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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-501 Operating System

Lecturer-23

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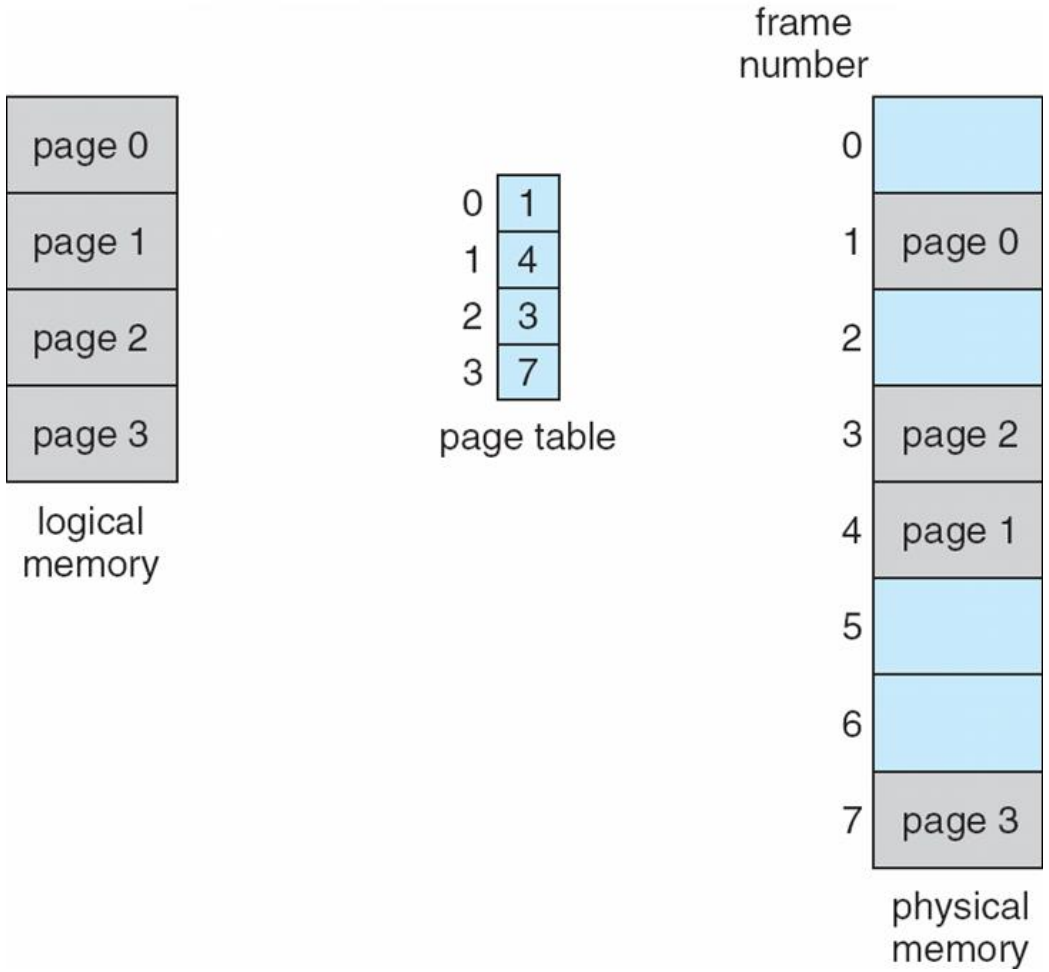
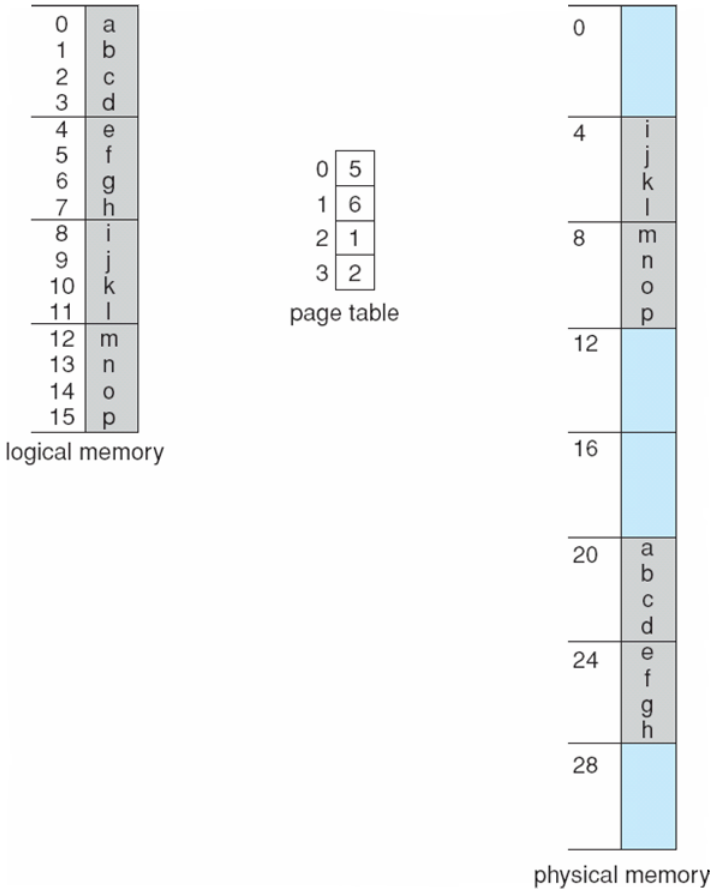
Memory

- Paging Model of Logical and Physical Memory
- Paging Example
- Frames

Paging Model of Logical and Physical Memory



Paging Example



Paging (Cont.)

- Calculating internal fragmentation—

  Page size = 2,048 bytes

  Process size = 72,766 bytes

  35 pages + 1,086 bytes

  Internal fragmentation of 2,048 - 1,086 = 962 bytes

  Worst case fragmentation = 1 frame – 1 byte

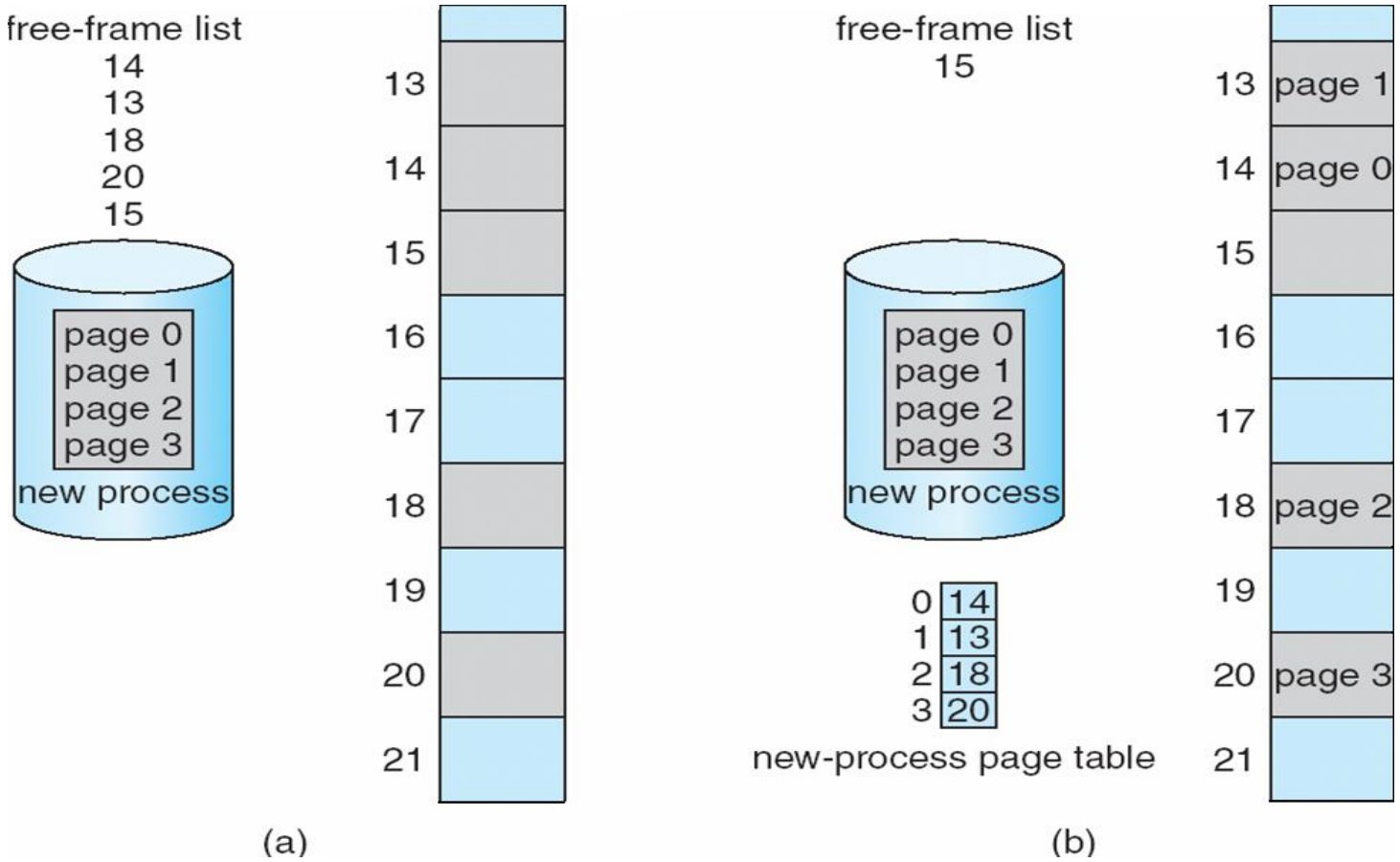
  On average fragmentation = 1 / 2 frame size

  - So small frame sizes desirable?

  - But each page table entry takes memory to track

  - Page sizes growing over time
    - Solaris supports two page sizes – 8 KB and 4 MB
- Process view and physical memory now very different
- By implementation process can only access its own memory

Free Frames


free-frame list
14
13
18
20
15
page 0
page 1
page 2
page 3
new process
13
14
15
16
17
18
19
20
21
(a)
free-frame list
15
page 0
page 1
page 2
page 3
new process
0 14
1 13
2 18
3 20
new-process page table
13 page 1
14 page 0
15
16
17
18 page 2
19
20 page 3
21
(b)

MCQ

Paging is implemented in
A. Operating System
B. Hardware
C. Software
D. All of them

Page-Table length register (PTLR) indicates size of
A. Page Table
B. Paging File
C. Main Memory
D. Virtual Memory

Bring a page into memory only when it is needed is called
A. Demand Memory
B. Demand Paging
C. Page Fault
D. Page Segmentation

Bring a page into memory only when it is needed is called
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Dived logical memory into blocks with the same size as frames are called
A. Pages
B. Frames
C. Page Table
D. Segmentation