Memory Management
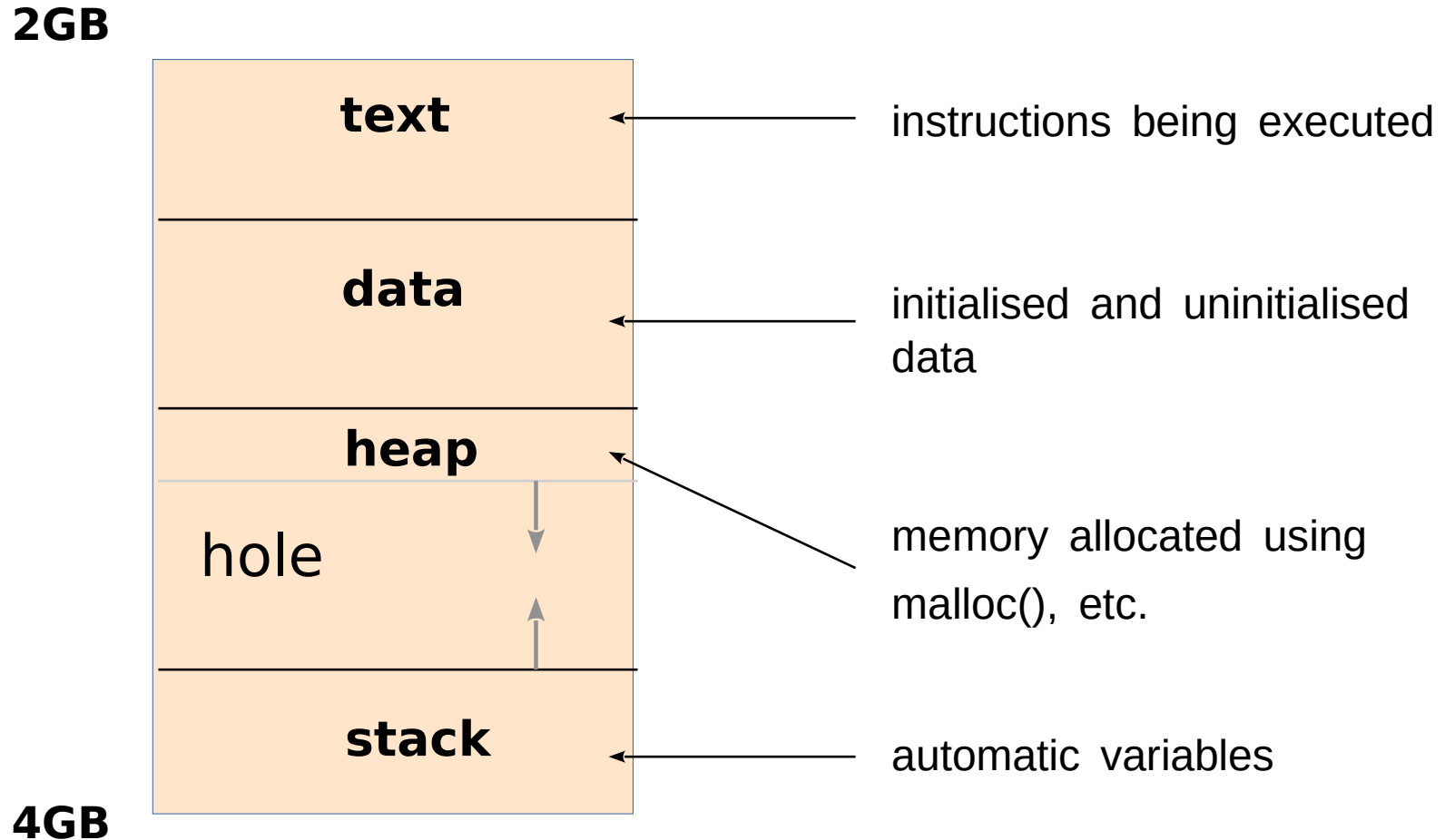
· Memory map of a process

· Managing memory in a process

· System V IPC shared memory

· Memory mapping Files

Memory Map of a Process

2GB

text	instructions being executed
data	initialised and uninitialised data
heap	memory allocated using malloc(), etc.
hole	
stack	automatic variables

4GB

Virtual Memory
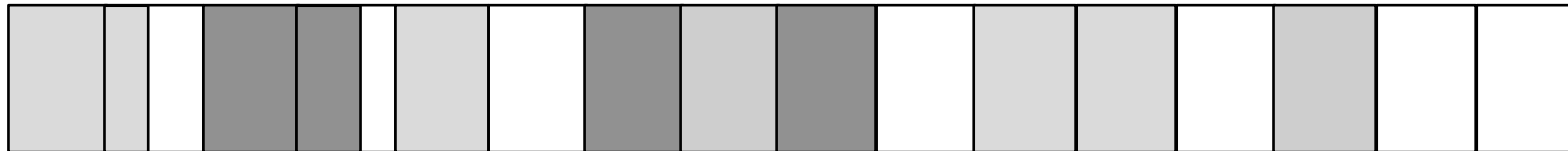
Process

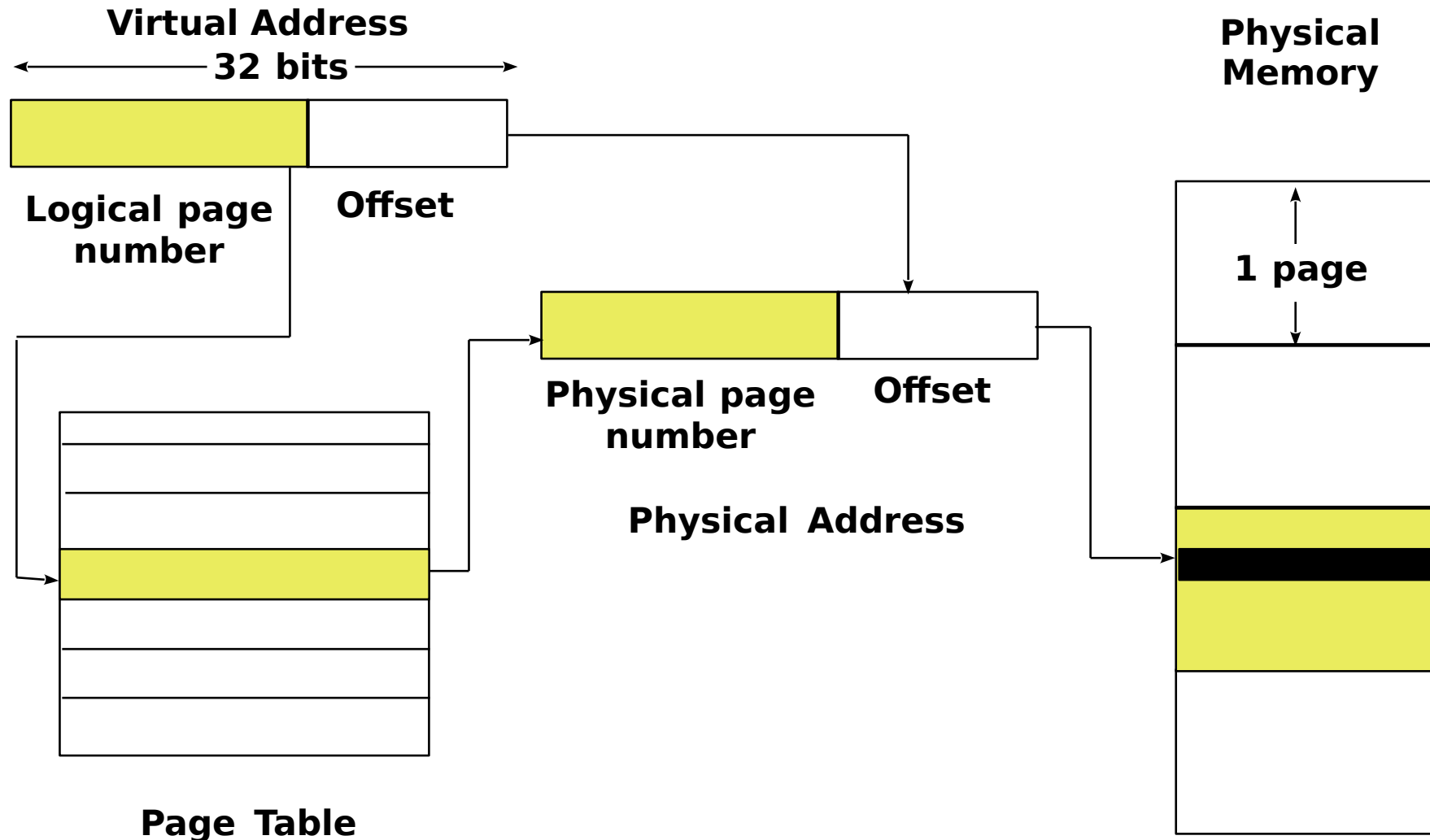Text   Data   Stack

Physical Memory

Virtual and Physical Addresses

Virtual Address
32 bits

Logical page number

Offset

Physical page number

Offset
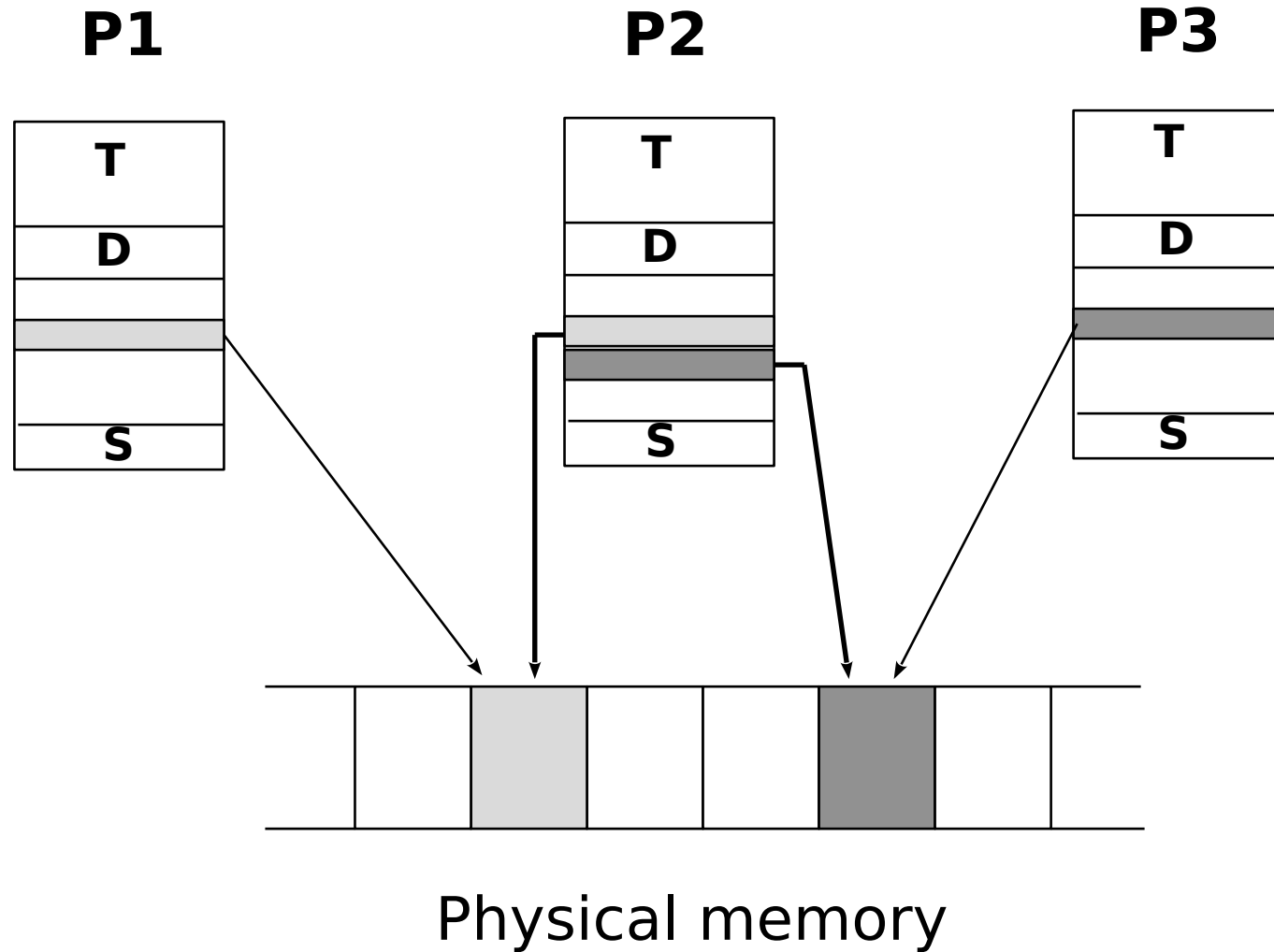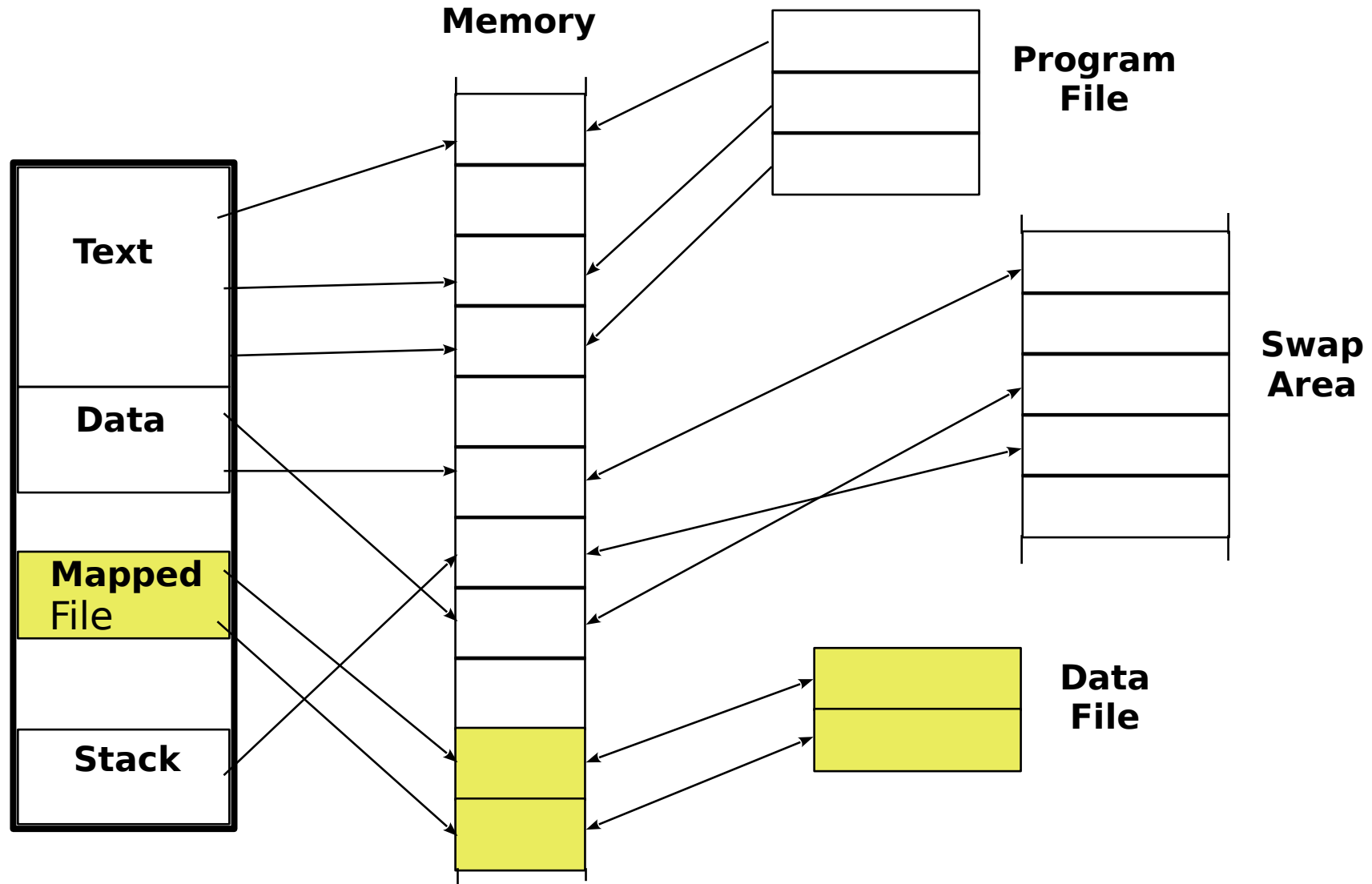
Physical Address

Physical Memory

1 page

Page Table

Backing Virtual Memory

Process

Memory

Program File

Text

Data

Stack

Swap area of disk

Shared Memory

P1

T
D
S

P2

T
D
S

P3

T
D
S

Physical memory

Memory Mapped Files

Memory

Program File

Swap Area

Text

Data

Mapped File

Stack

Data File

Shared and Private Mappings