第34讲 虚拟分页和虚拟分段技术

Paging

➢ **Each process has its own page table.**

➢ **Each page table entry contains the frame number of the corresponding page in main memory.**

➢ **A bit is needed to indicate whether the *page is in* main memory *or not.***

➤ **Another *modify bit* is needed to indicate if the page has been altered since it was last loaded into main memory.**

➤ **If no change has been made, the page does not have to be written to the disk when it needs to be swapped out.**

Virtual Address

Page Number	Offset

Page Table Entry

P	M	Other Control Bits	Frame Number

(a) Paging only

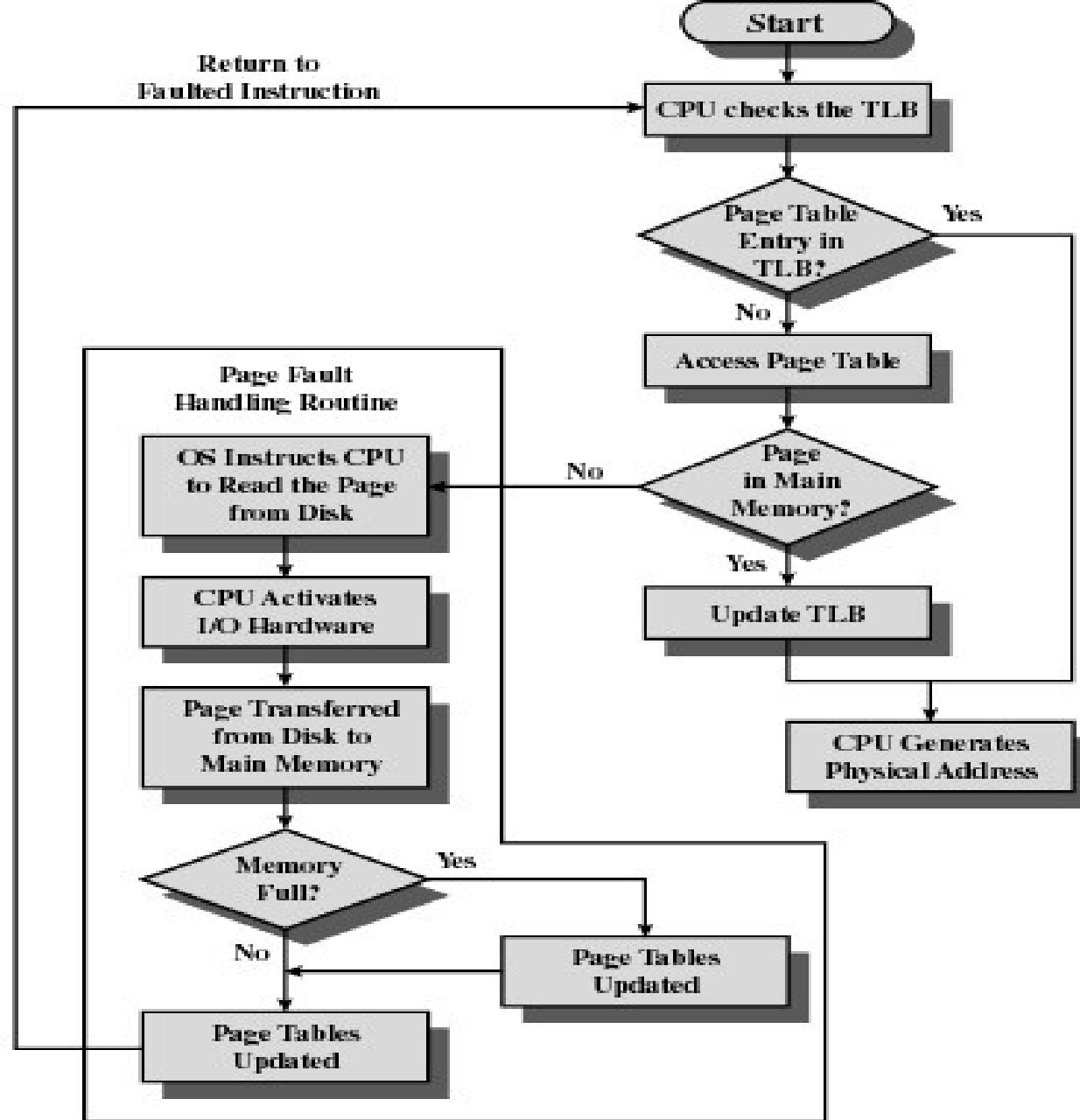Figure 8.2 Typical Memory Management Formats

Figure 8.8   Operation of Paging and Translation Lookaside Buffer (TLB) [FURH87]

Virtual-Memory Segmentation Technique

➤ **May be unequal, dynamic size.**

➤ **Simplifies handling of growing data structures.**

➤ **Allows programs to be altered and recompiled independently.**

➤ **Lends itself to sharing data among processes.**

➤ **Lends itself to protection.**

Segment Tables

➢ **Corresponding segment in main memory.**

➢ **Each entry contains the *length* of the segment.**

➢ **A bit is needed to determine if segment is *already in* main memory.**

➢ **Another bit is needed to determine if the segment has been *modified* since it was loaded in main memory.**

Segment Table Entries

Virtual Address

Segment Number	Offset

Segment Table Entry

P	M	Other Control Bits	Length	Segment Base

(b) Segmentation only

Figure 8.2 Typical Memory Management Formats

Virtual-Memory Paging -Segmentation