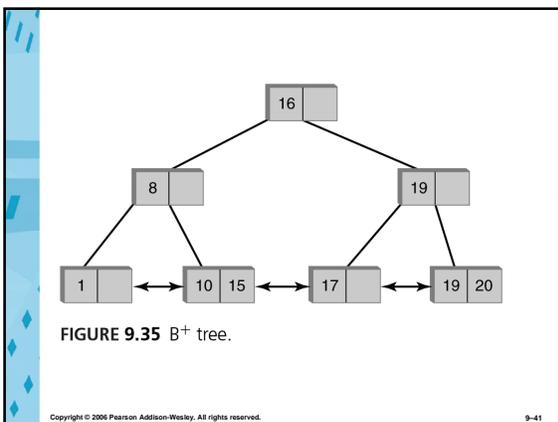


FIGURE 9.35 B⁺ tree.