SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.
An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

COURSE NAME : 23CST202 – OPERATING SYSTEMS

II YEAR/ IV SEMESTER

UNIT – III STORAGE MANAGEMENT

Topic: Segmentation

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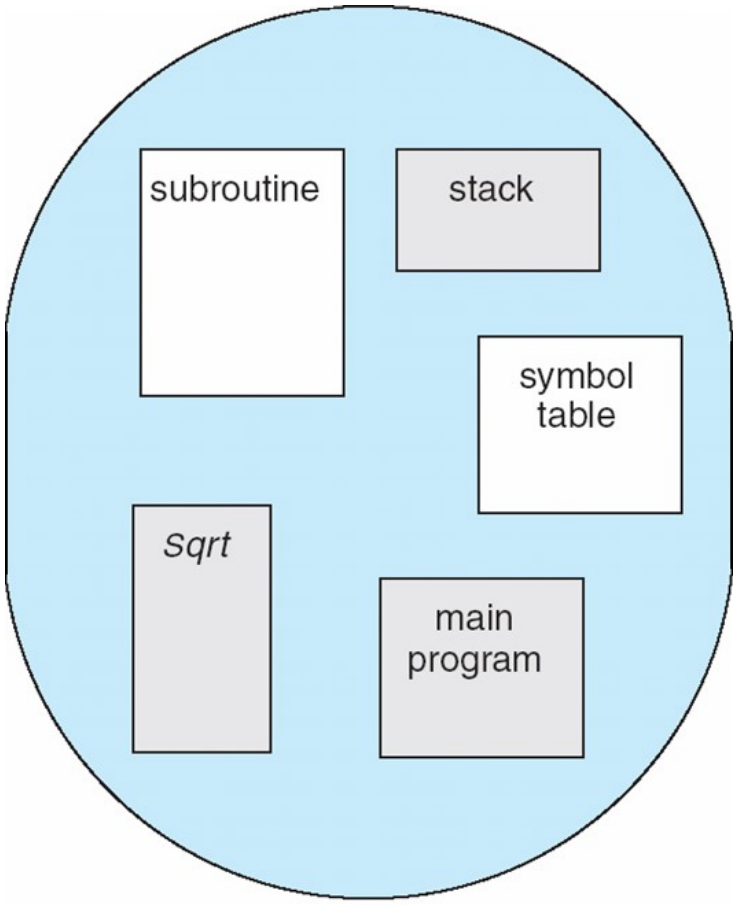
Segmentation

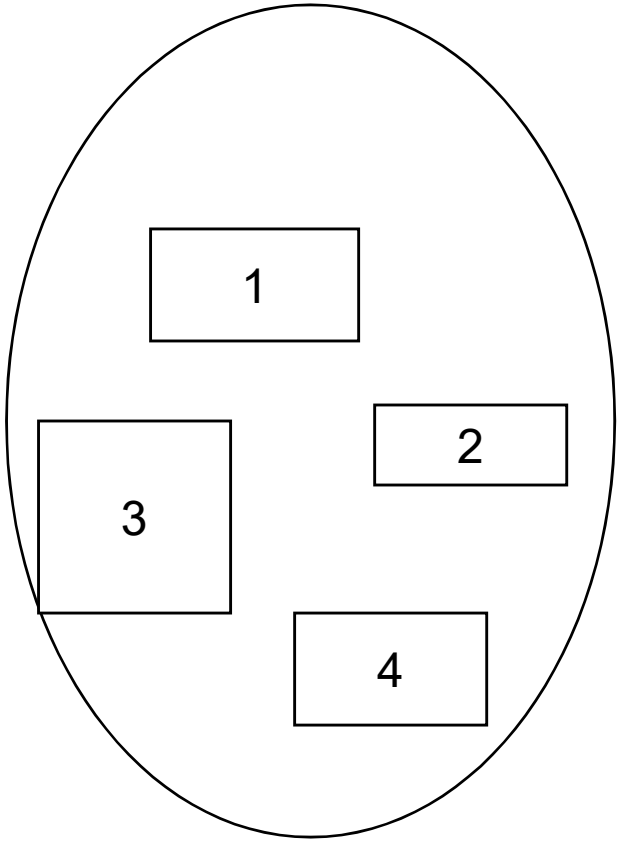
- Memory-management scheme that supports user view of memory
- A program is a collection of segments
  - A segment is a logical unit such as:

main program	**object**
procedure	**local variables, global variables**
function	**common block**
method	**stack**
symbol table	**arrays**

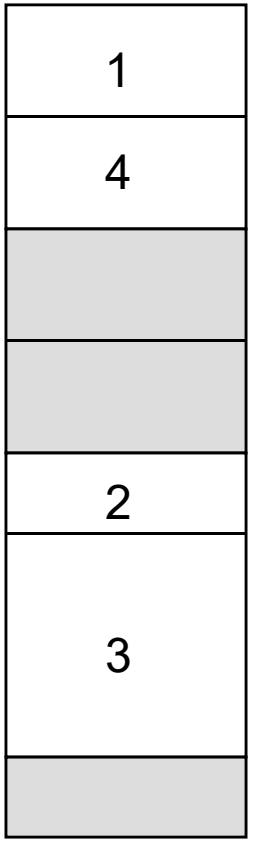
User's View of a Program



Logical View of Segmentation



user space



physical memory space

Segmentation Architecture

- Logical address consists of a two tuple:

<segment-number, offset>,

- **Segment table** – maps two-dimensional physical addresses; each table entry has:
  - **base** –starting physical address where the segments reside in memory
  - **limit** – specifies the length of the segment
- **Segment-table base register (STBR)** points to the segment table's location in memory
- **Segment-table length register (STLR)** indicates number of segments used by a program;

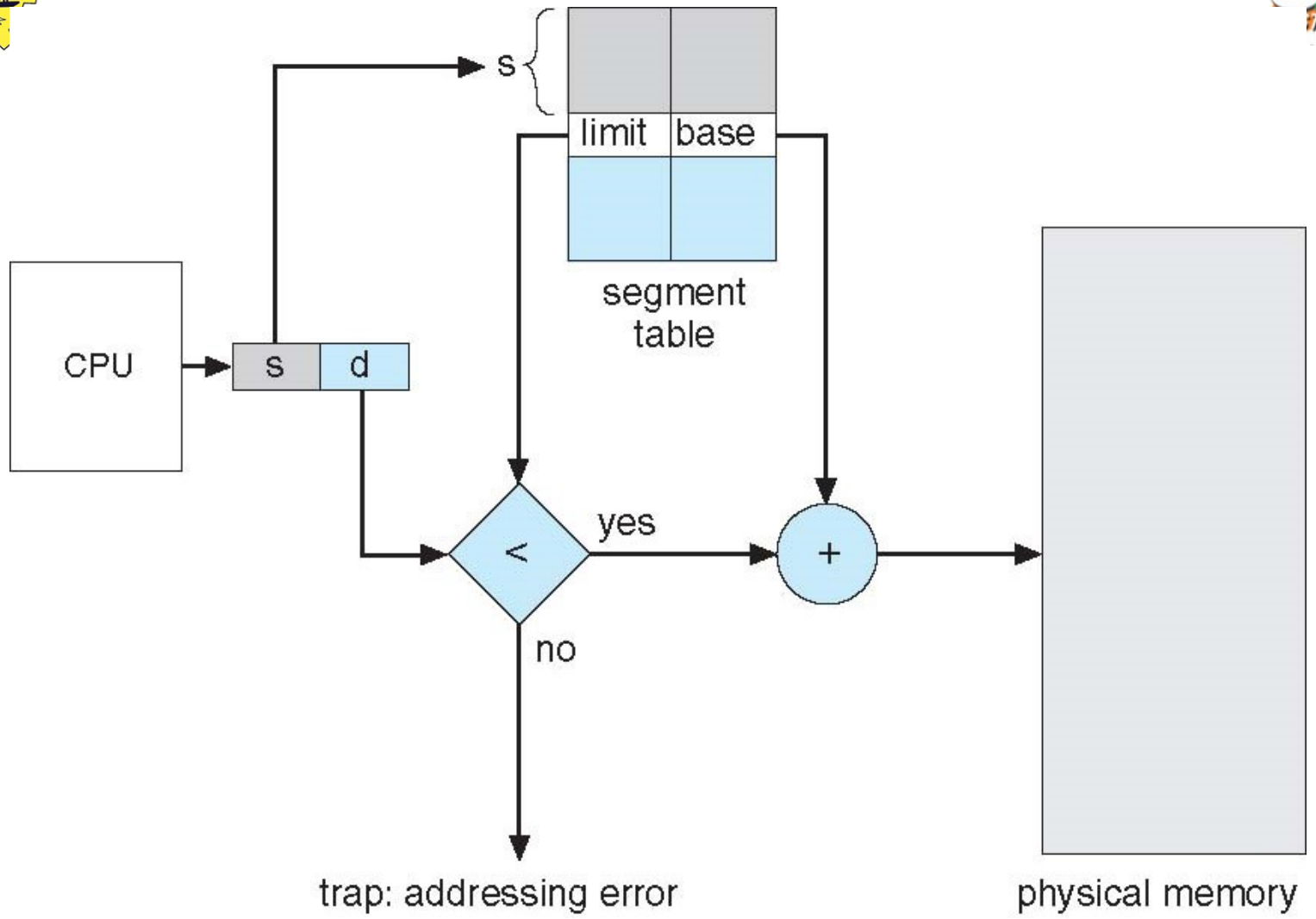
segment number ***s*** is legal if ***s*** < **STLR**

Segmentation Architecture (Contd..)

- Protection
  - With each entry in segment table associate:
    - validation bit = 0 ⇒ illegal segment
    - read/write/execute privilege

Since segments vary in length, memory allocation is a dynamic storage-allocation problem

Segmentation Hardware



Segmentation - Example