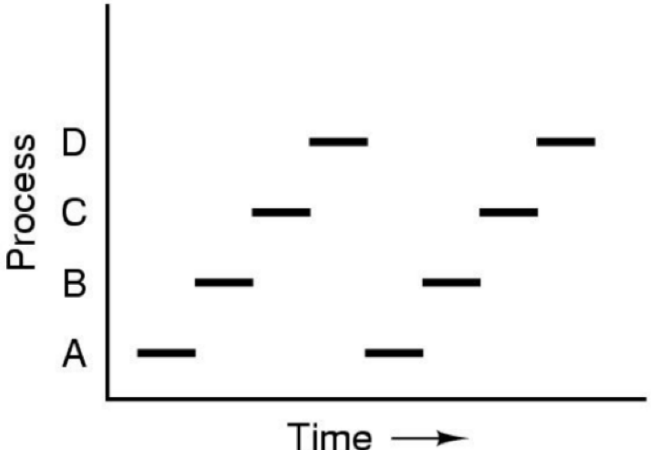
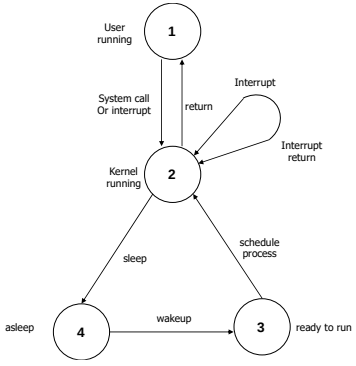
Architectures des Systèmes de Bases de Données

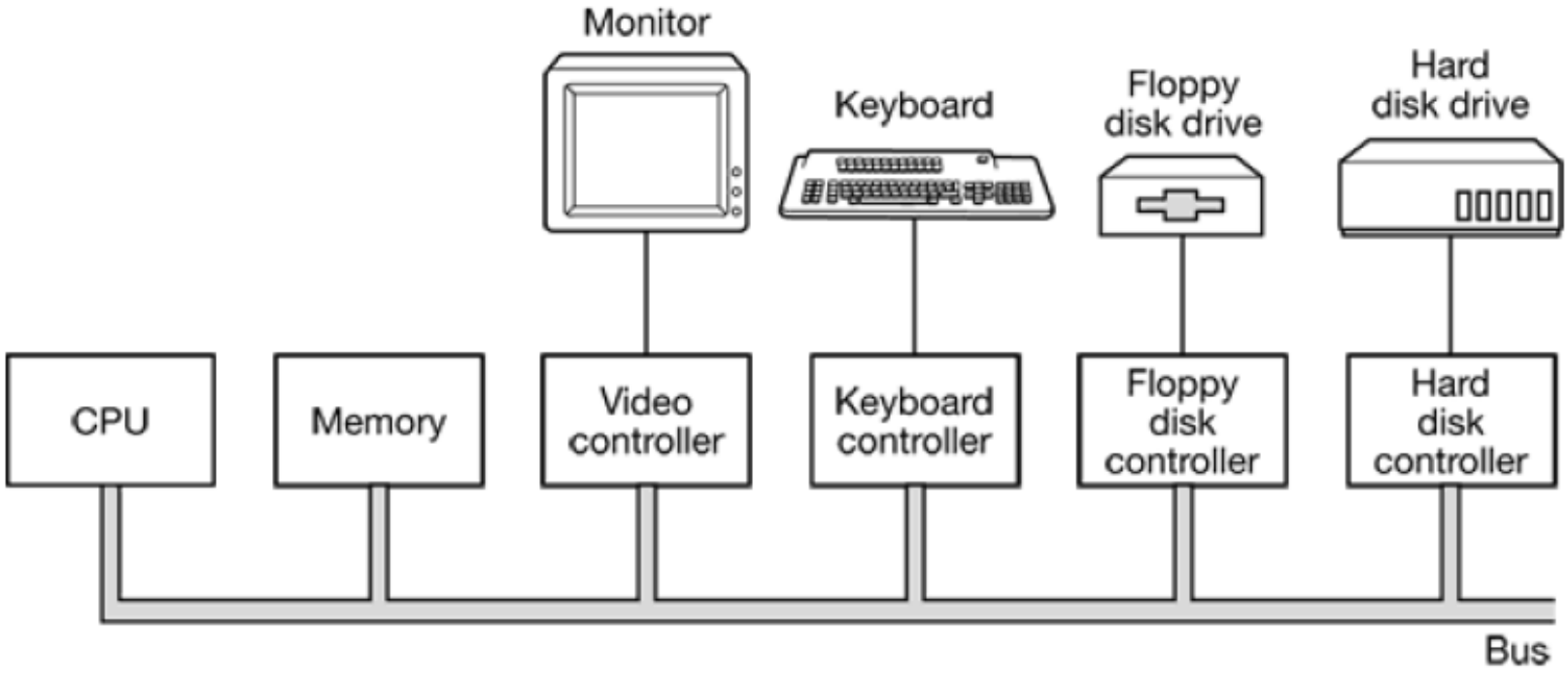
I/O Process State Address Space





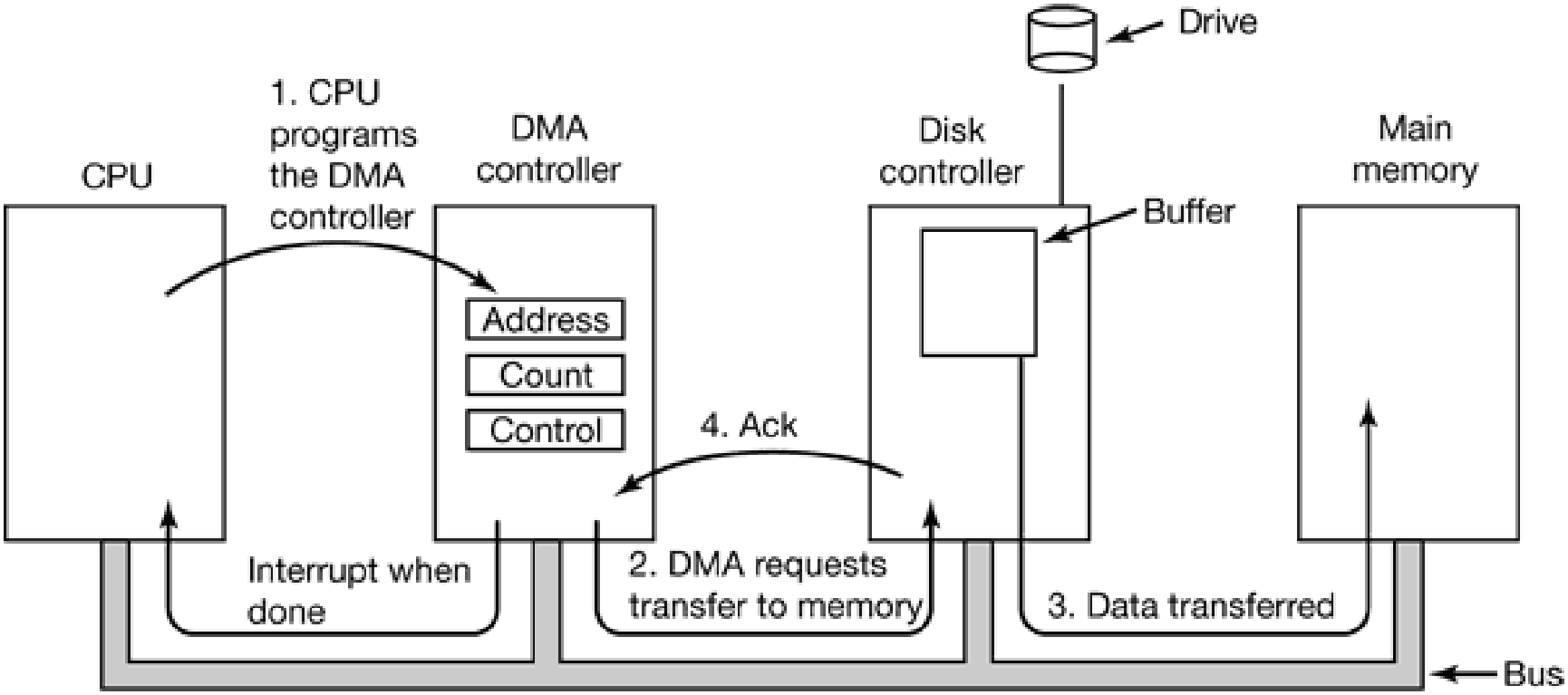
Traduction en cours

Computer Physical Architecture

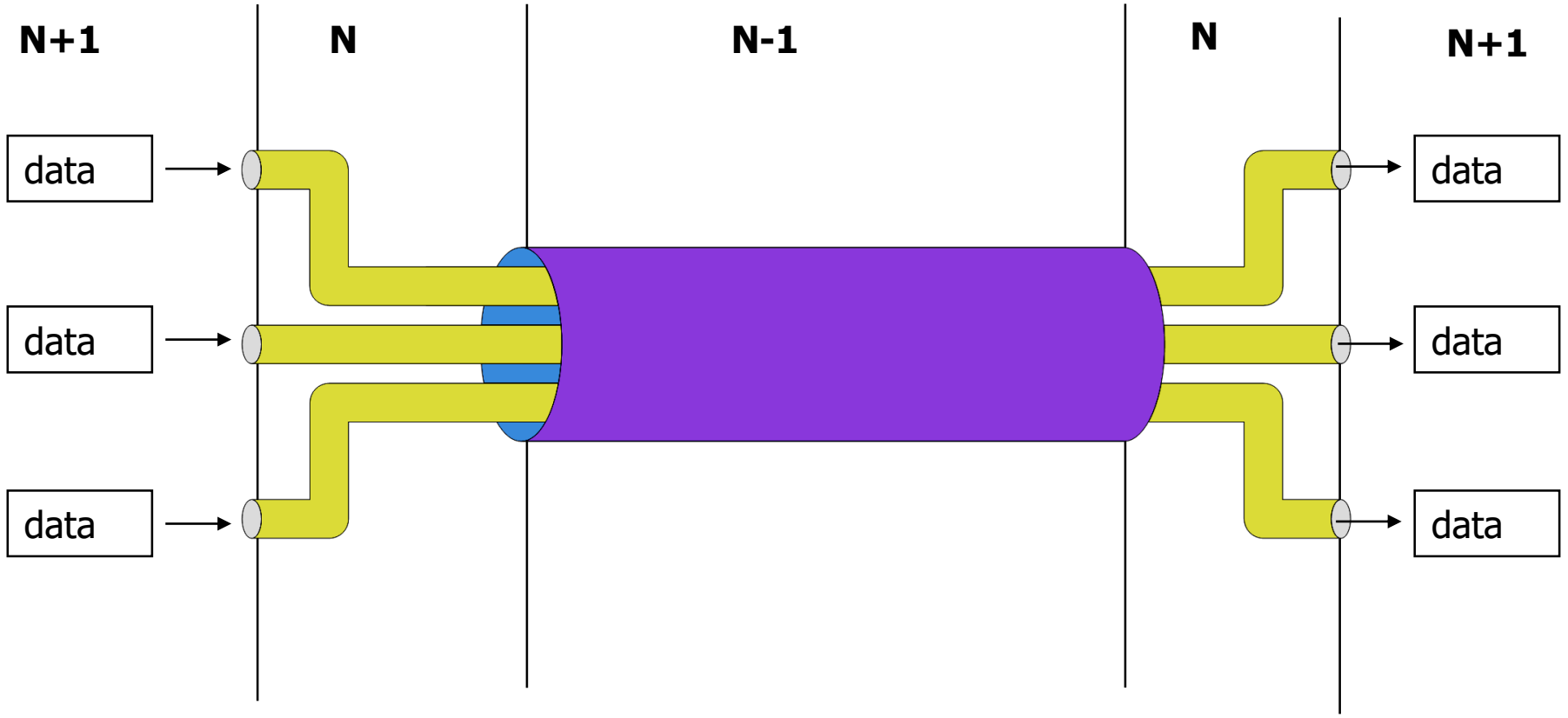


Source MOS : MODERN OPERATING SYSTEMS ANDREW S. TANENBAUM (A.S.T)

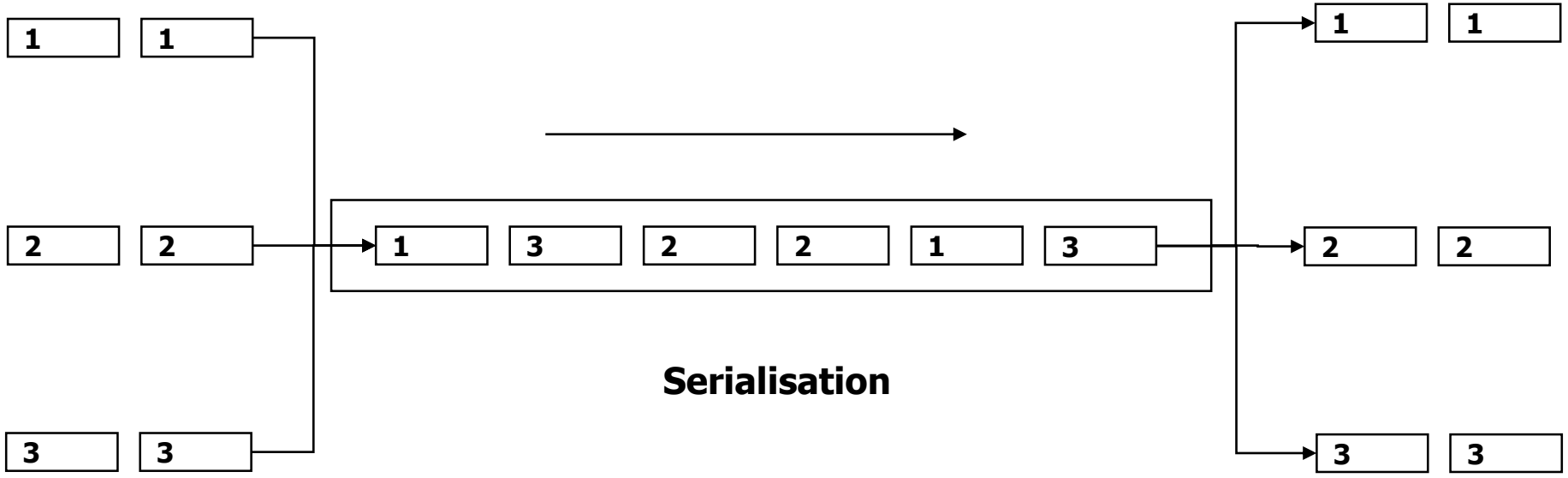
A.S.T : IT DMA, device driver



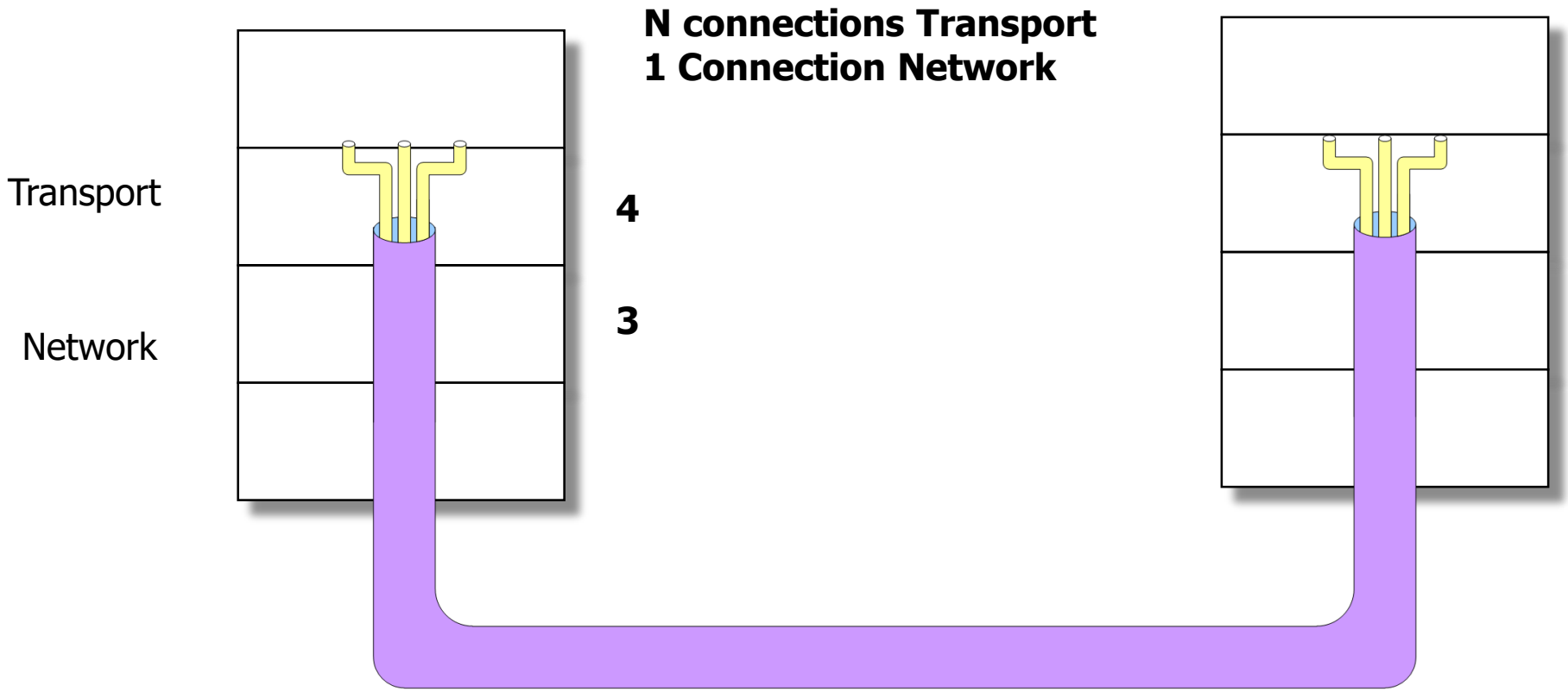
Network Ressource Multiplexing



Multiplexing : Virtual Channels

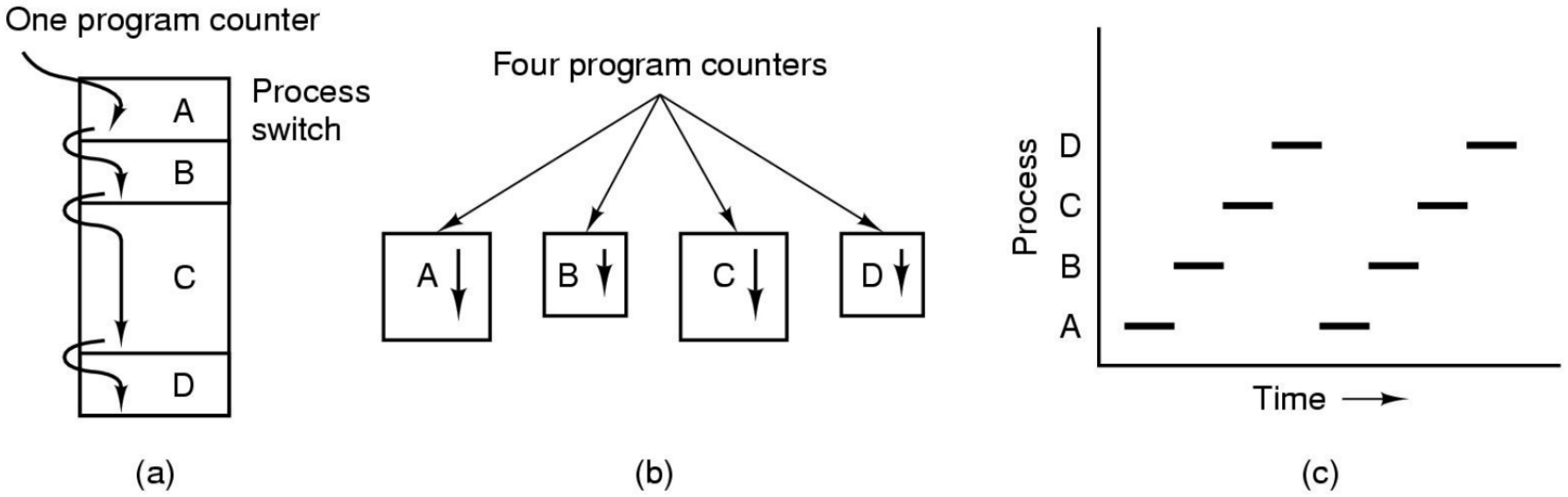


Transport Multiplexing

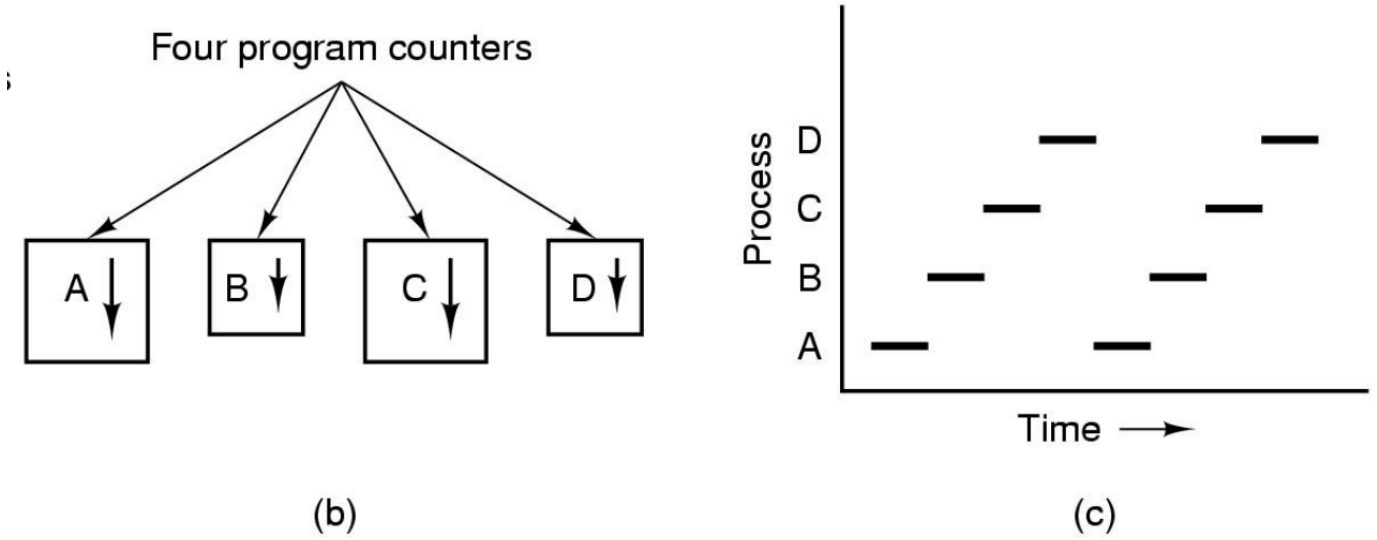


A.S.T : Process

The Process Model



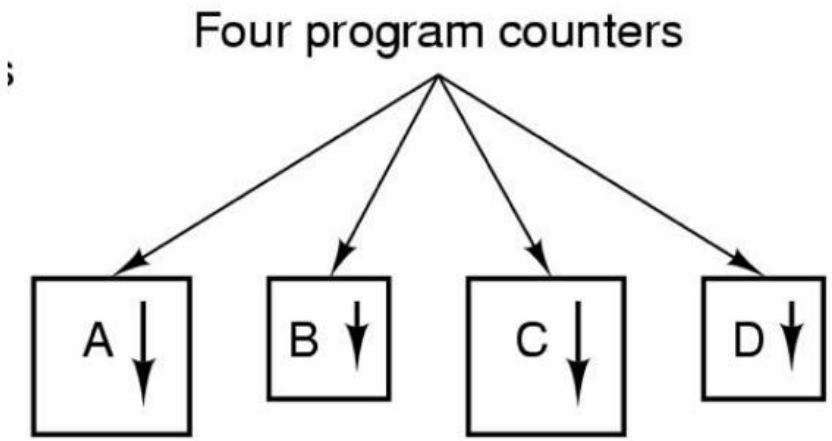
The Process Model



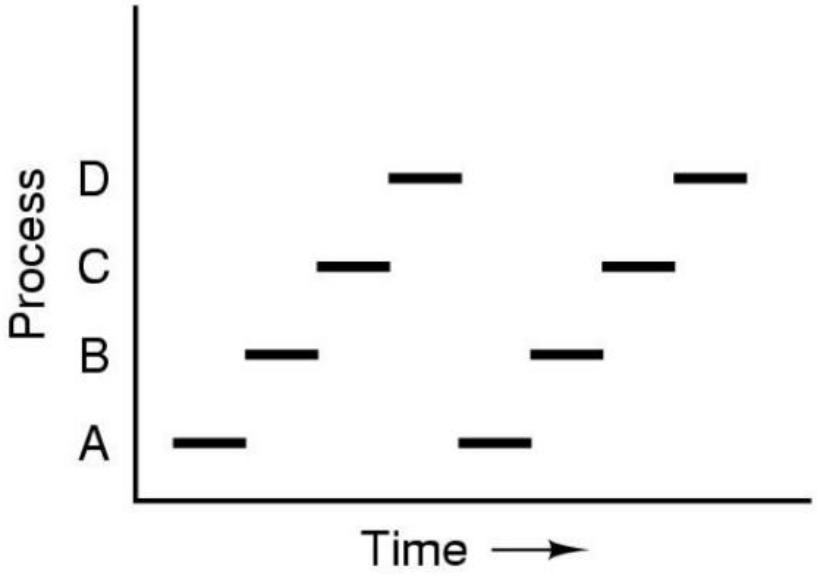
Two points of view

A.S.T : Process

Two points of view



(b)

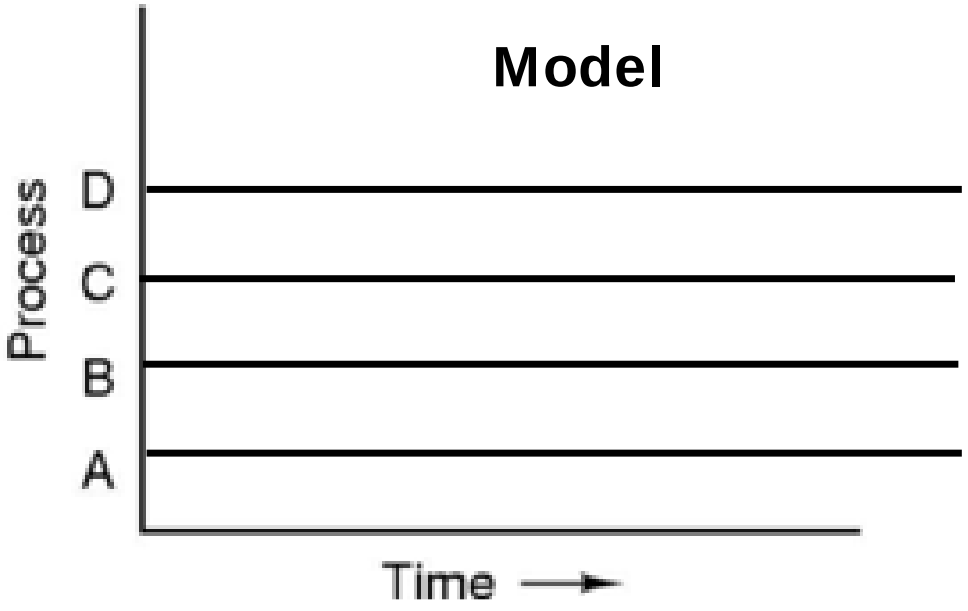


(c)

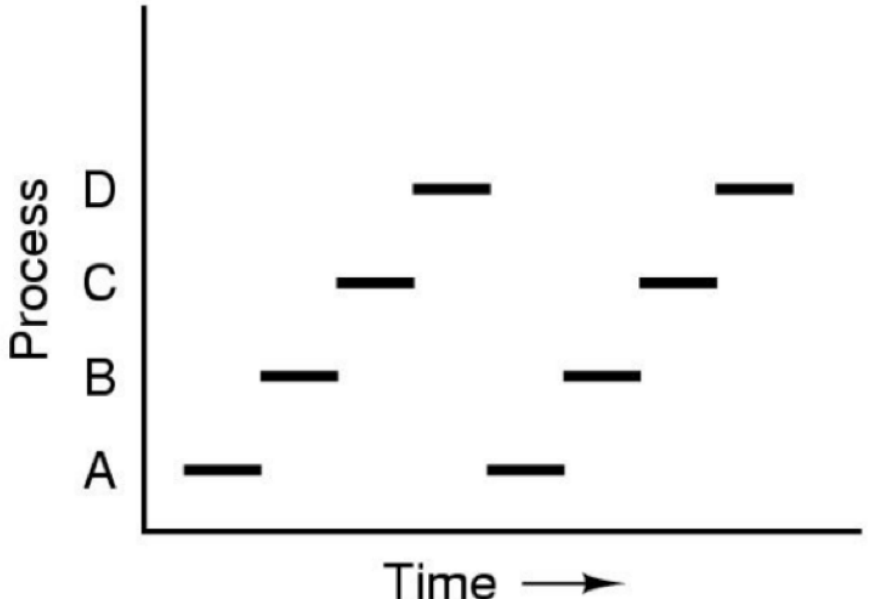
Memory Space

Time Space

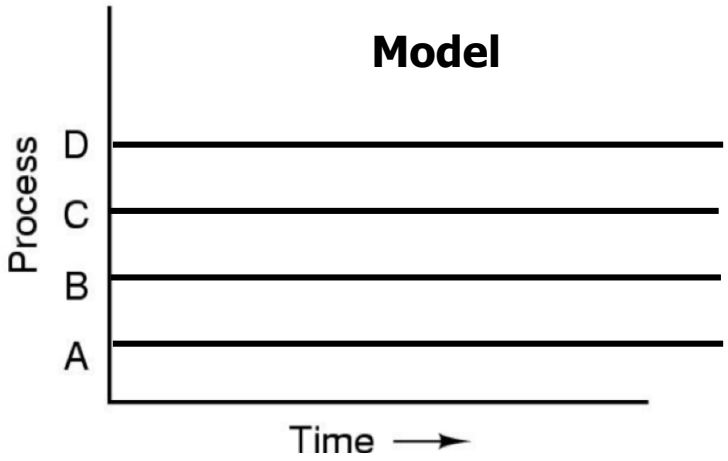
The Multi-Process model

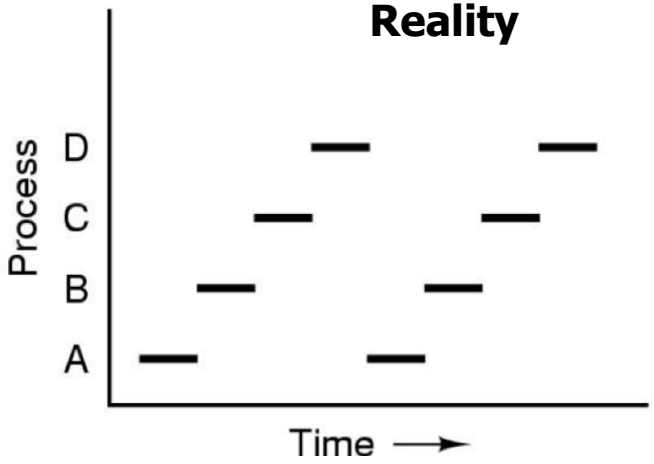


Reality

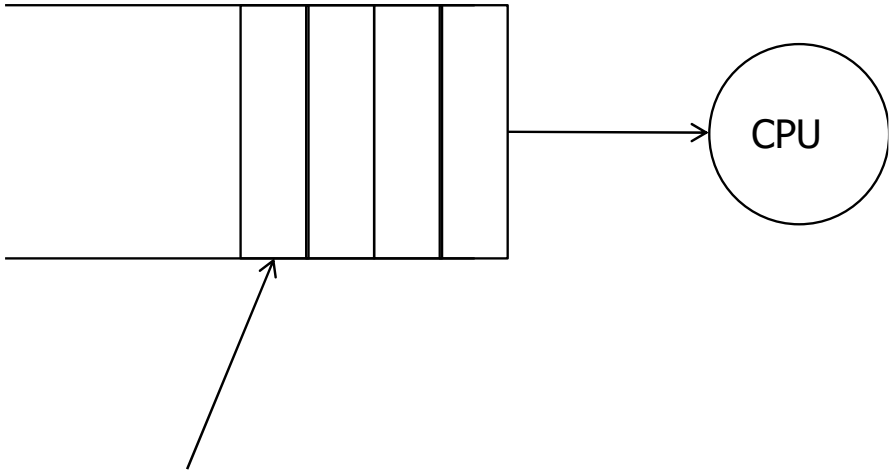


The process model



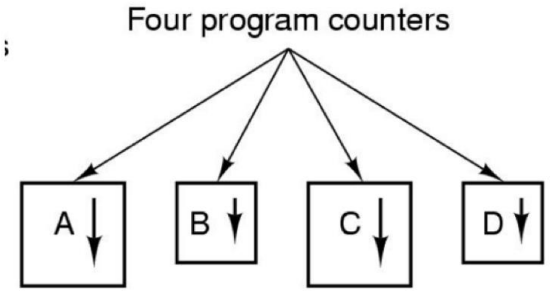


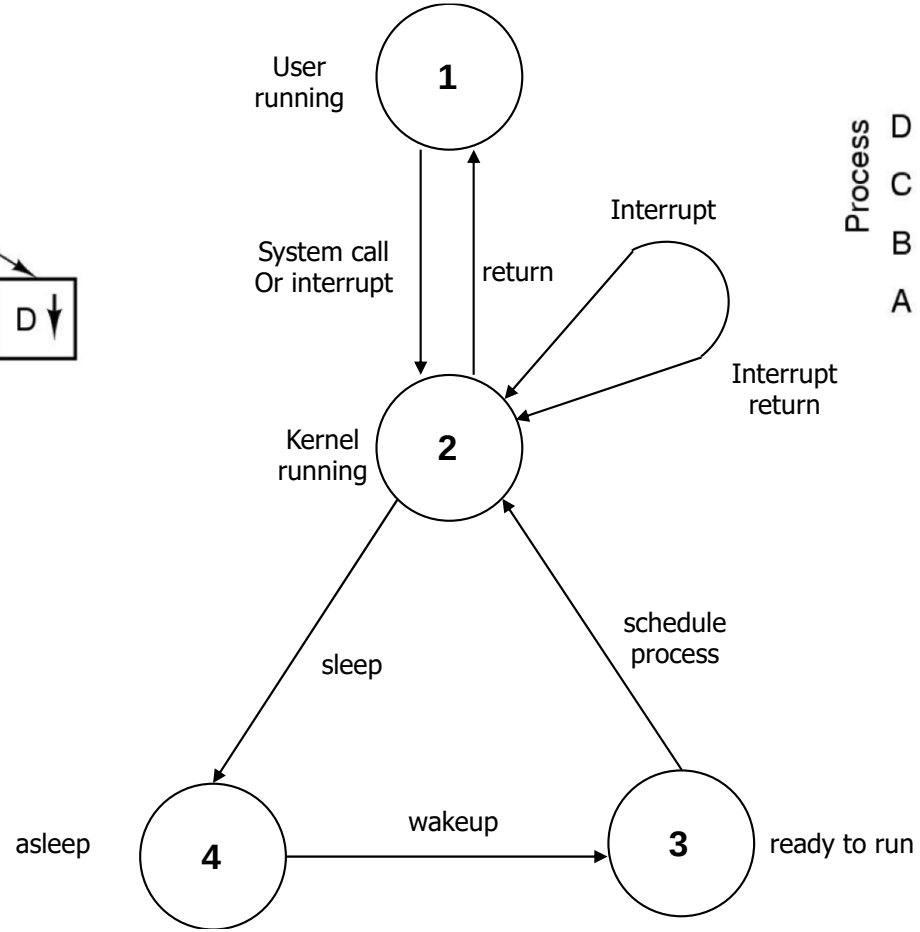
Ready Queue

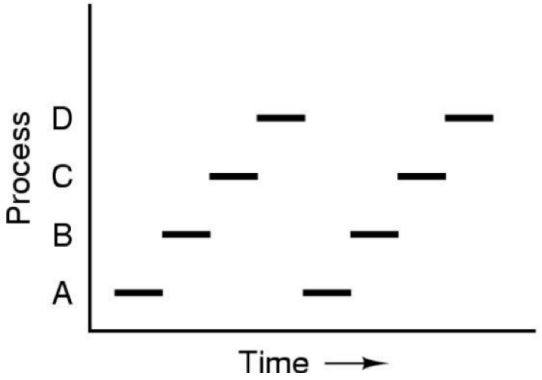


BACH process state diagram

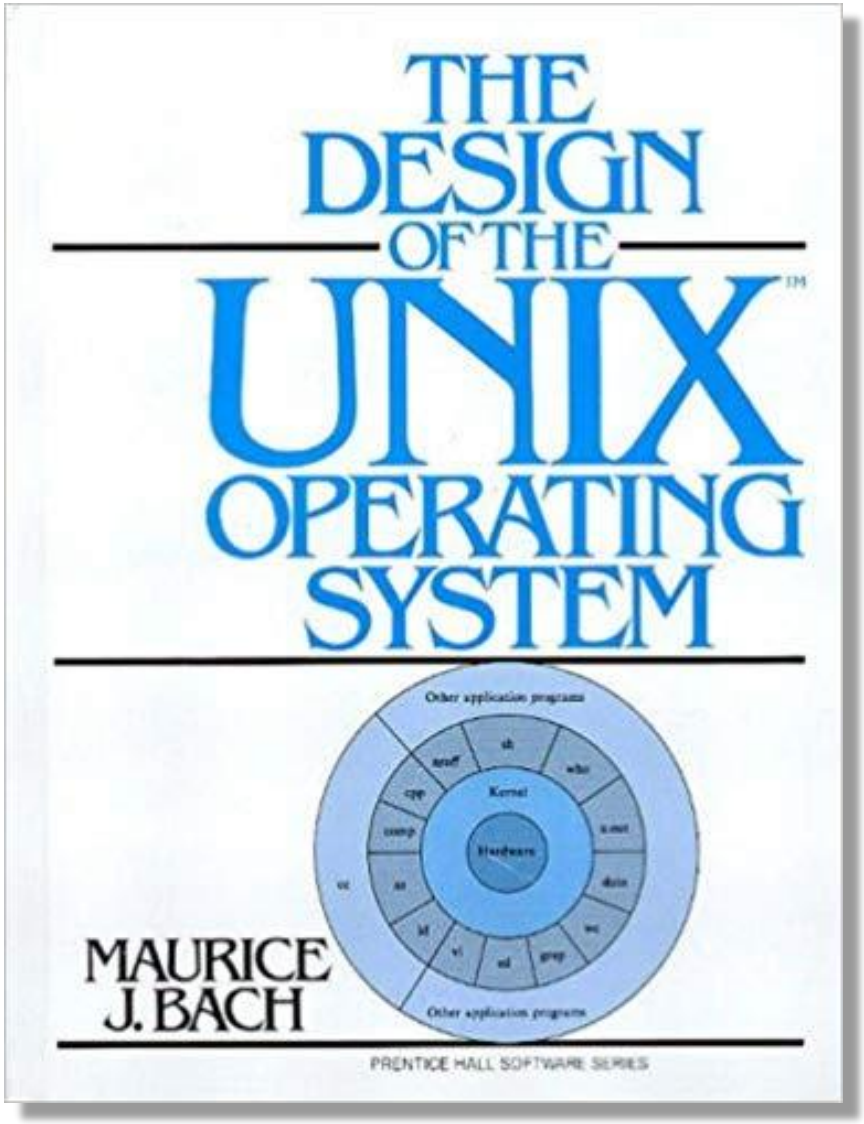
Third point of view

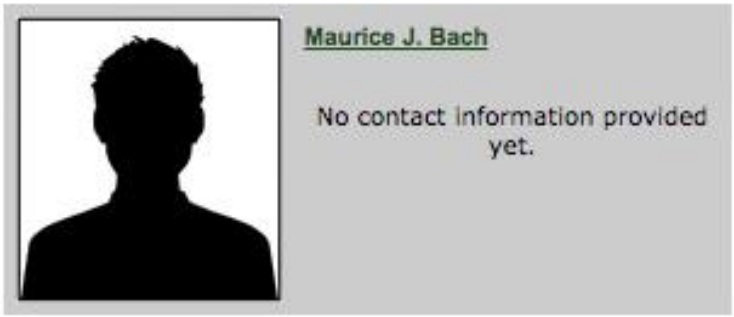


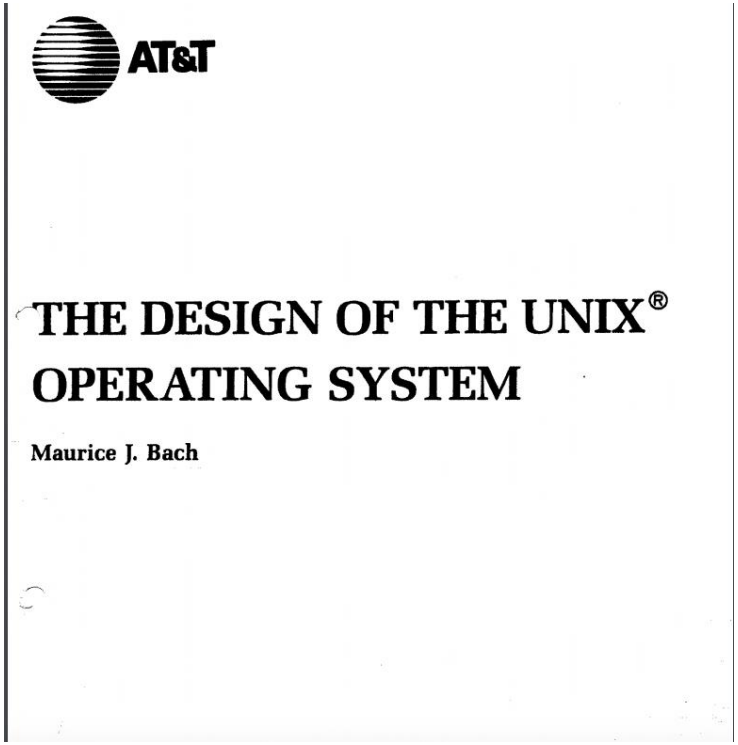




The Design of the UNIX Operating System Maurice J. Bach







The Design of the UNIX Operating System Maurice J. Bach-

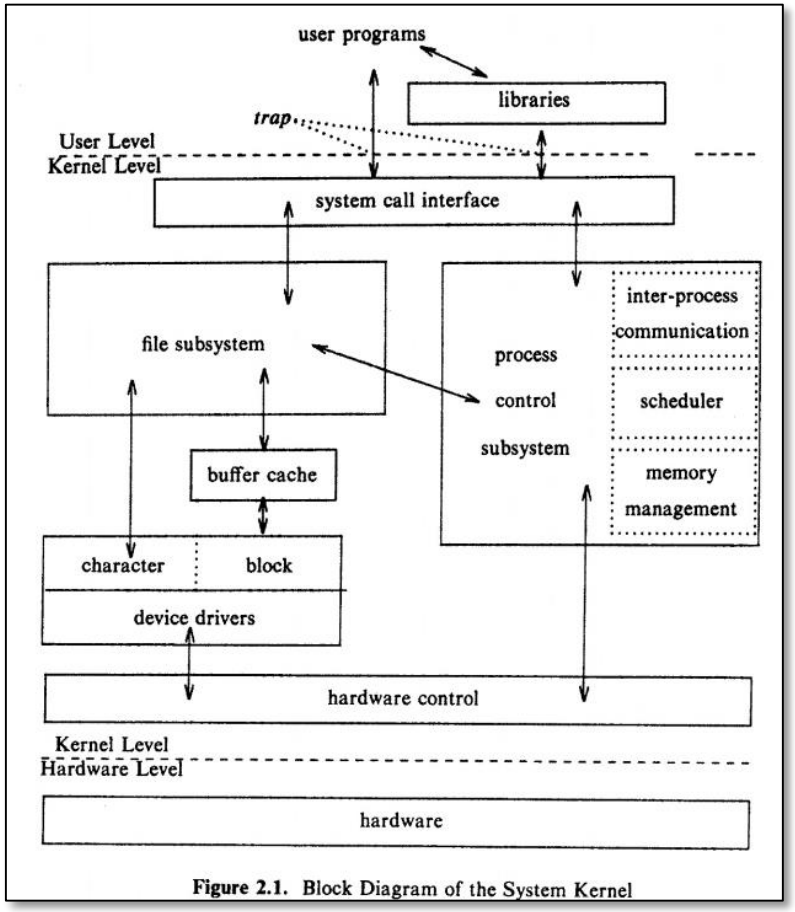


Figure 2.1. Block Diagram of the System Kernel

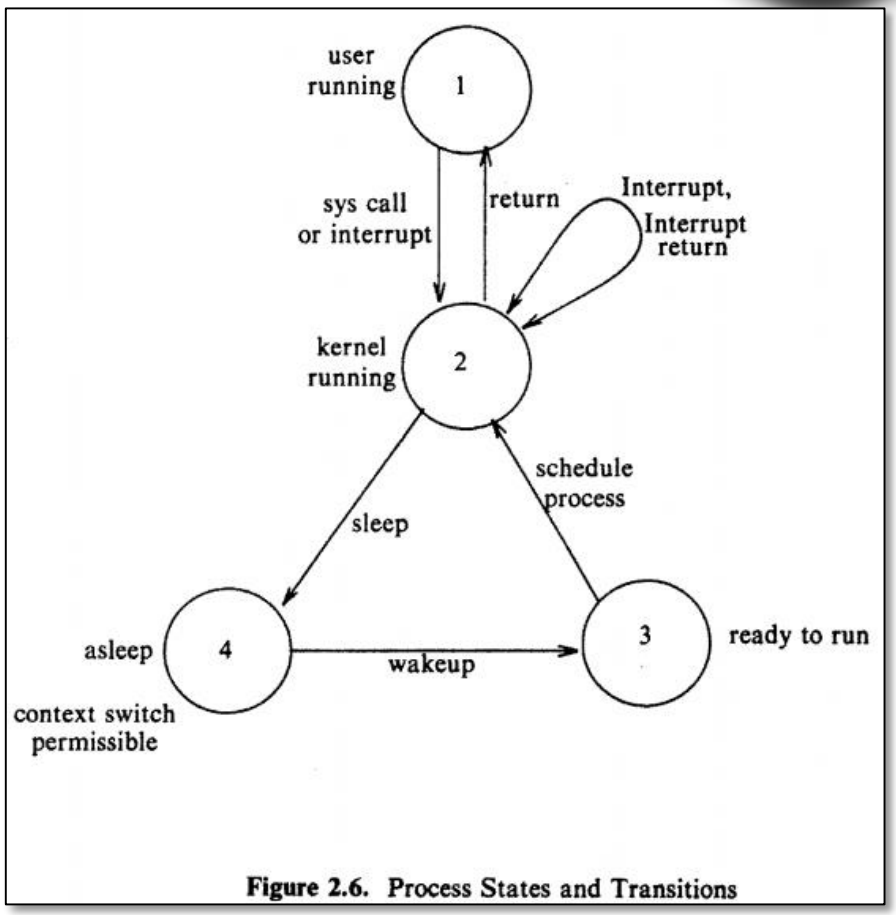
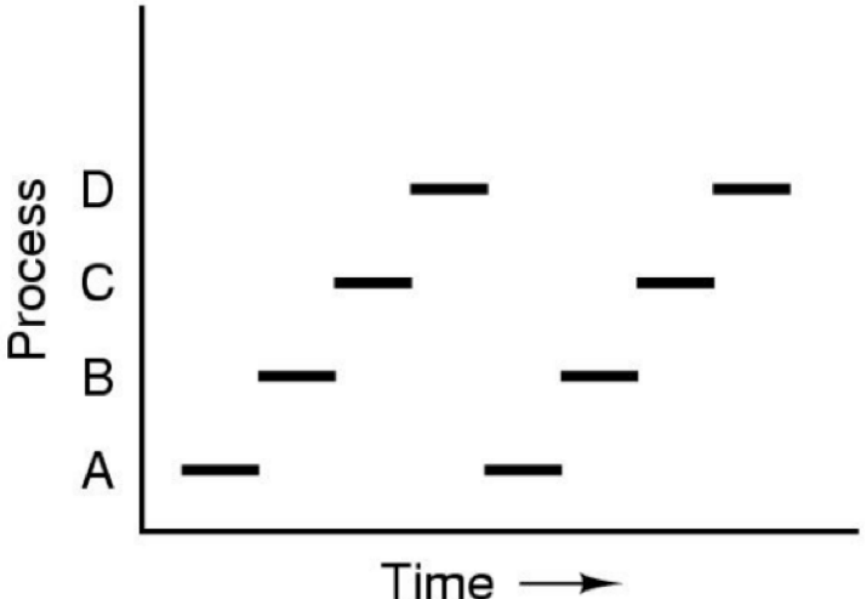
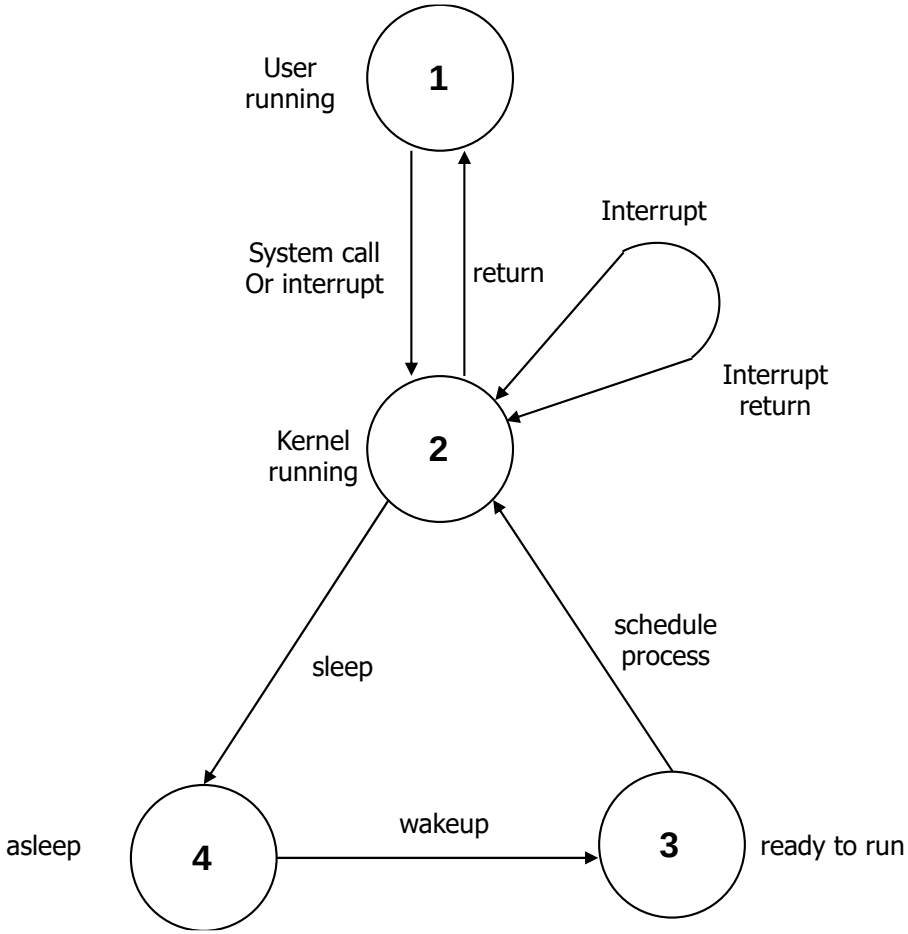


Figure 2.6. Process States and Transitions

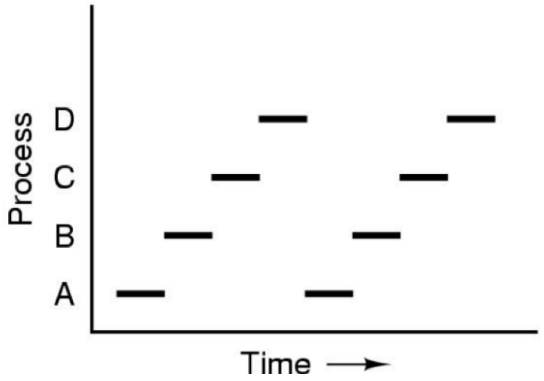
I/O Time and State process

Two points of view



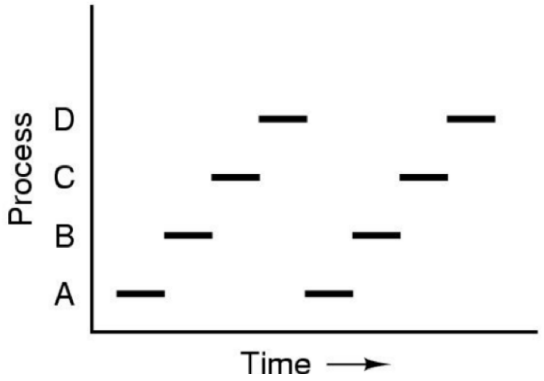


I/O



User Mode

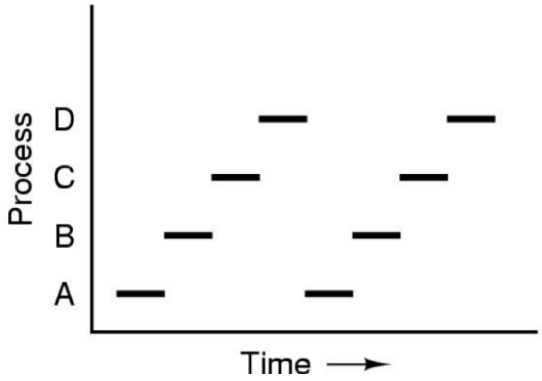
I/O



User Mode

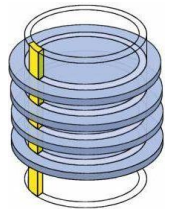
Kernel Mode

I/O



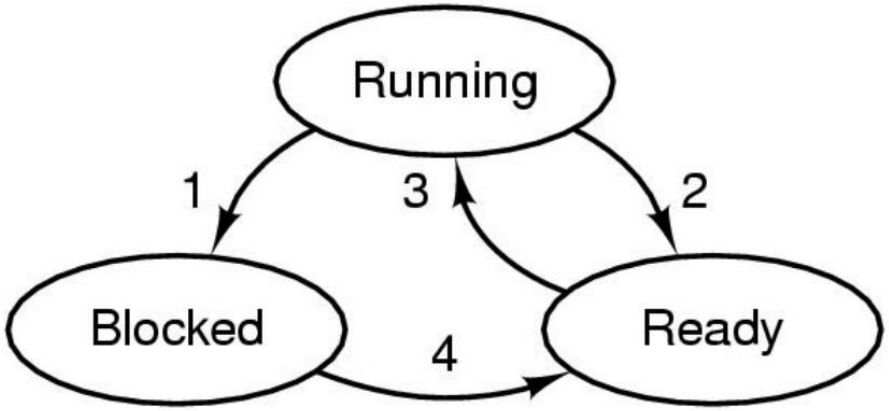
User Mode

Kernel Mode



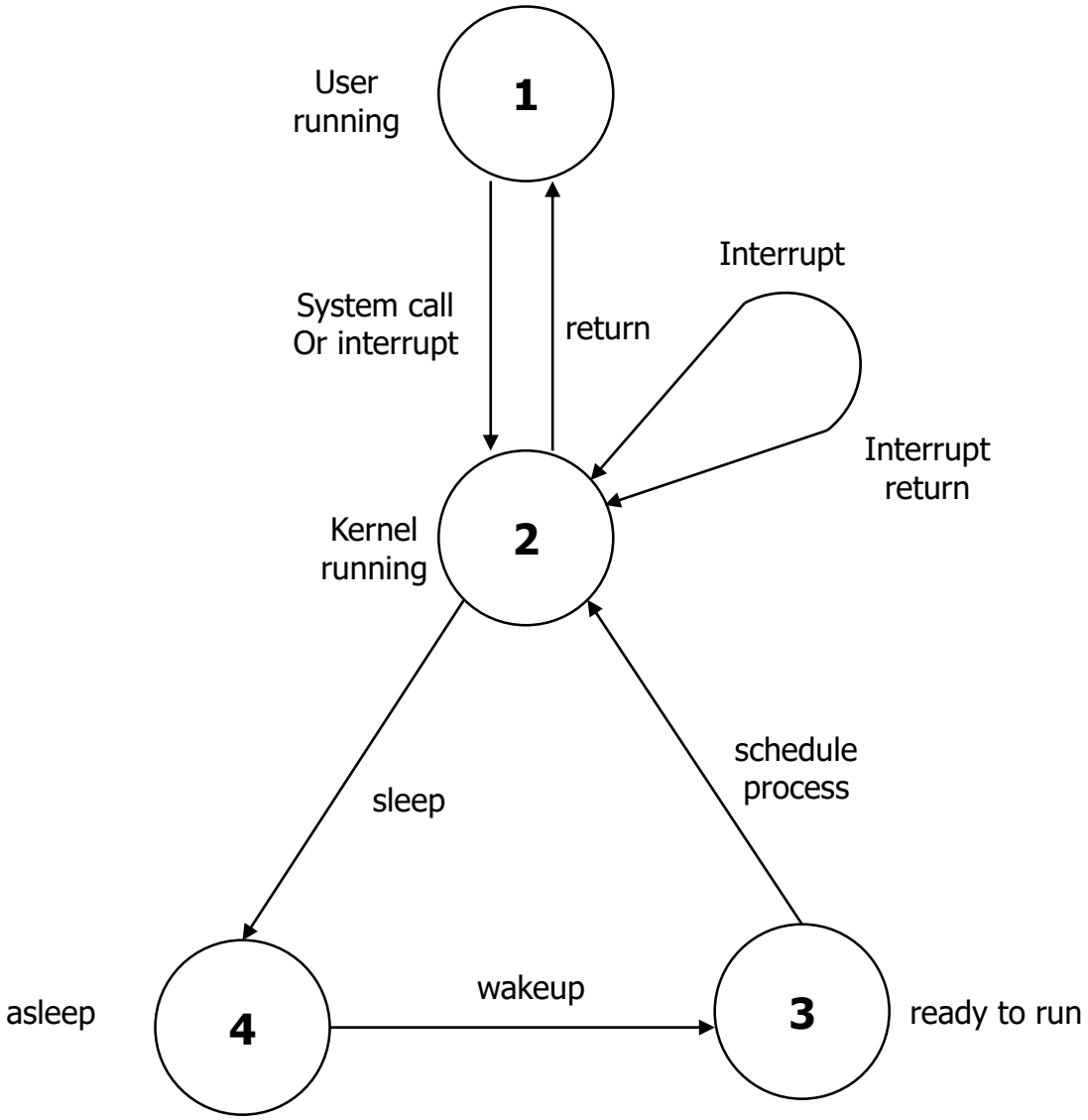
A.S.T : Process State Machine

Process States

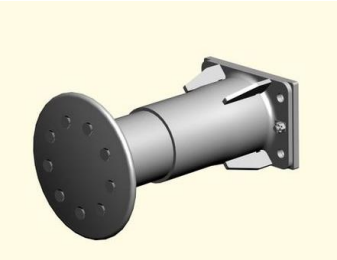


1. Process blocks for input
2. Scheduler picks another process
3. Scheduler picks this process
4. Input becomes available

BACH process state diagram



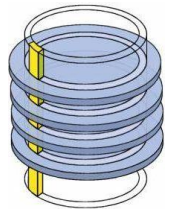
I/O



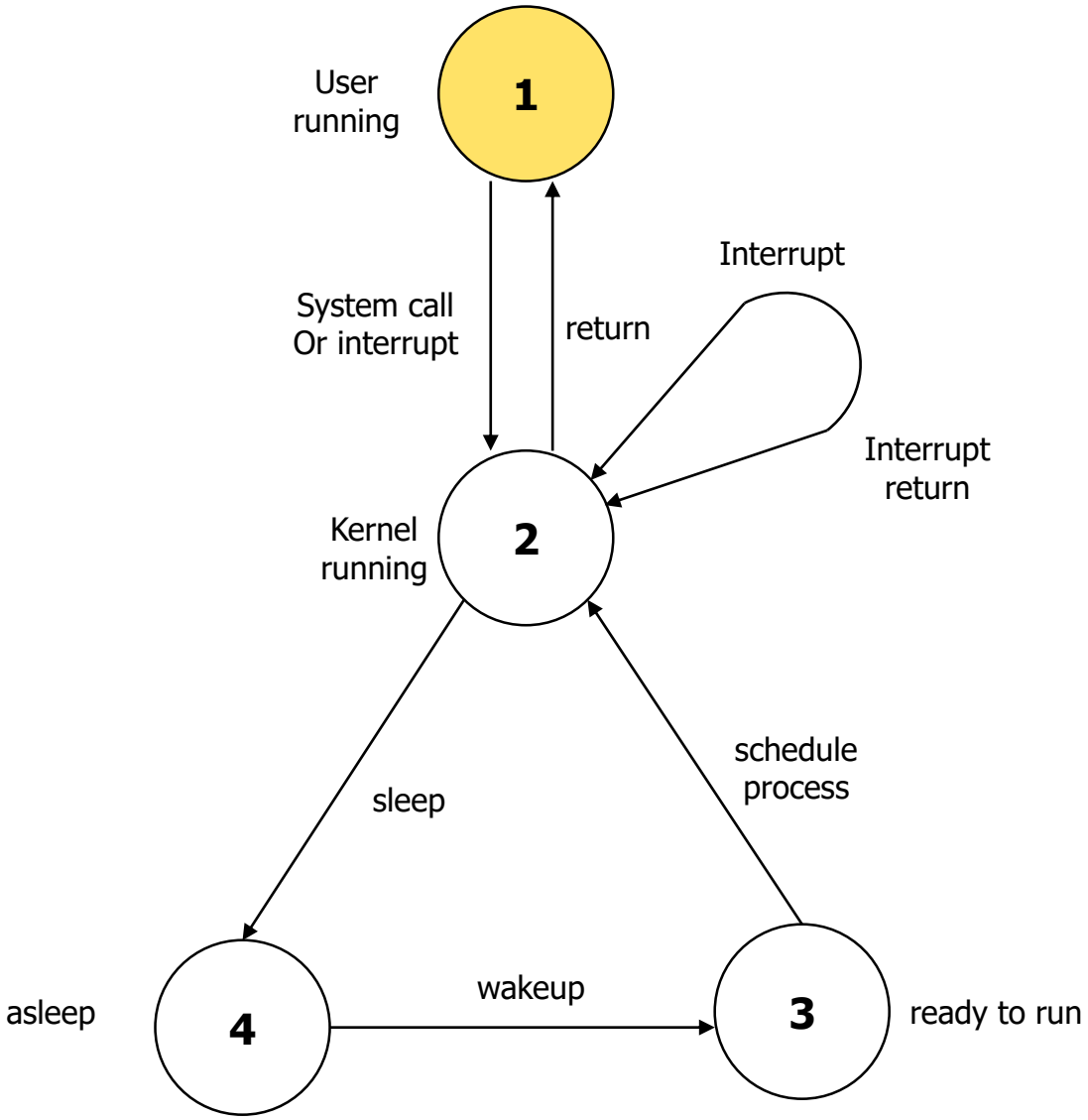
User Mode

User Buffer

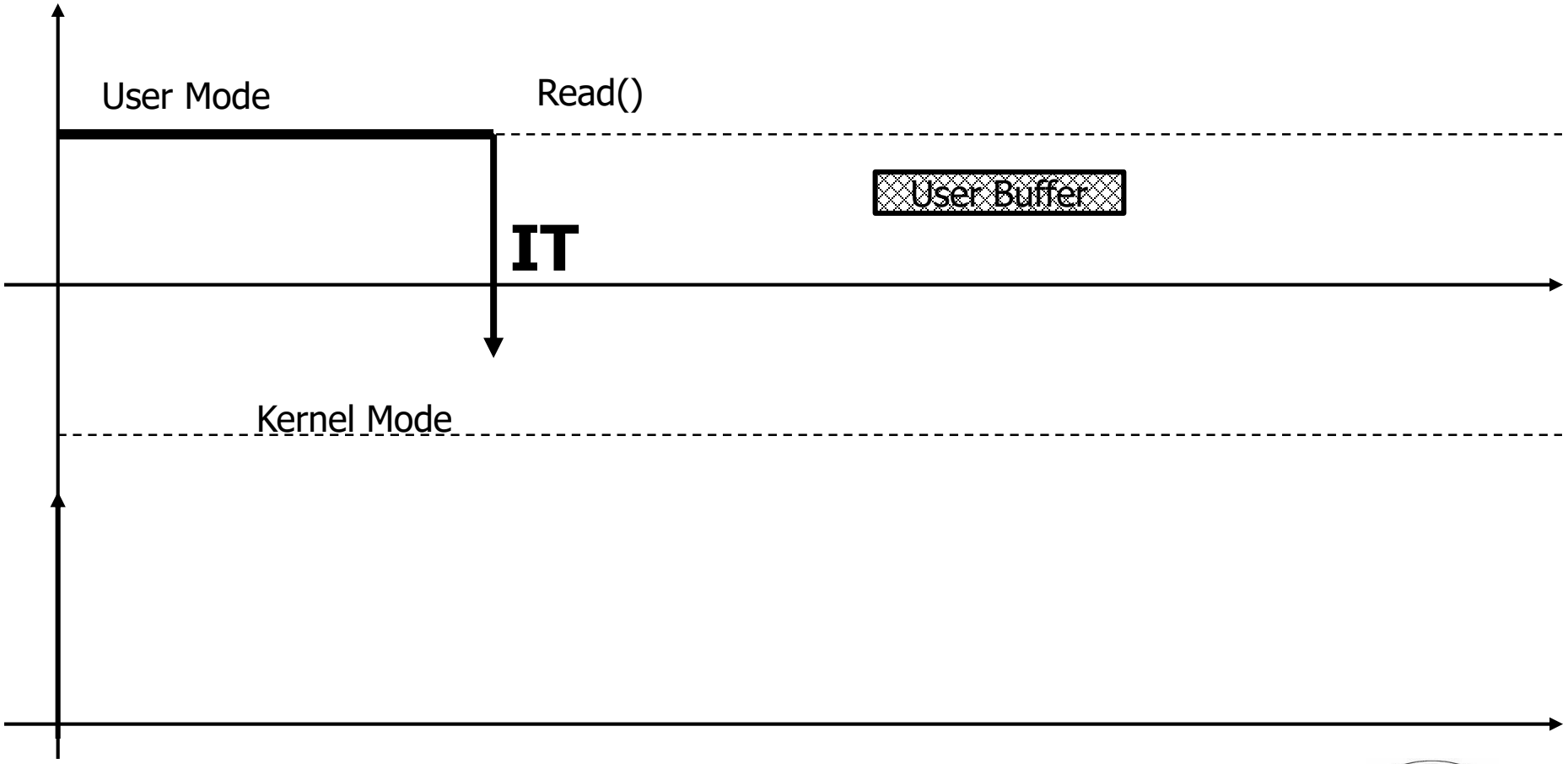
Kernel Mode

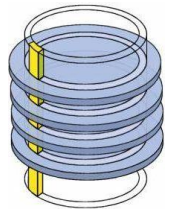


BACH process state diagram



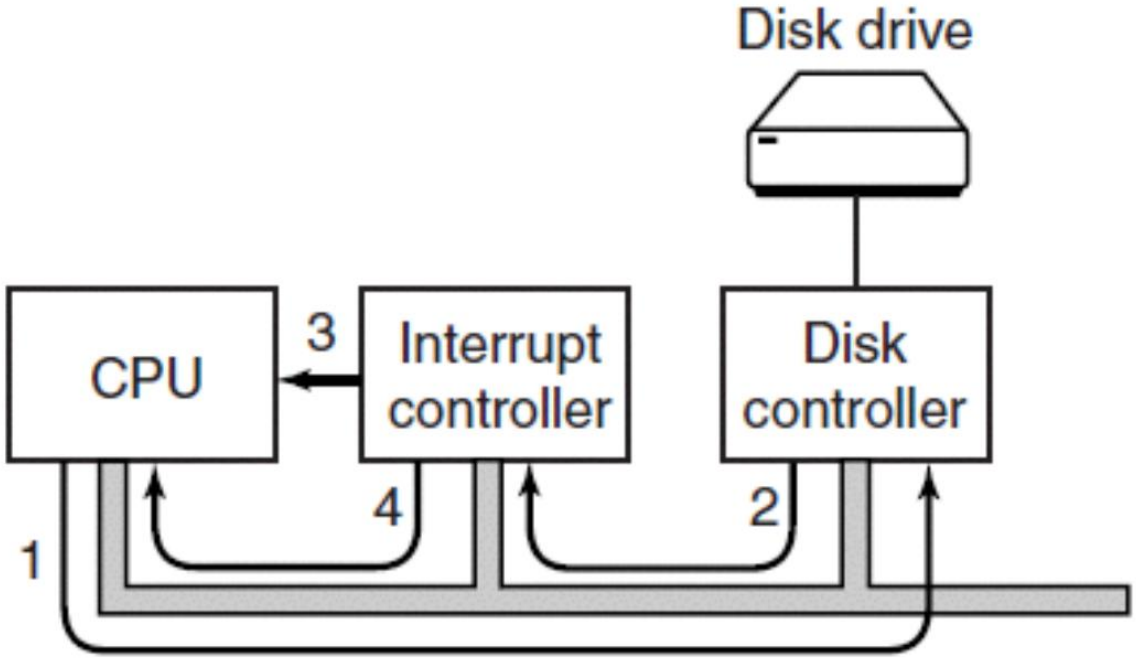
I/O





A.S.T : I/O IT

I/O Devices



A.S.T : Hard IT

I/O Devices

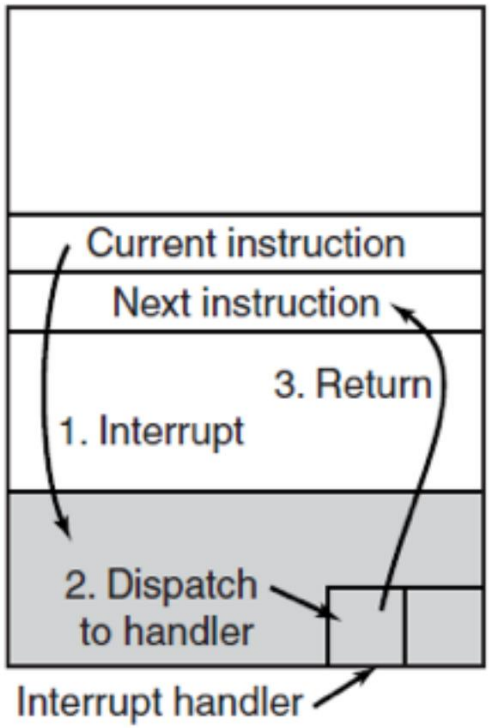
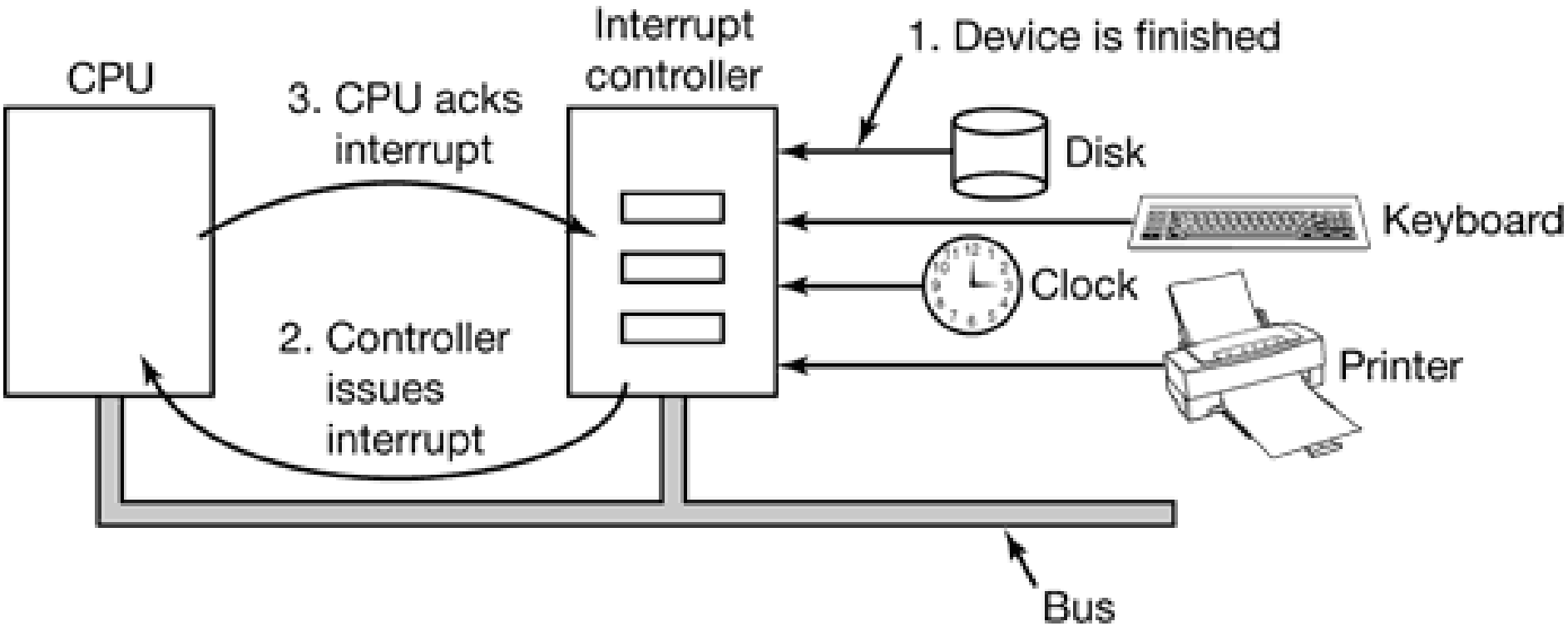


Figure 1-11. (b) Interrupt processing involves taking the interrupt, running the interrupt handler, and returning to the user program.

A.S.T : IT


CPU
3. CPU acks interrupt
Interrupt controller
1. Device is finished
Disk
Keyboard
Clock
Printer
2. Controller issues interrupt
Bus

A.S.T : System call = Trap = Soft IT

System Calls (1)

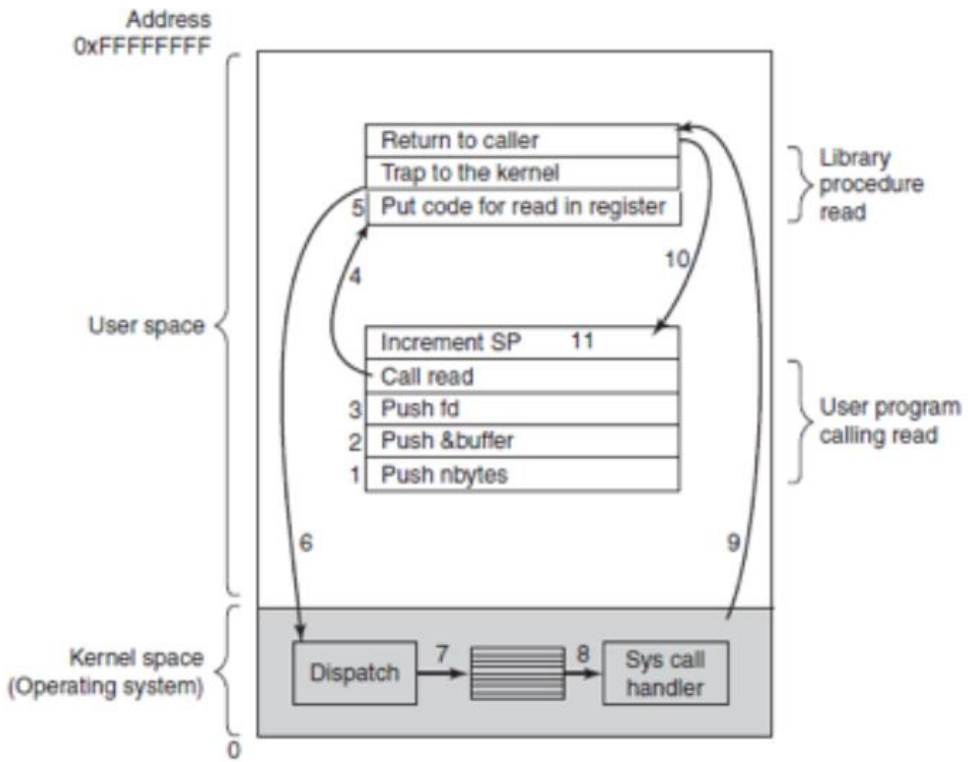
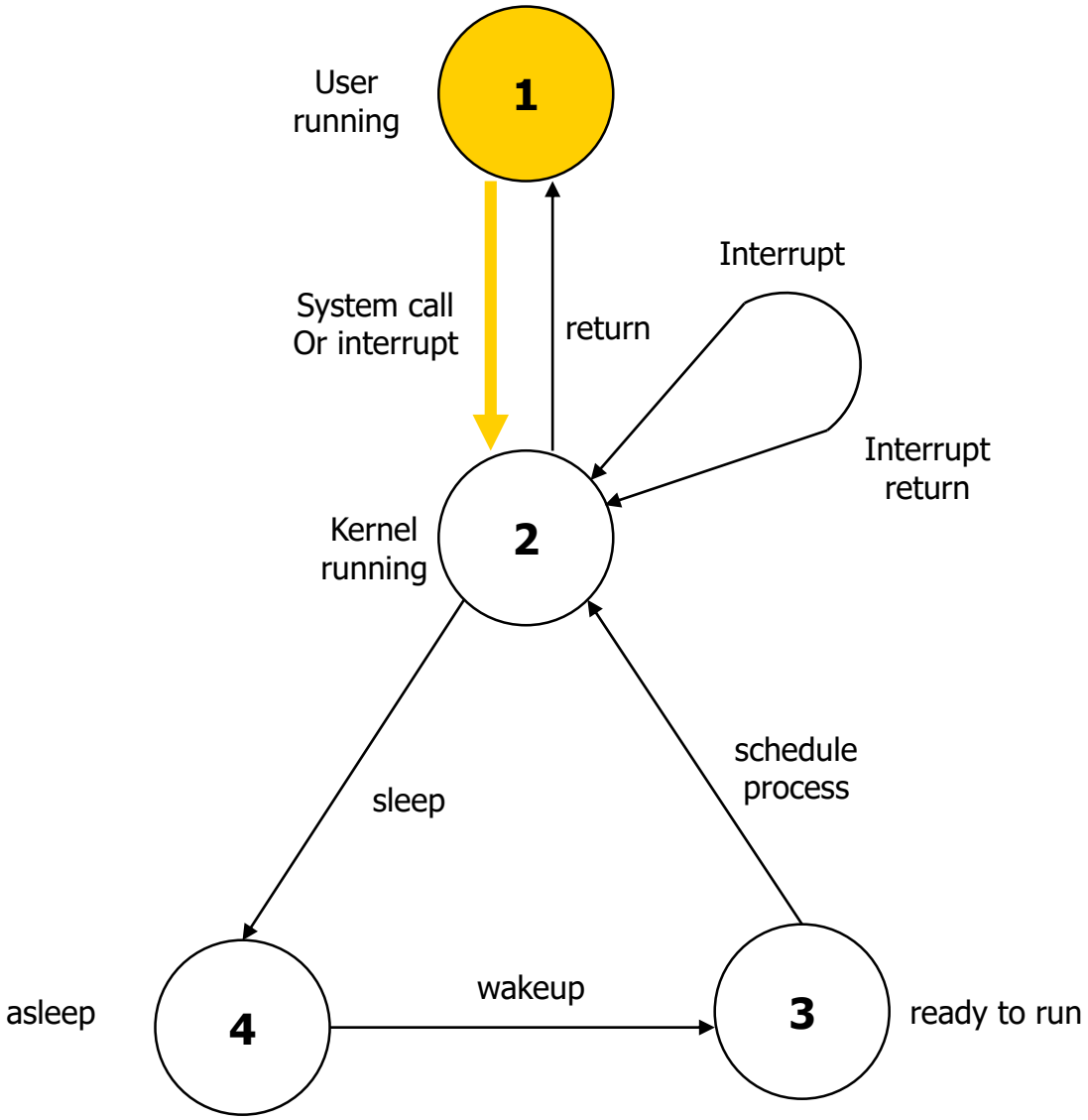
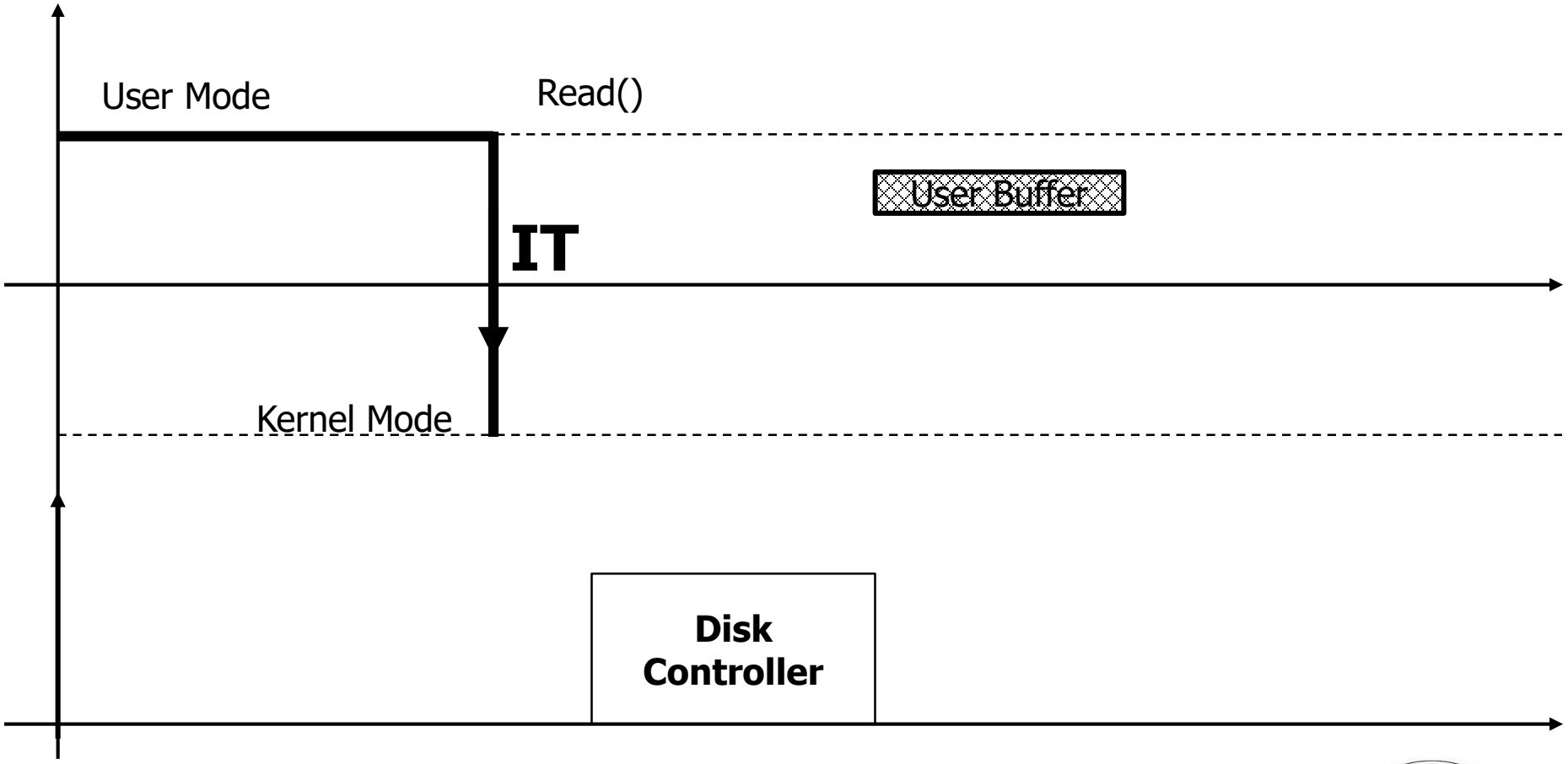


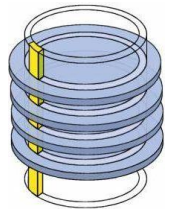
Figure 1-17. The 11 steps in making the system call *read(fd, buffer, nbytes)*.

BACH process state diagram

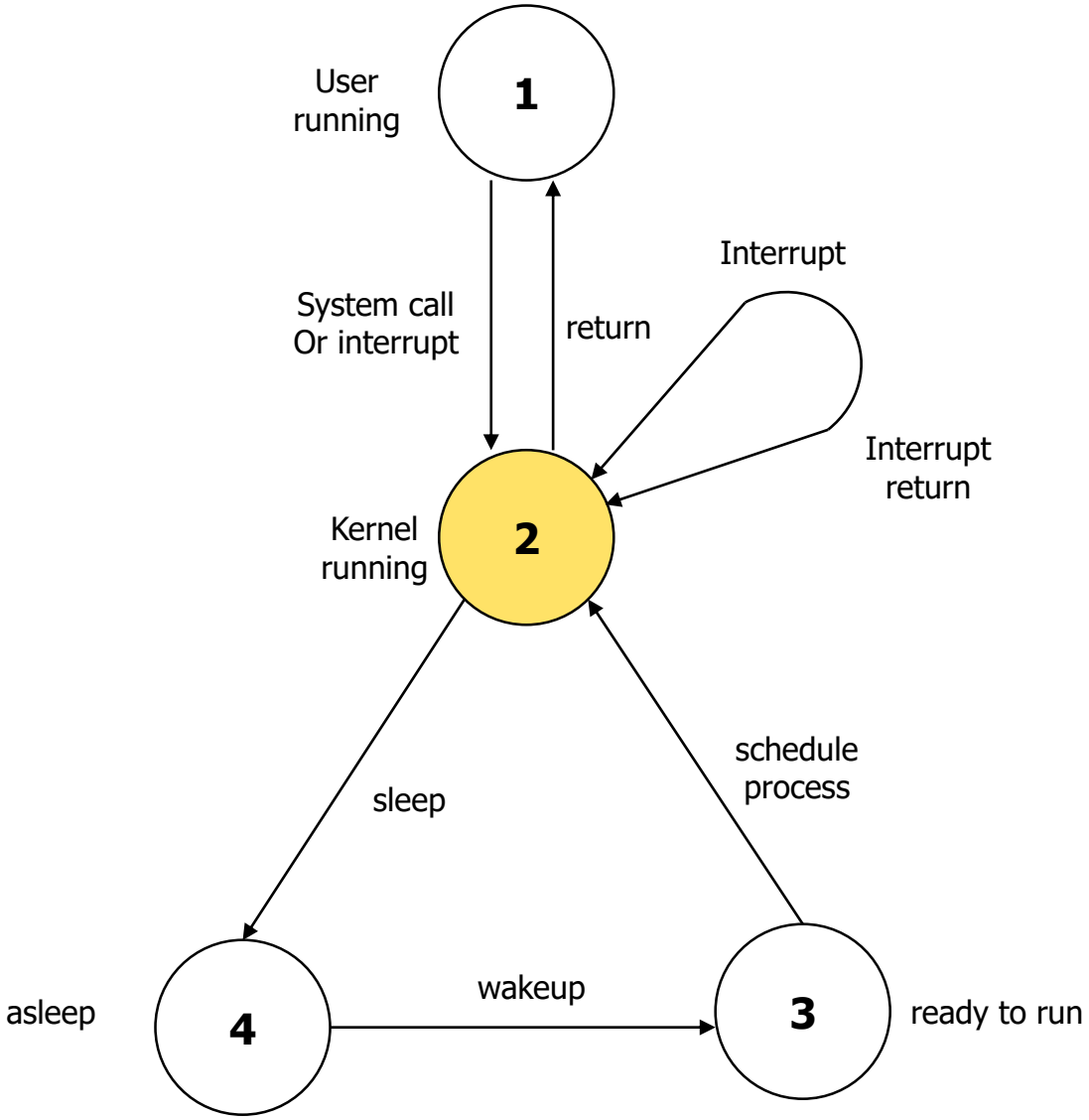


I/O

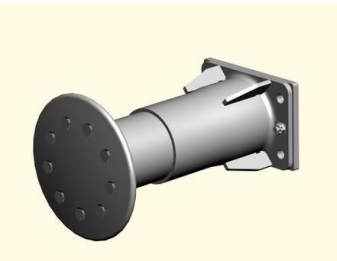




BACH process state diagram



I/O



User Mode

Read()

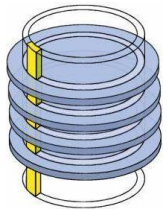
User Buffer

IT

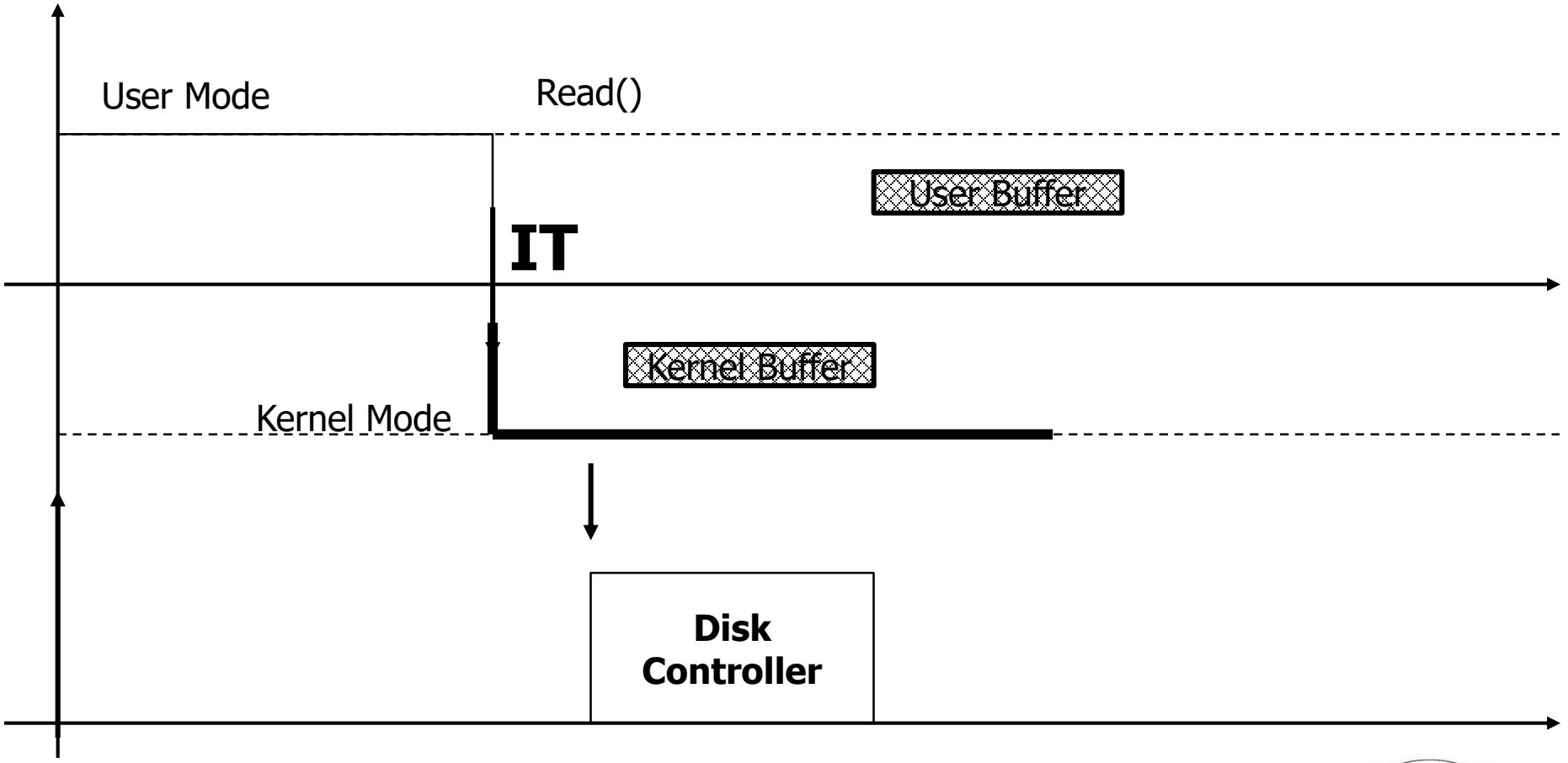
Kernel Buffer

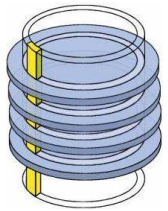
Kernel Mode

Disk Controller

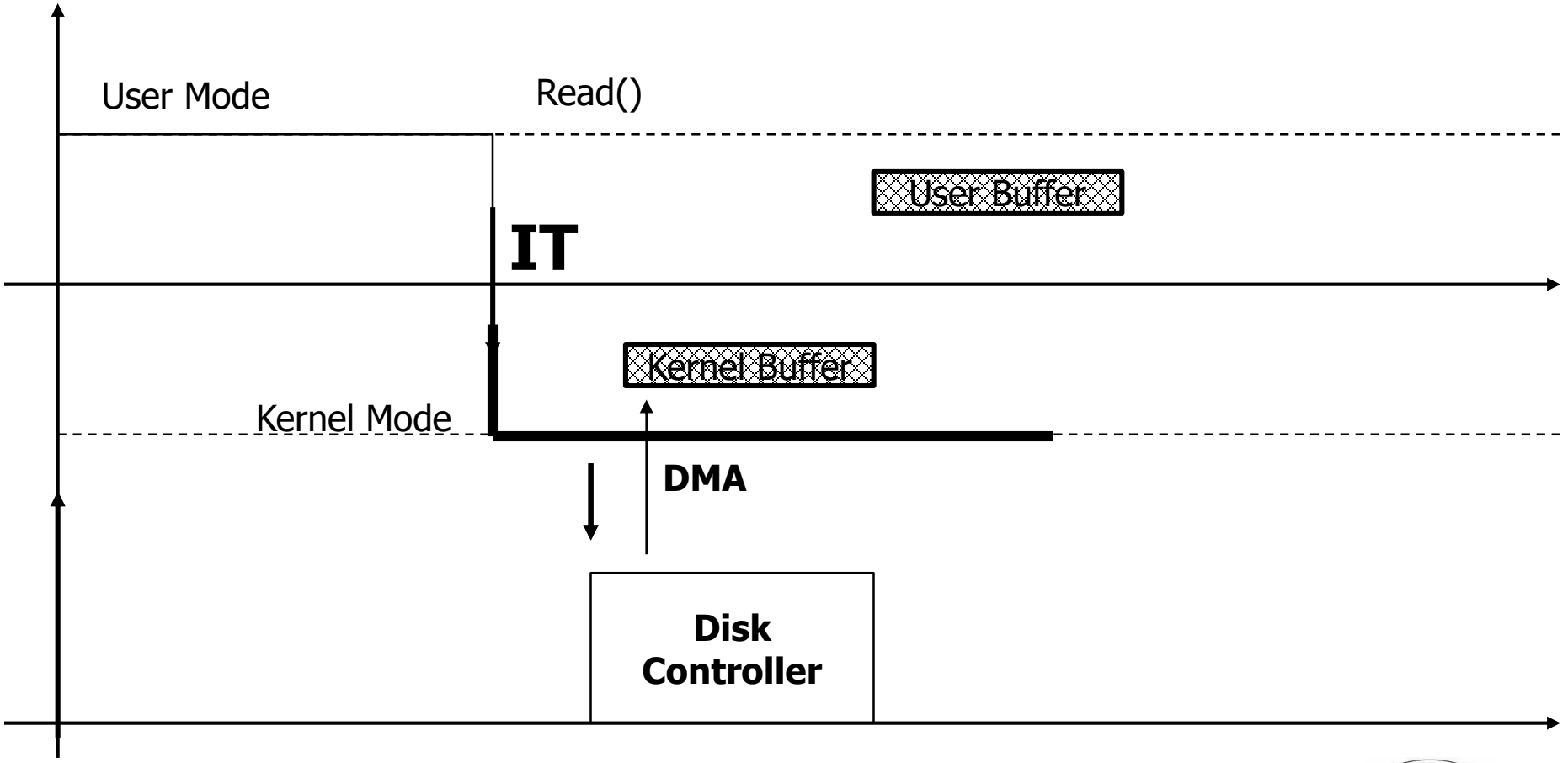


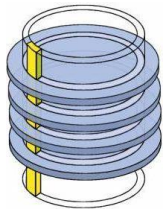
I/O


User Mode
Read()
User Buffer
IT
Kernel Buffer
Kernel Mode
Disk
Controller



I/O


User Mode
Read()
User Buffer
IT
Kernel Buffer
Kernel Mode
DMA
Disk
Controller



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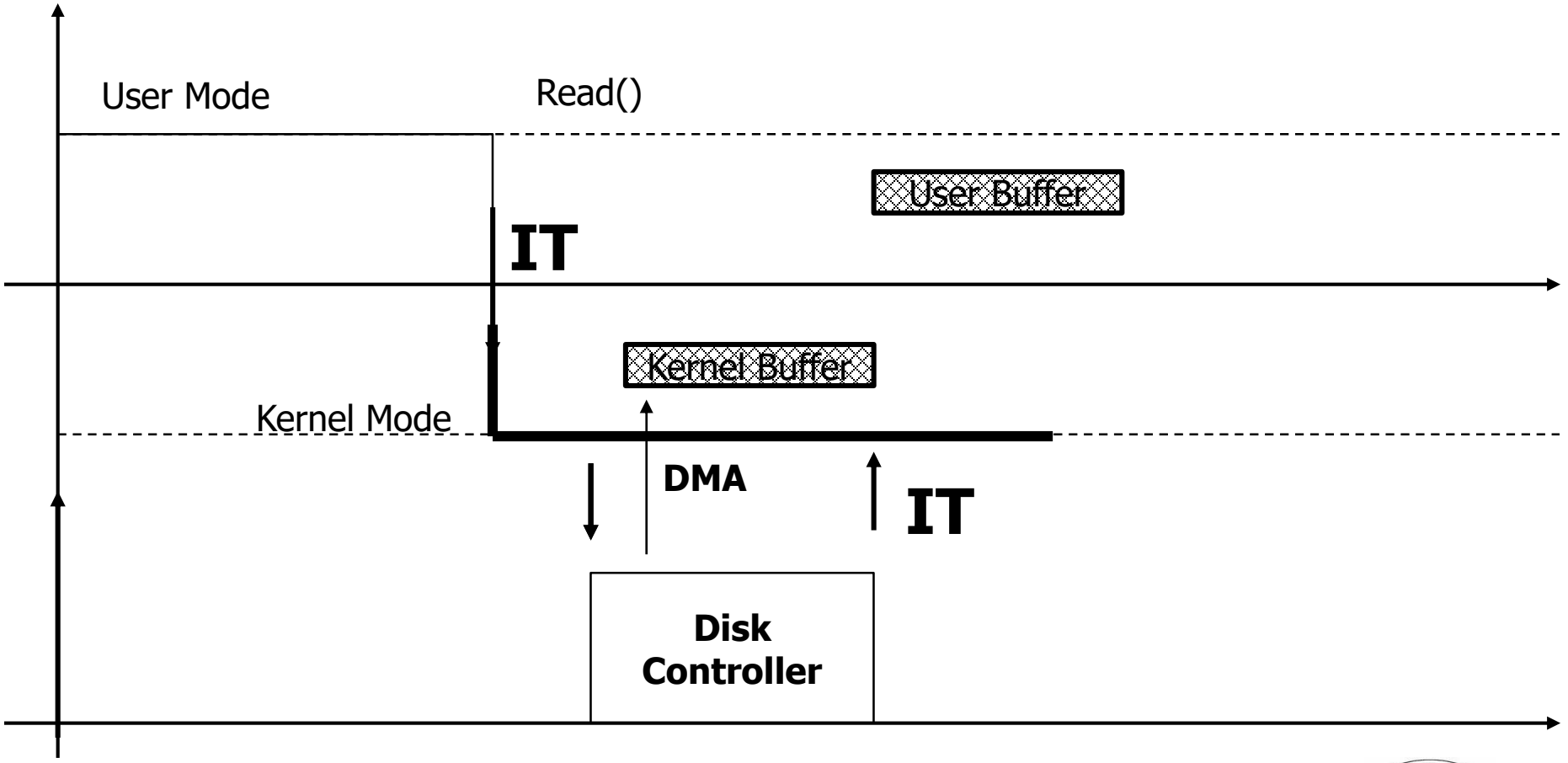
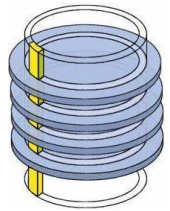
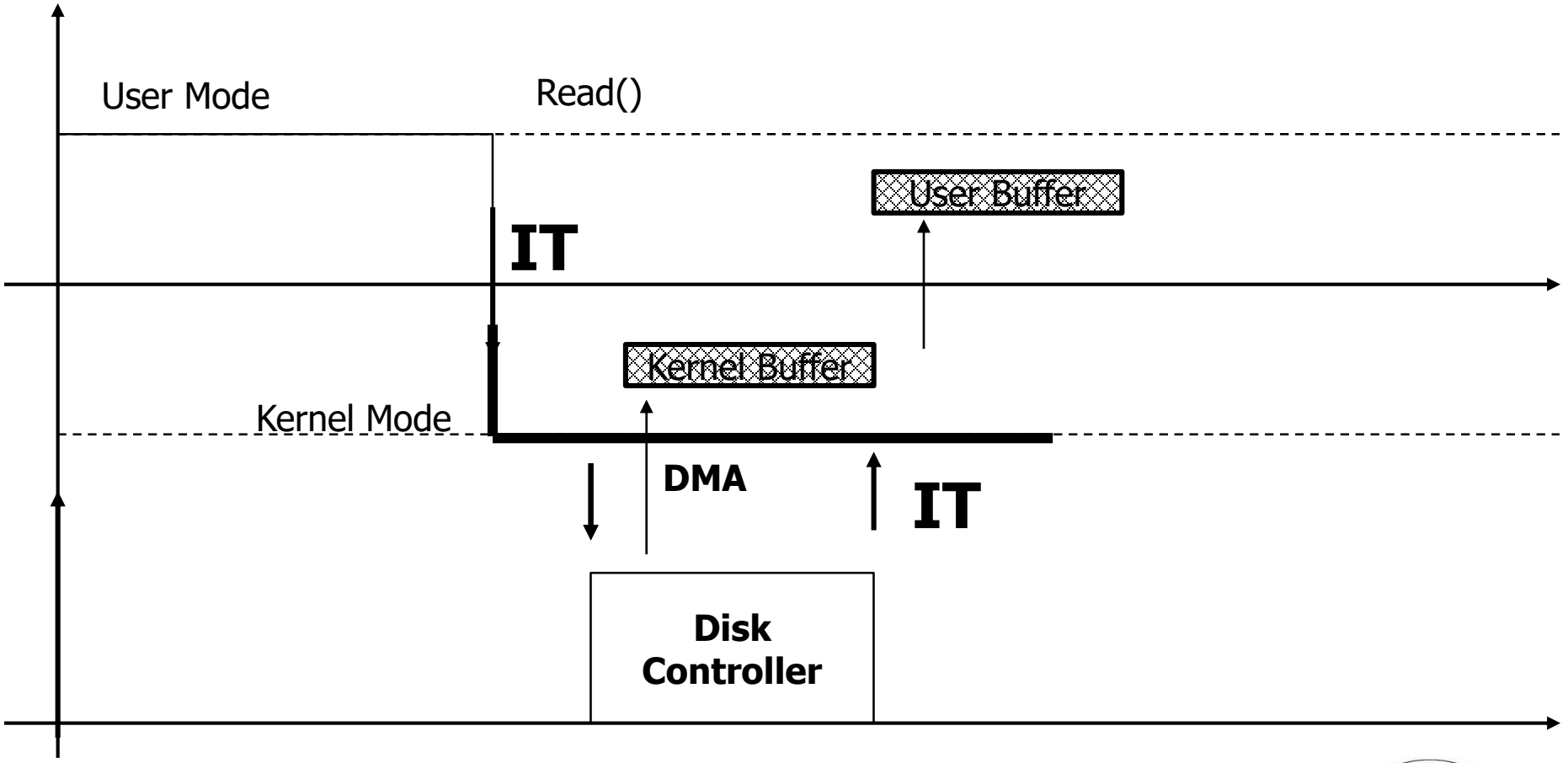
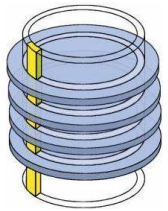

User Mode
Read()
User Buffer
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

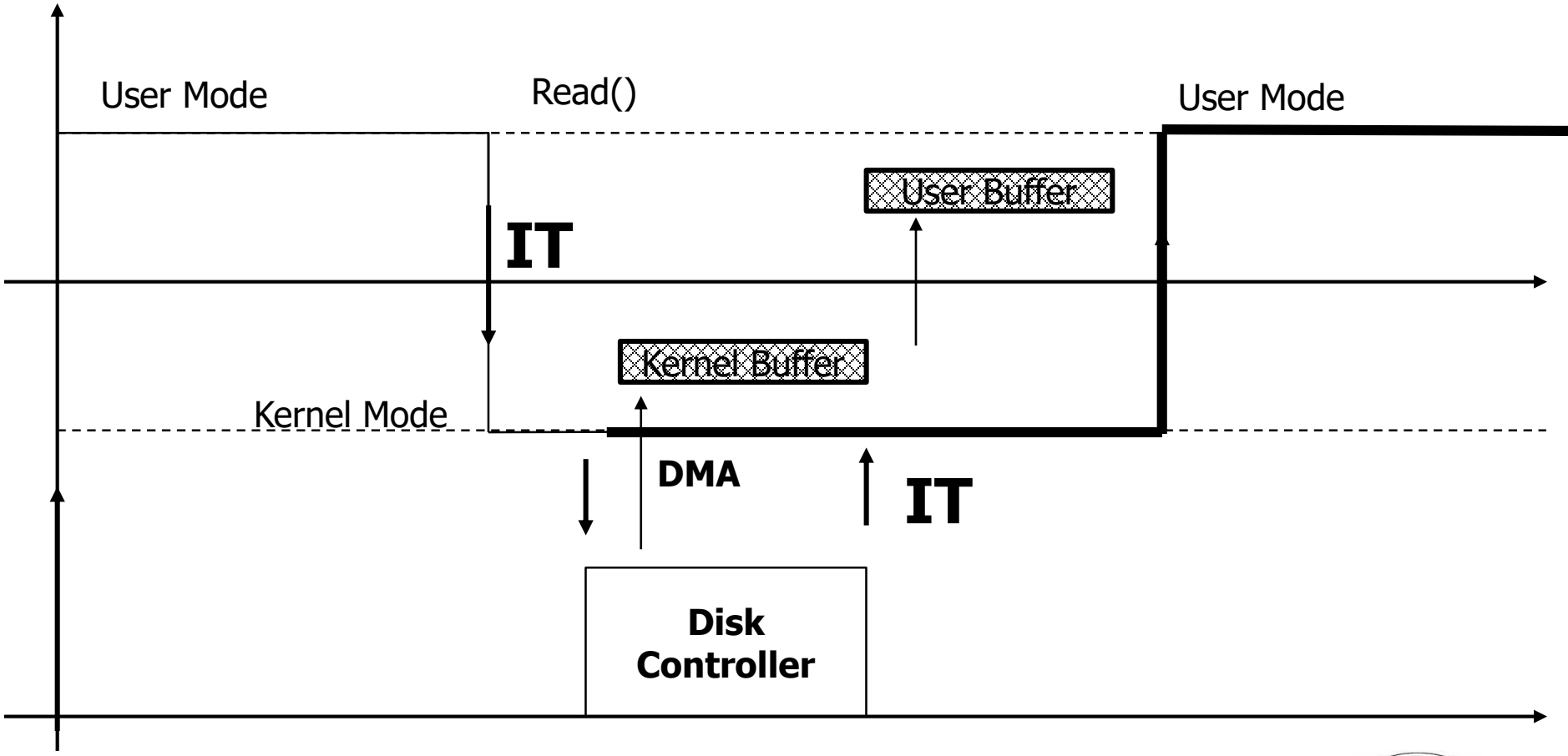


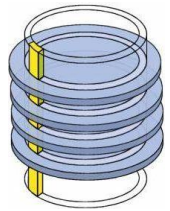
I/O


User Mode
Read()
User Buffer
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

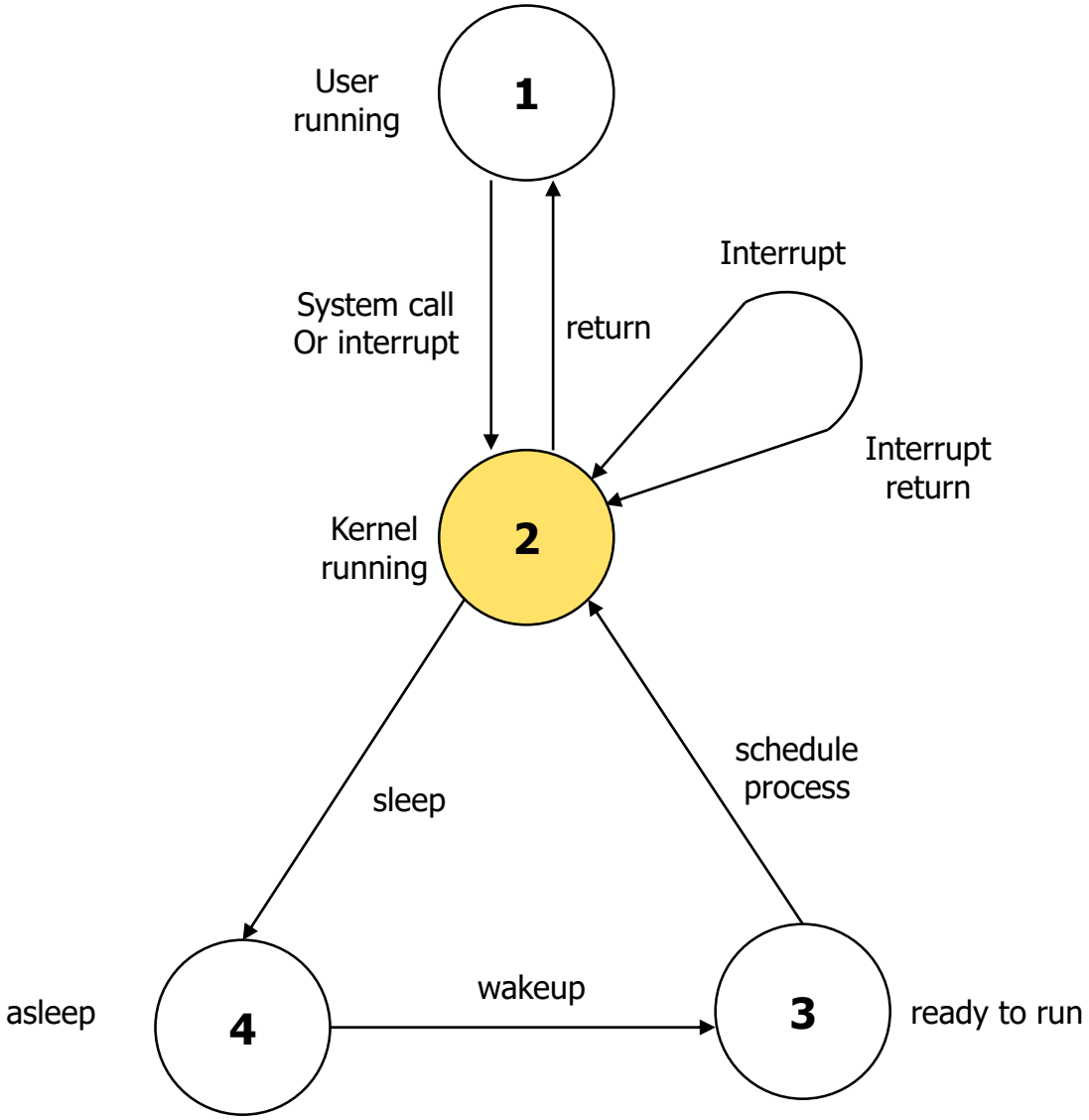


I/O

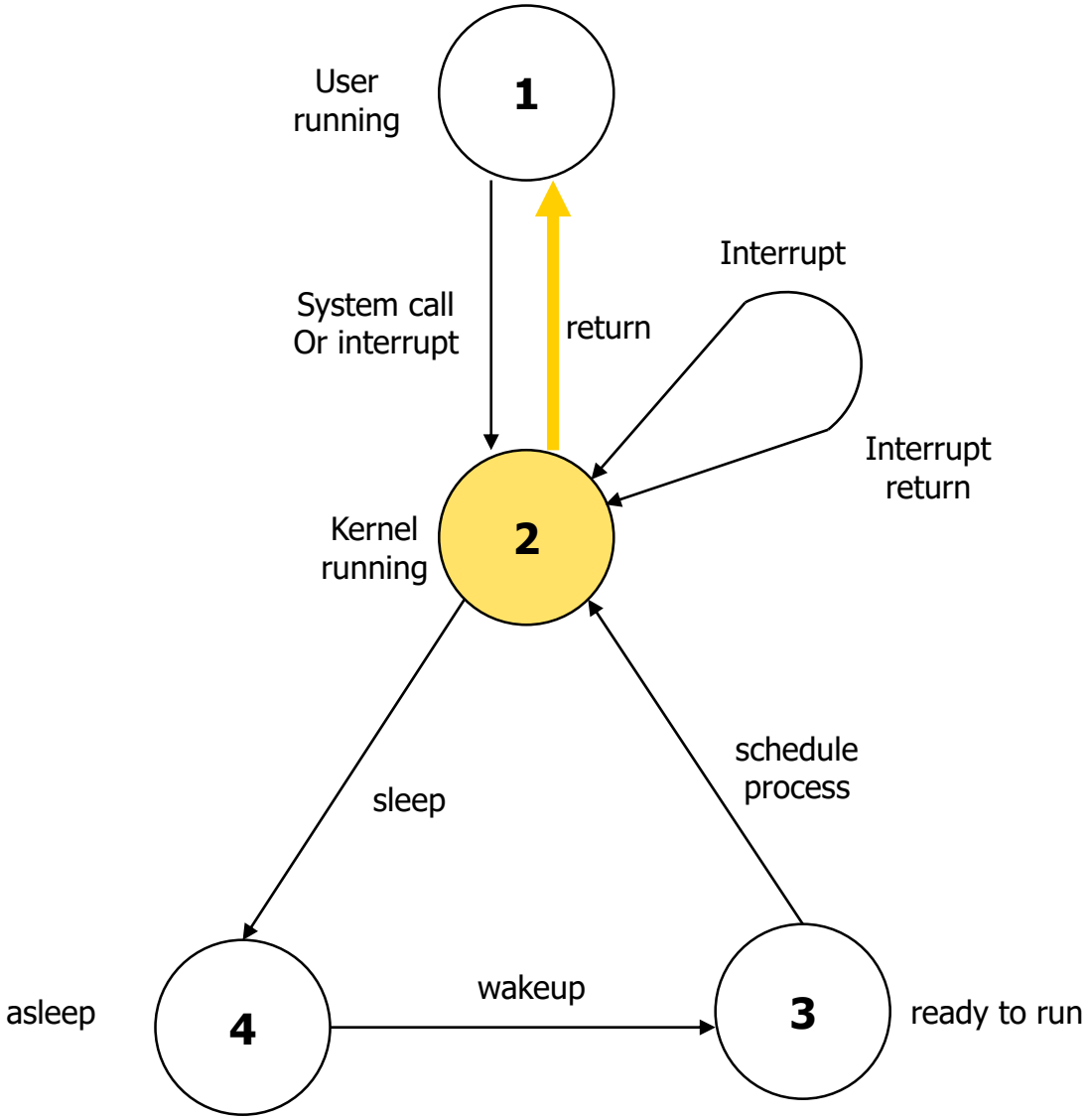

User Mode
Read()
User Mode
User Buffer
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller



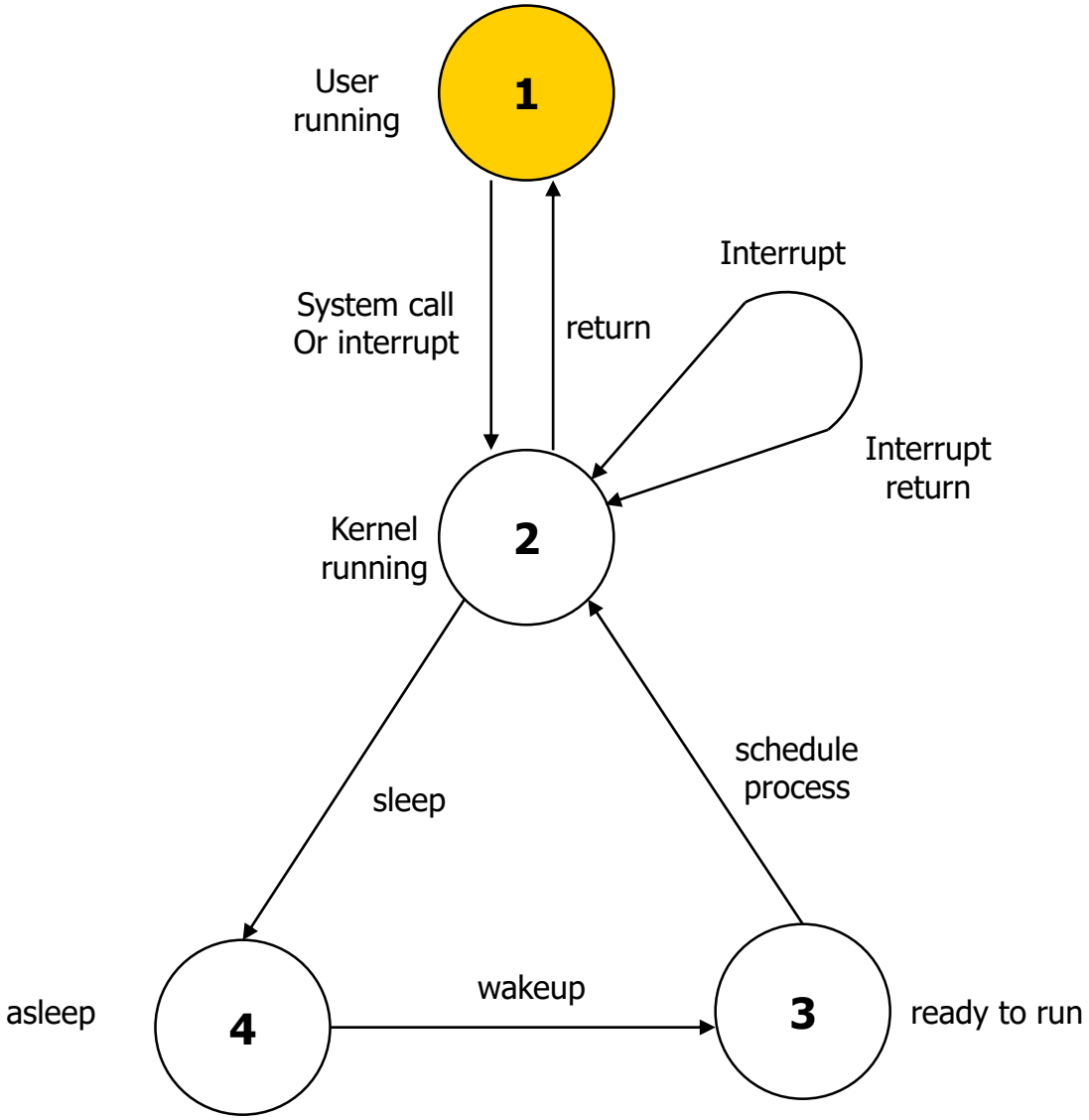
BACH process state diagram



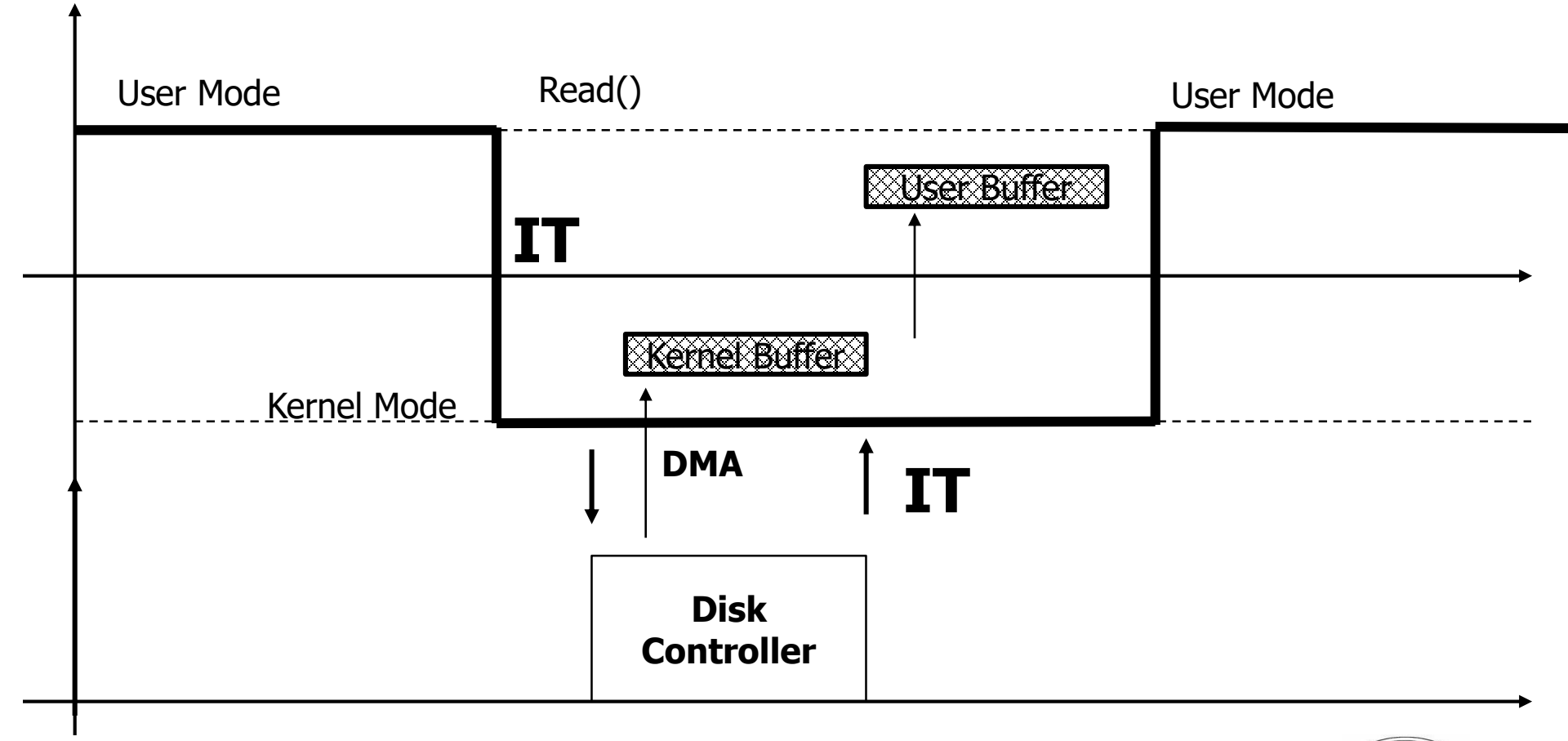
BACH process state diagram



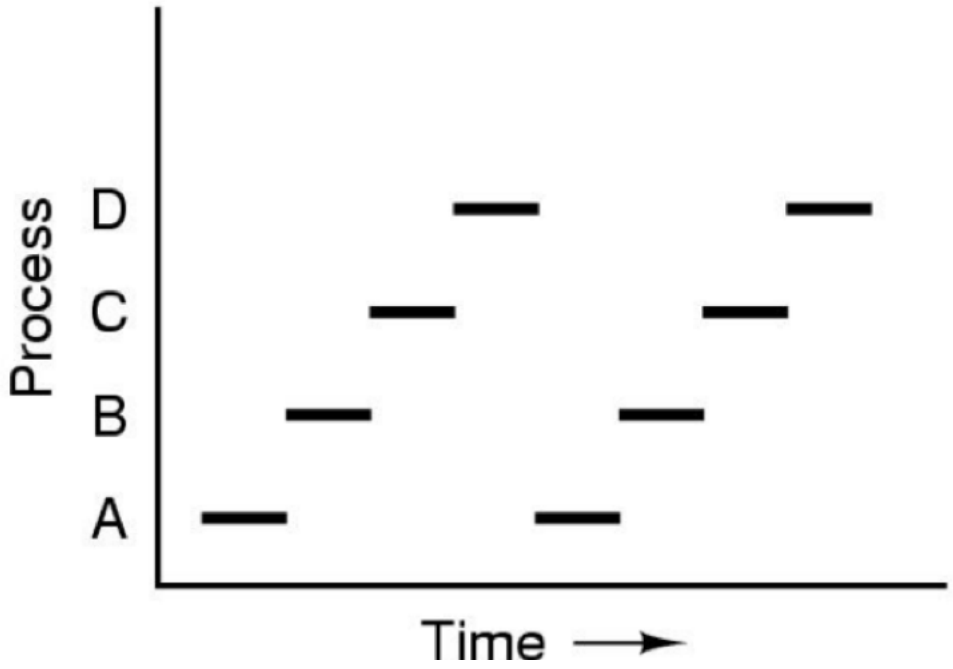
BACH process state diagram



I/O


User Mode
Read()
User Mode
User Buffer
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

N process : Multi-process



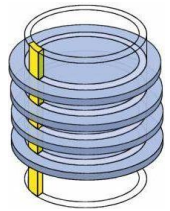
I/O

User Mode P1

User Buffer

User Mode P2

Kernel Mode



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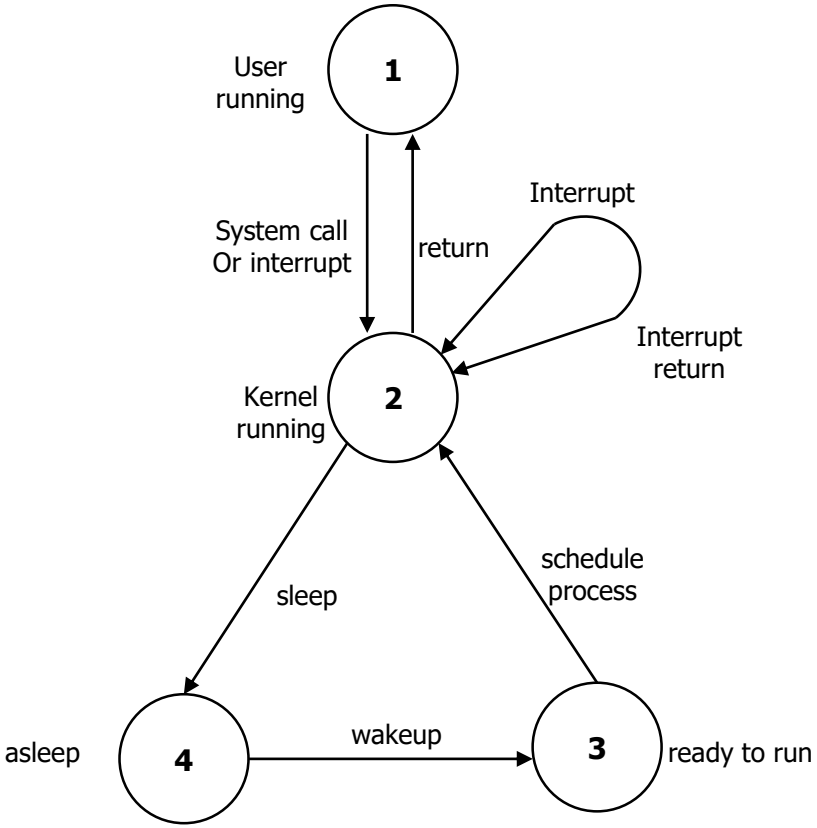
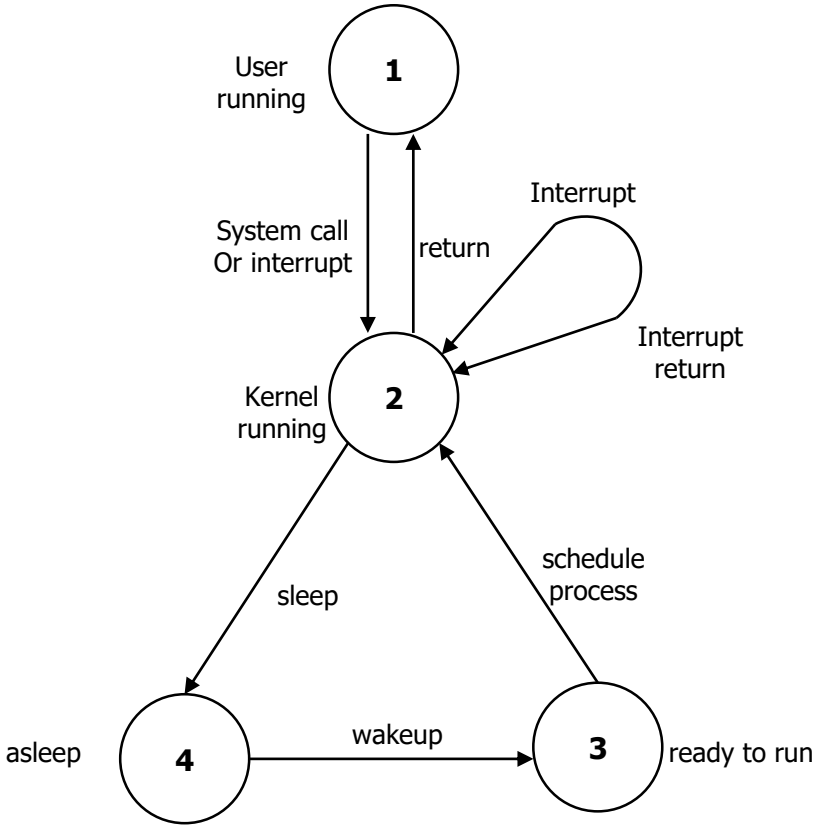
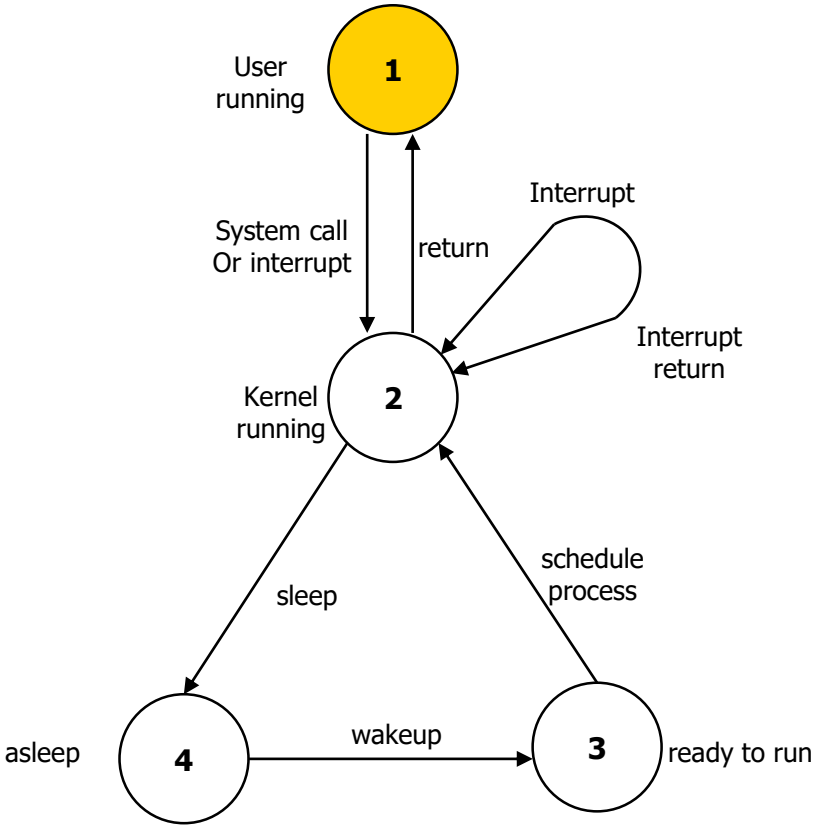
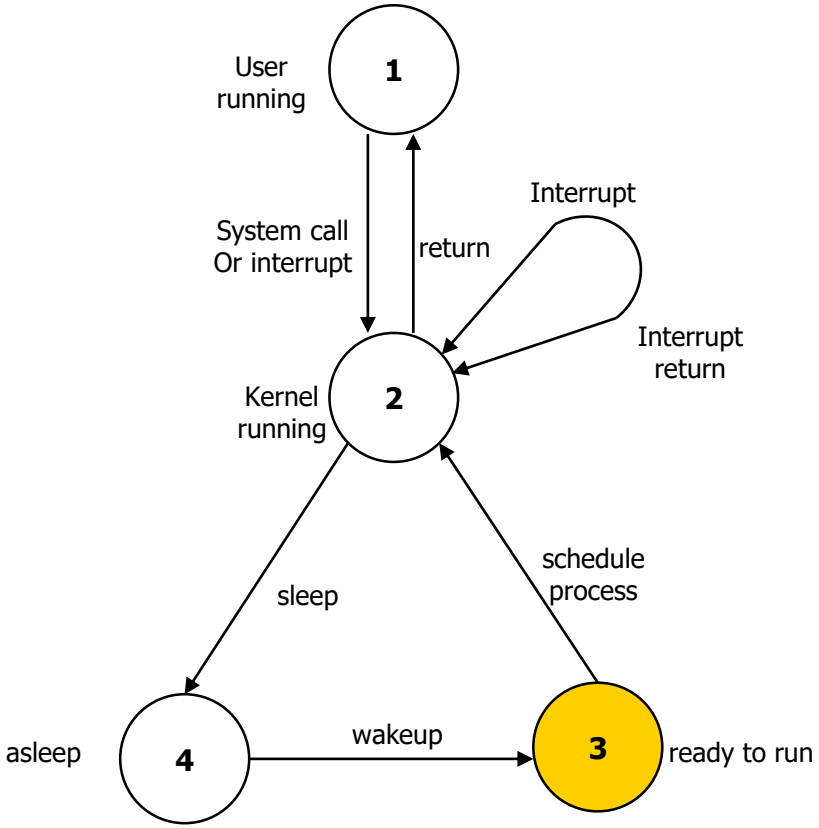




BACH process state diagram





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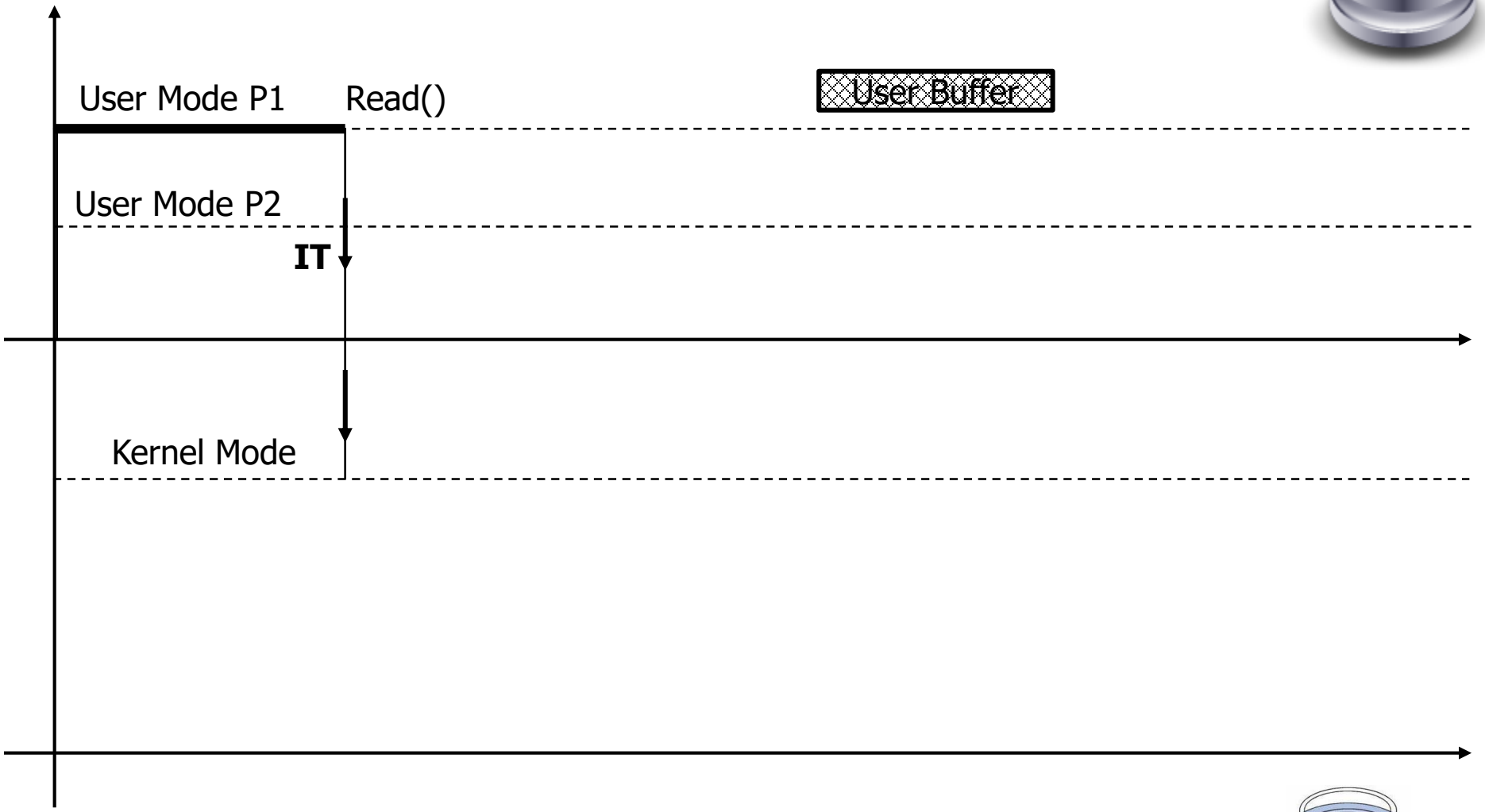
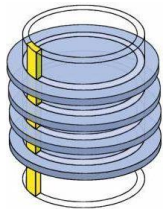
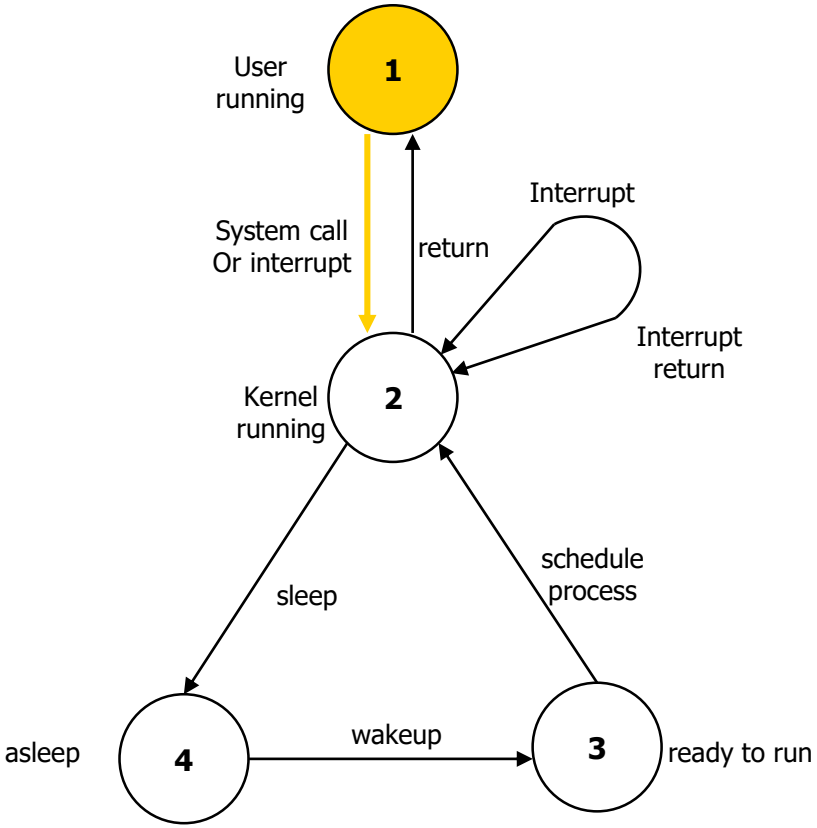
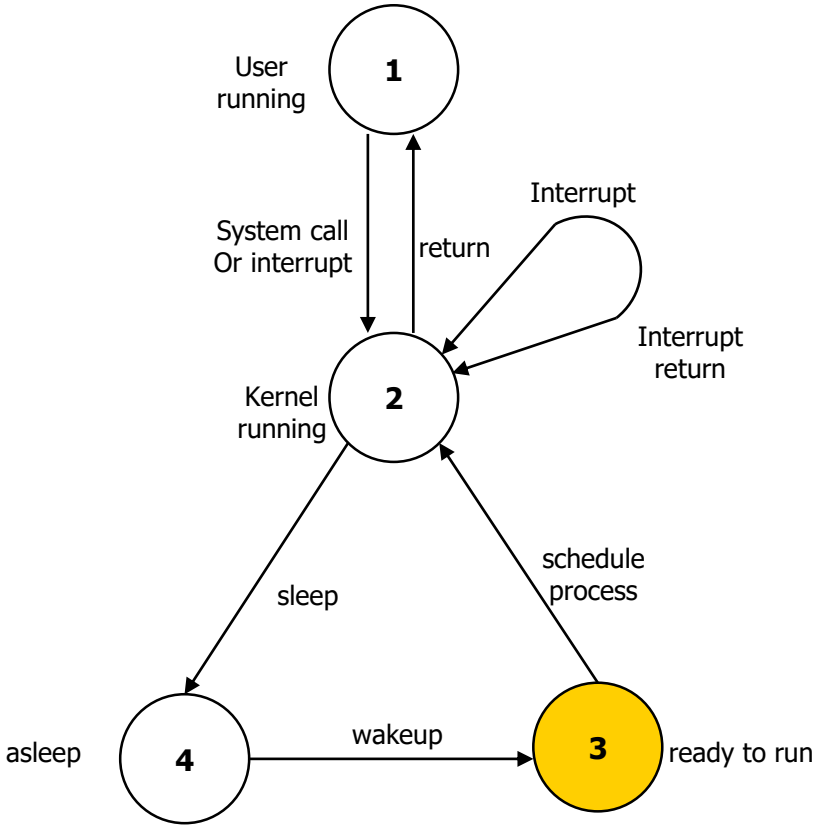


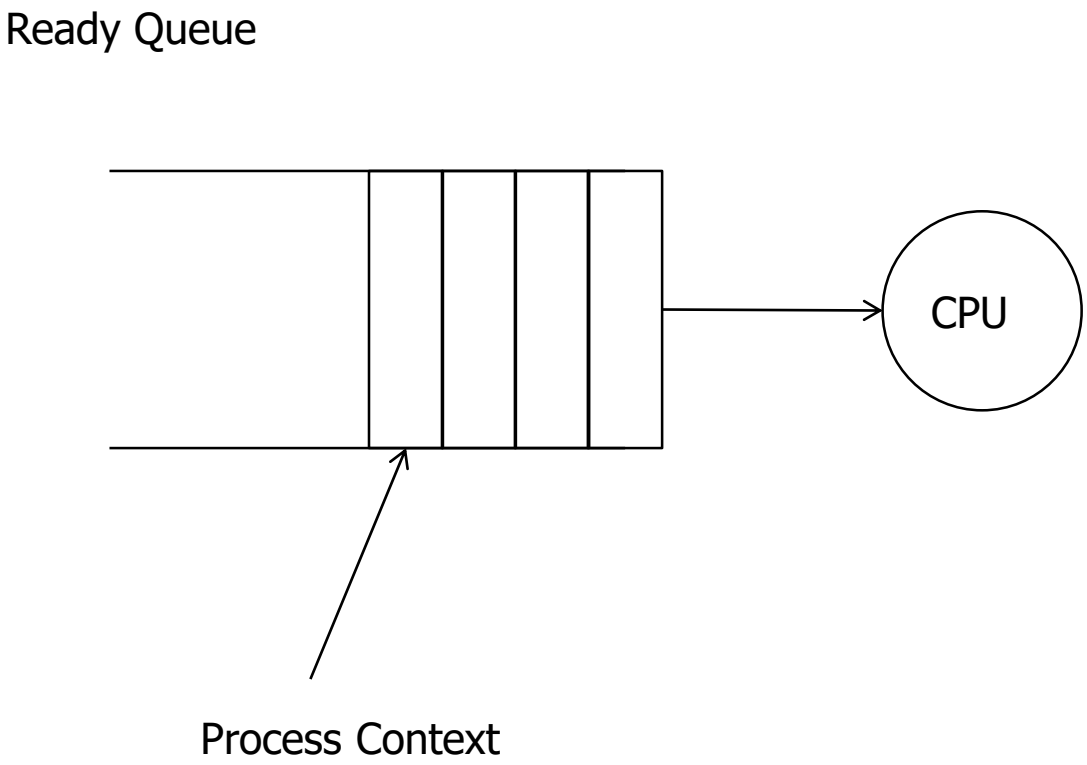


BACH process state diagram

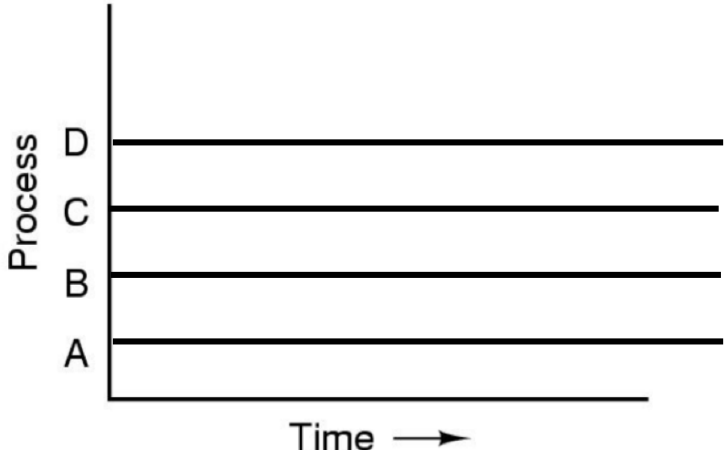


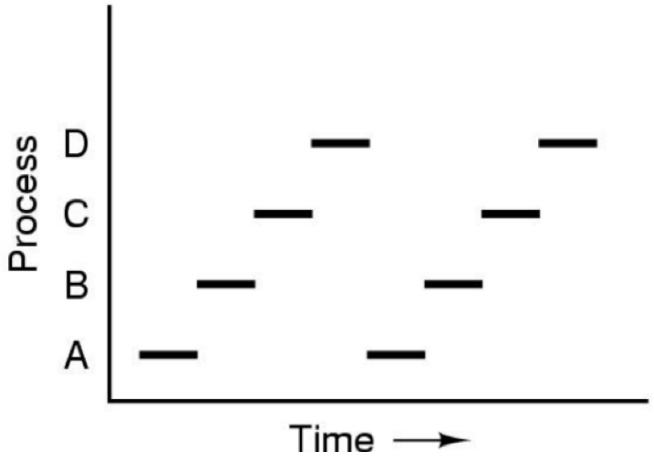


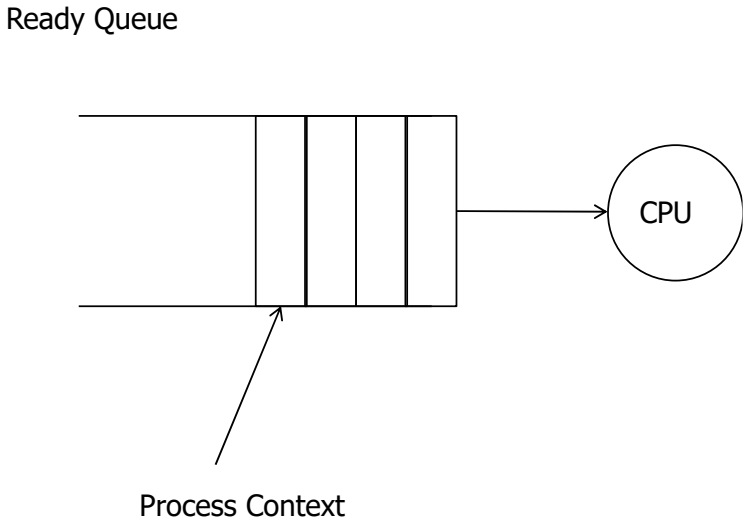
CPU waiting queue



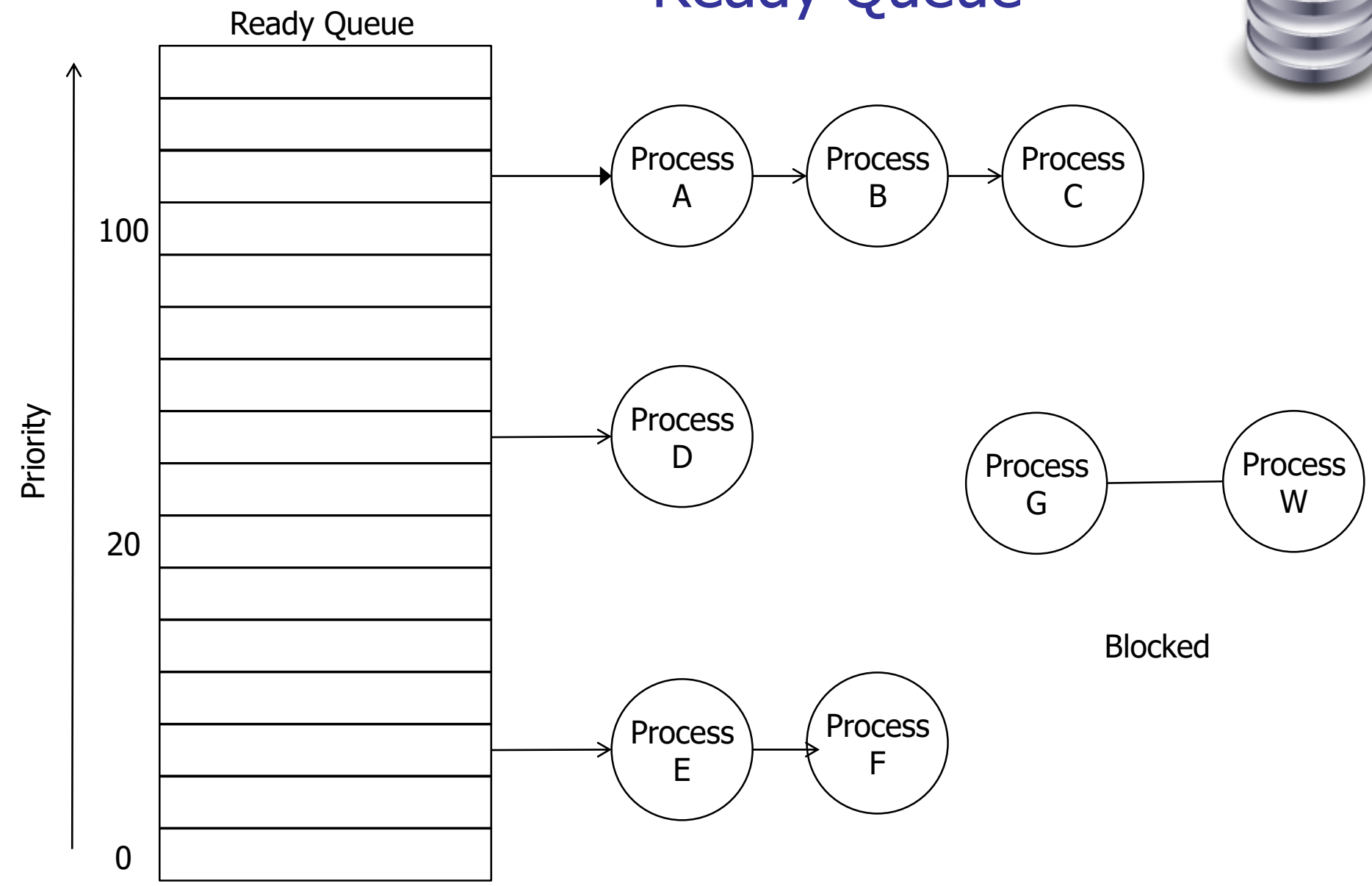
CPU waiting queue



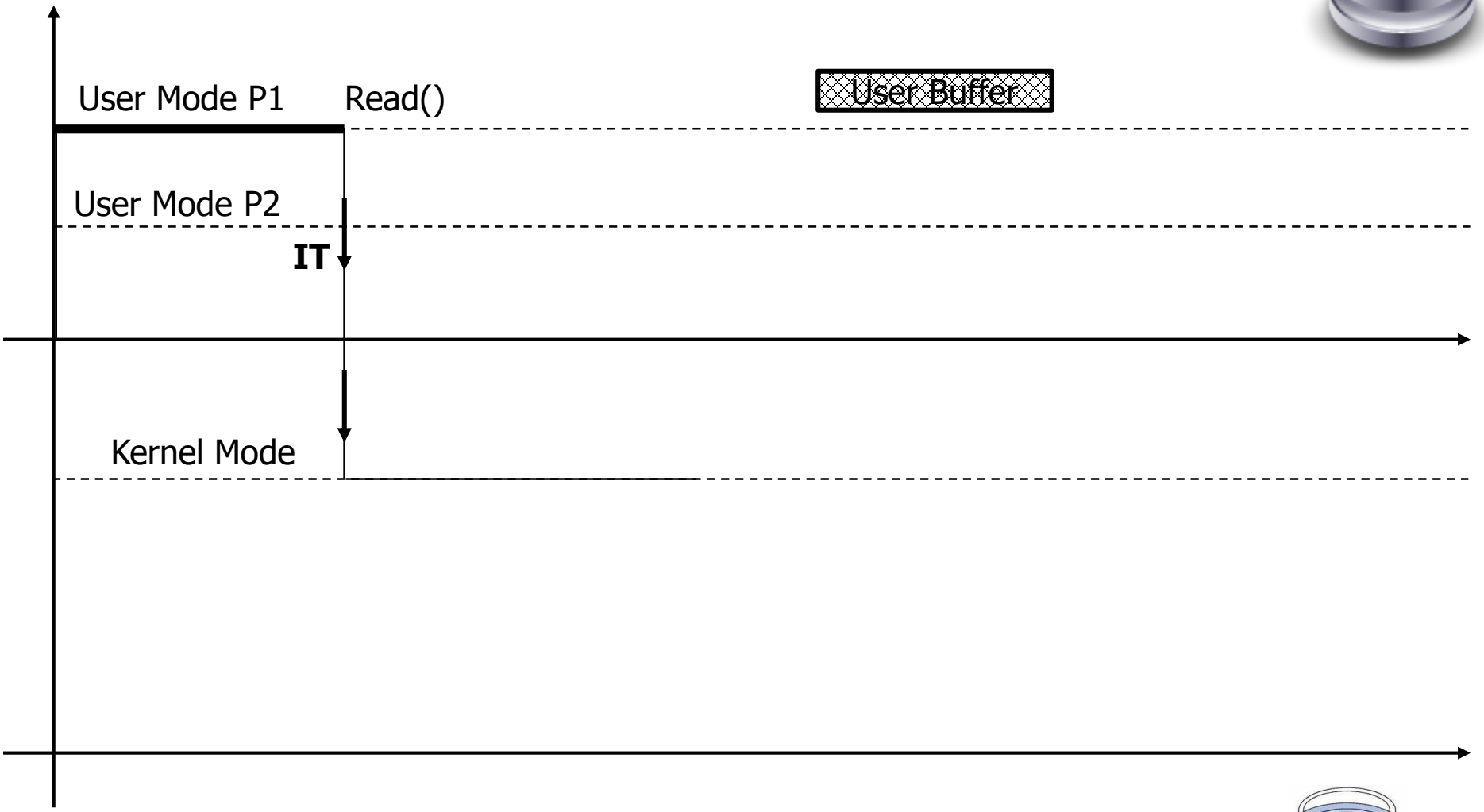


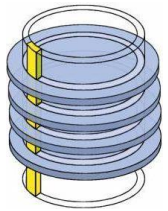


Ready Queue

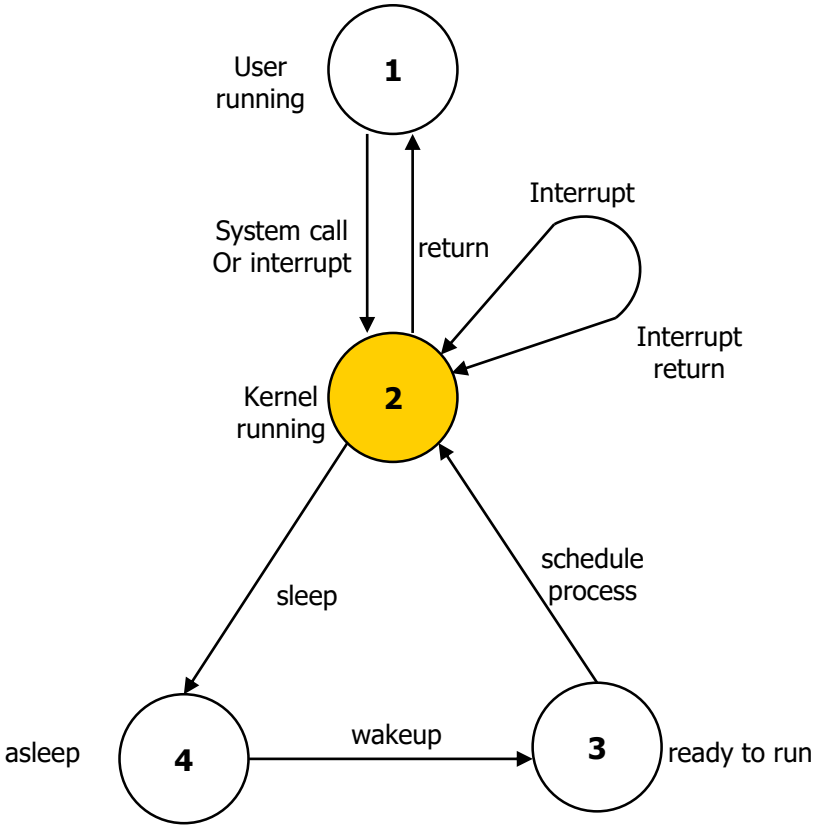

Ready Queue
Priority
100
20
0
Process A
Process B
Process C
Process D
Process E
Process F
Process G
Process W
Blocked

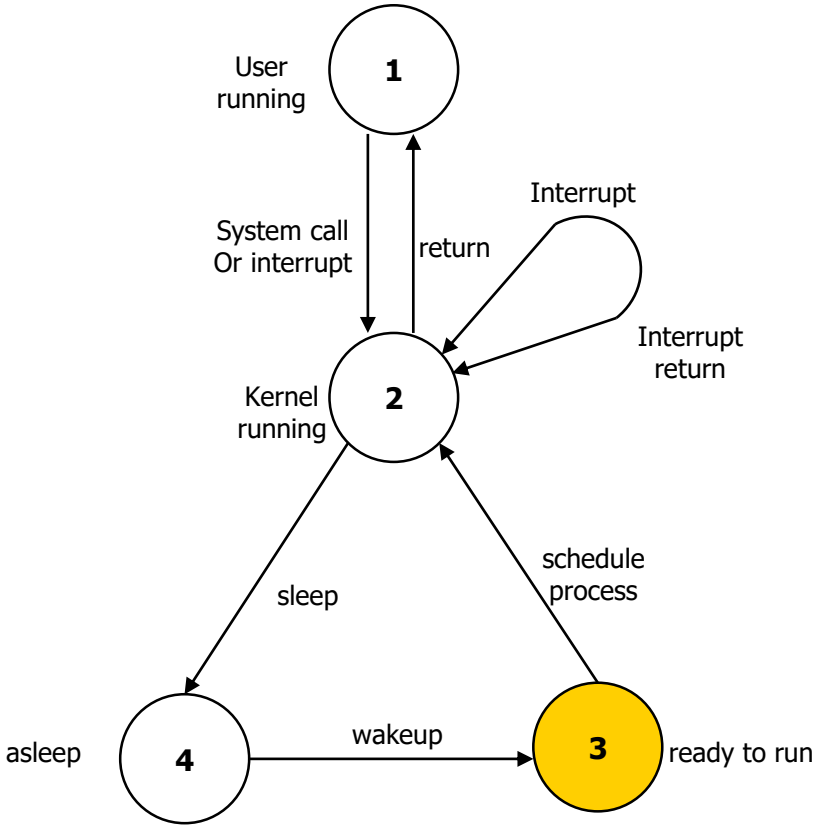
I/O





BACH process state diagram





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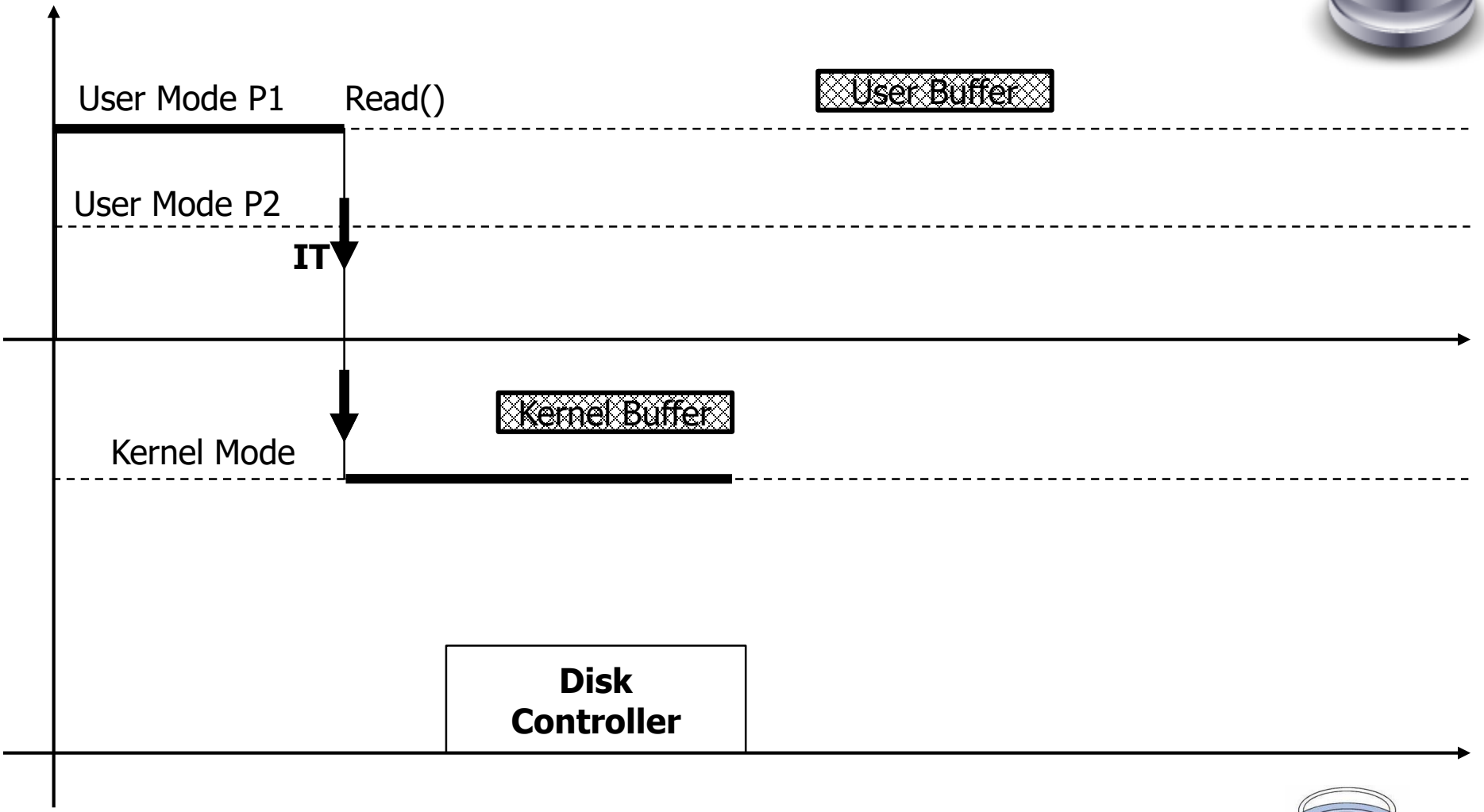
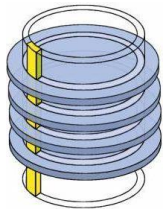

User Mode P1
Read()
User Buffer
User Mode P2
IT
Kernel Buffer
Kernel Mode
Disk
Controller



I/O

User Mode P1 Read() User Buffer

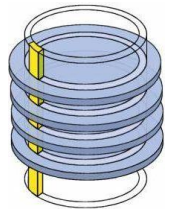
User Mode P2

IT

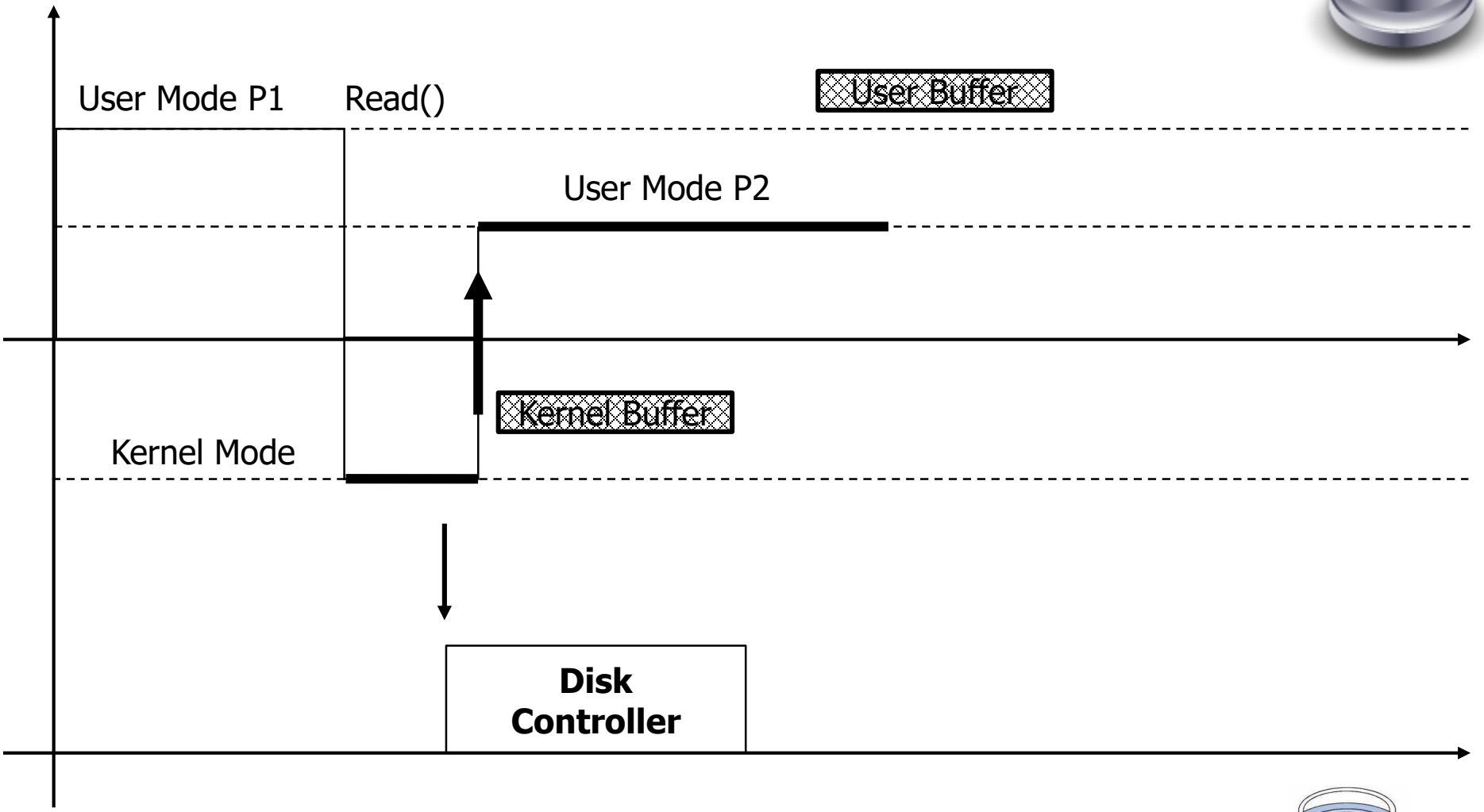
Kernel Buffer

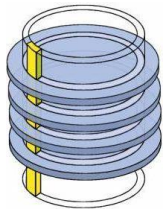
Kernel Mode

Disk Controller

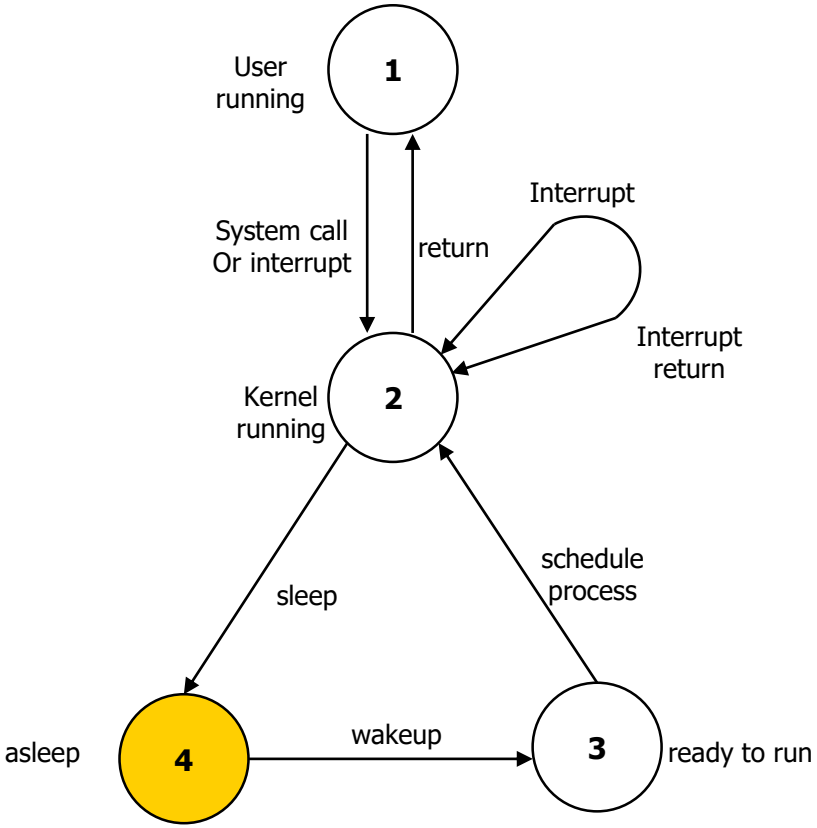


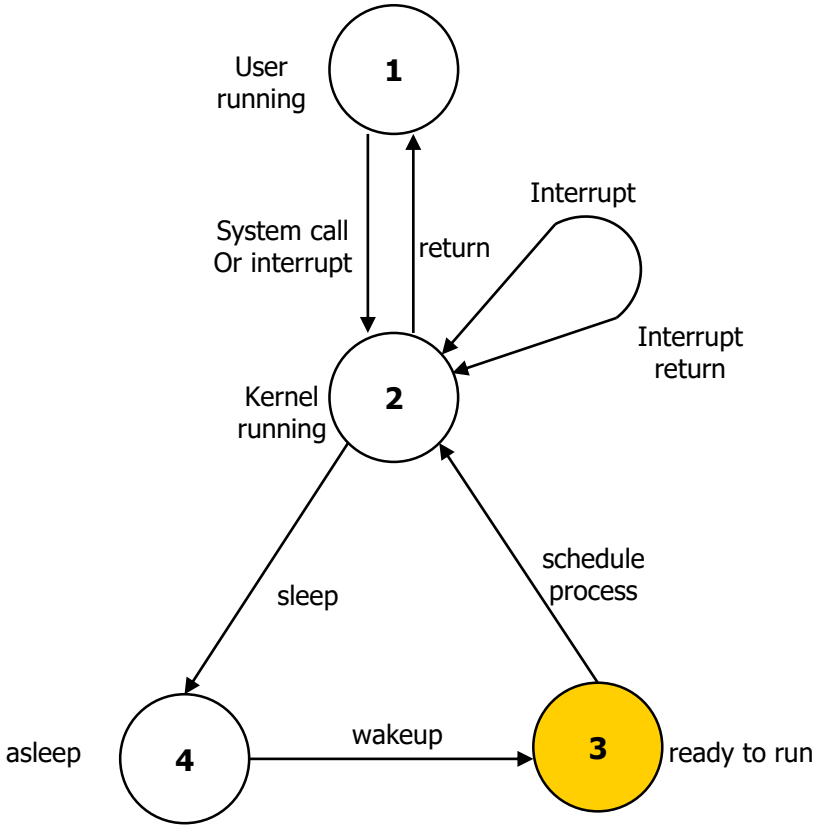
I/O


User Mode P1
Read()
User Buffer
User Mode P2
Kernel Buffer
Kernel Mode
Disk
Controller

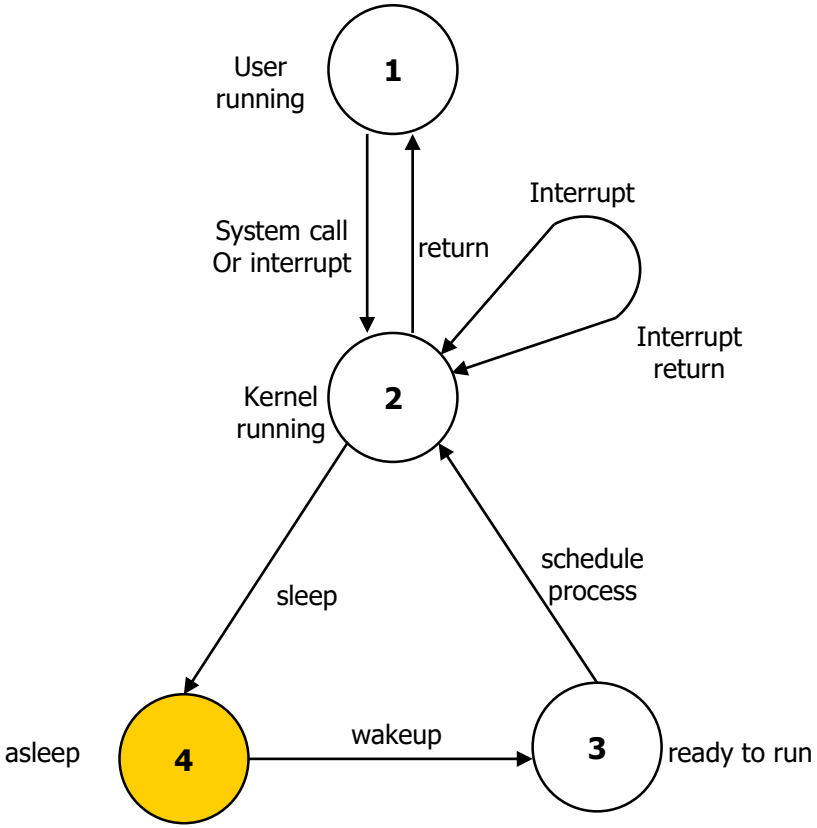


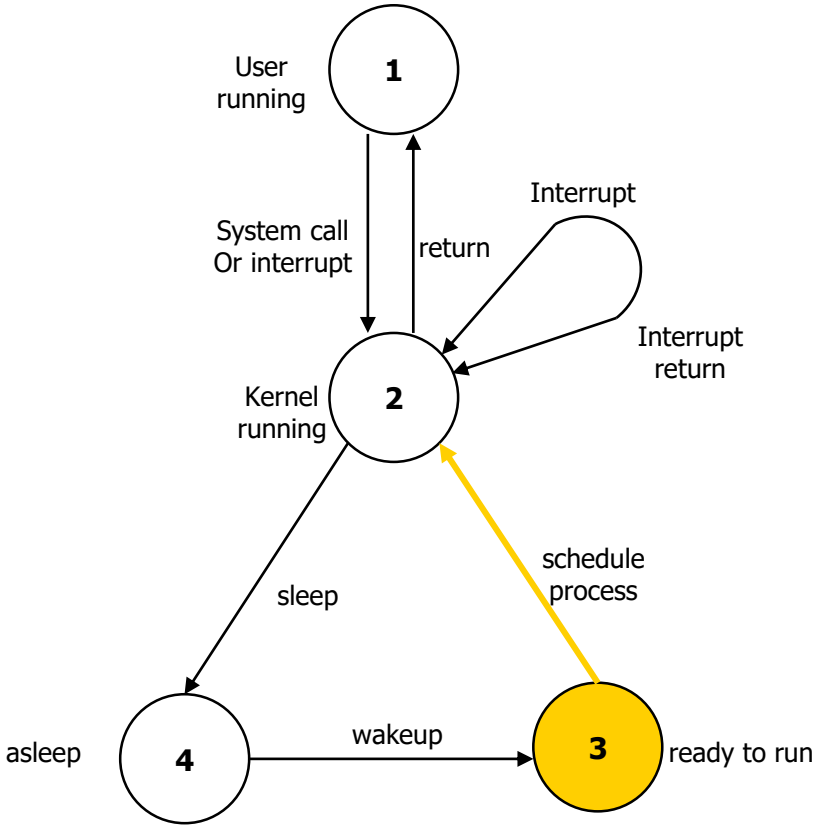
BACH process state diagram





BACH process state diagram





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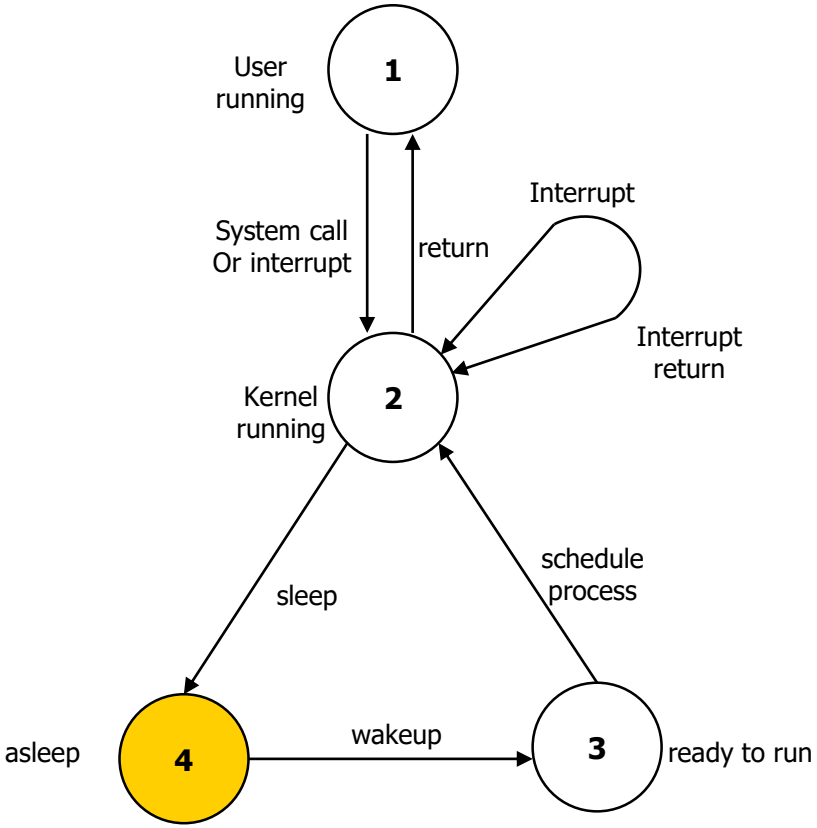

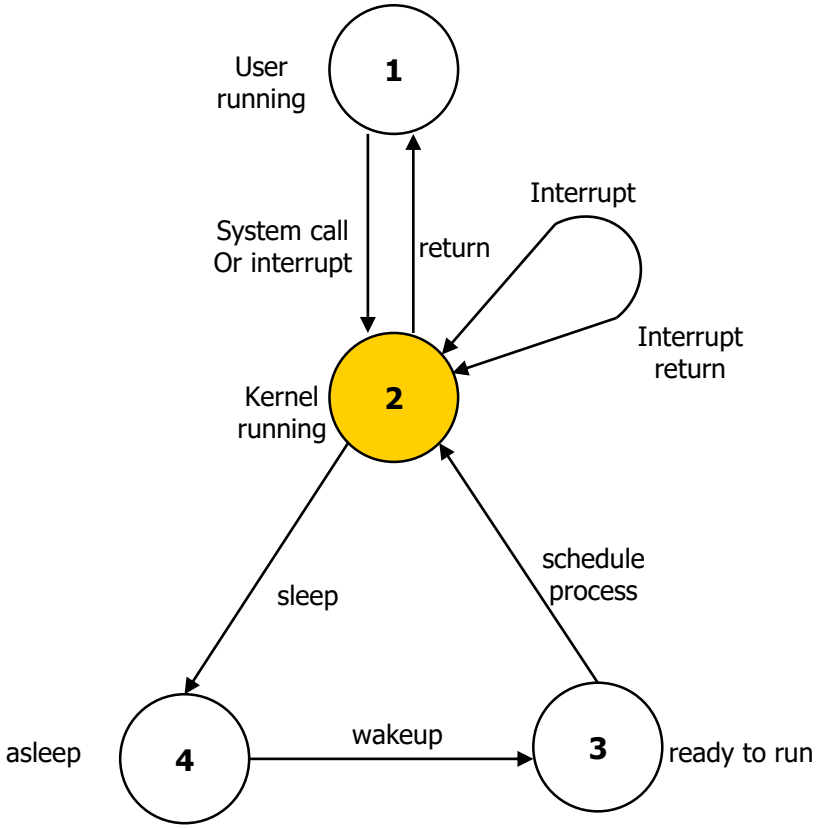

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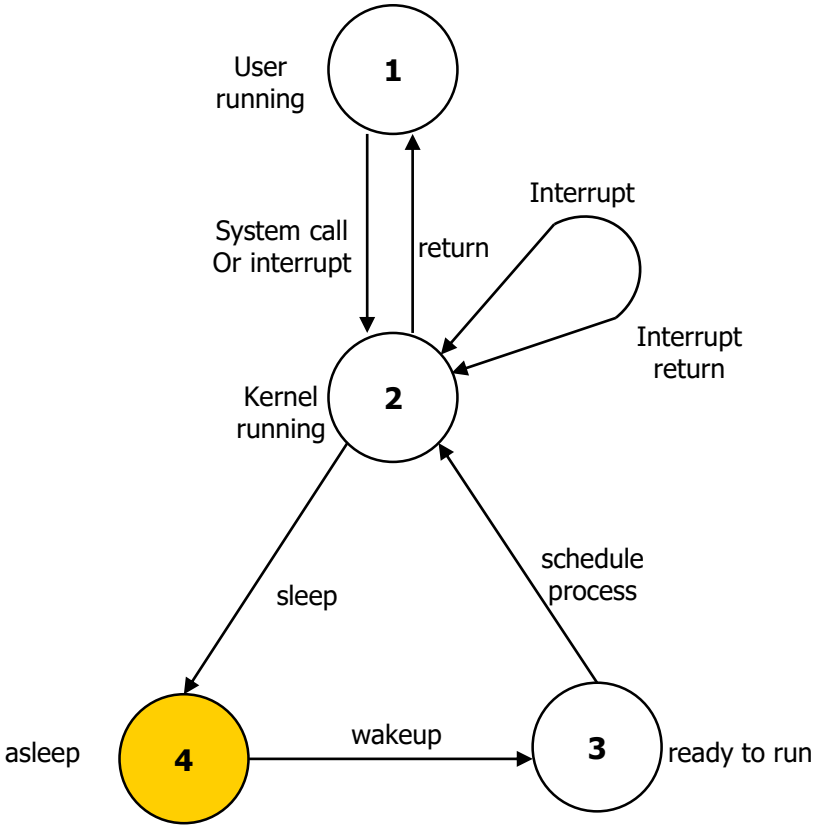

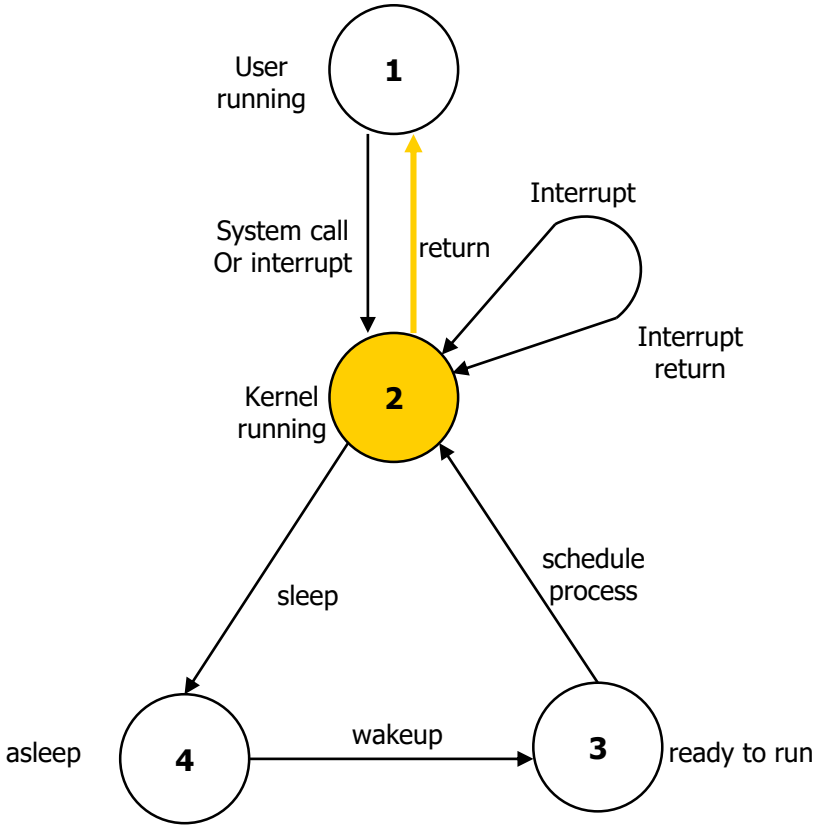

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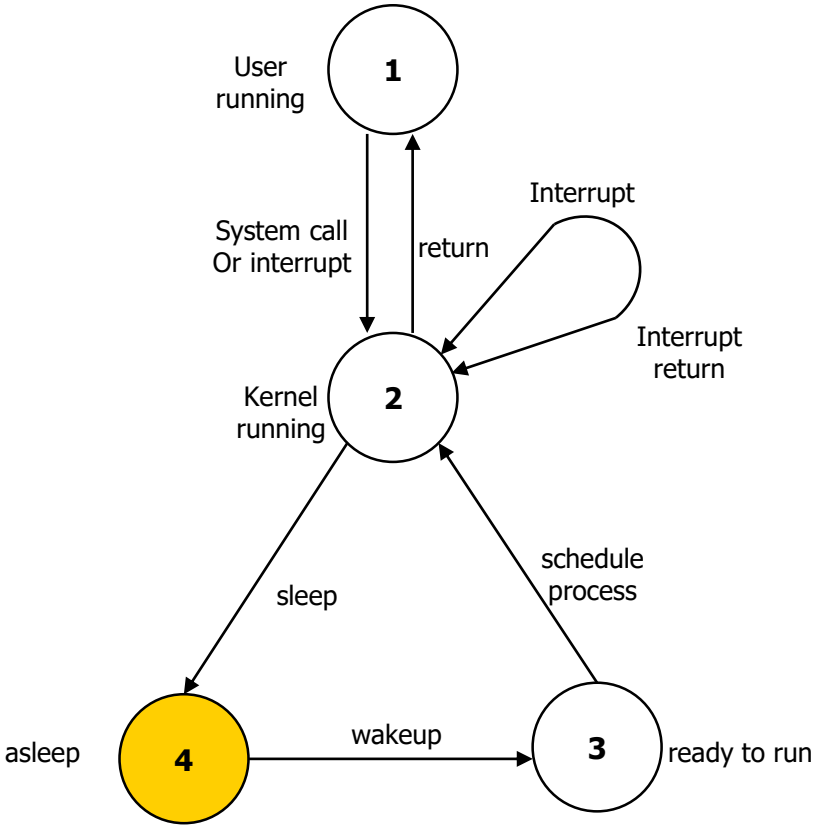

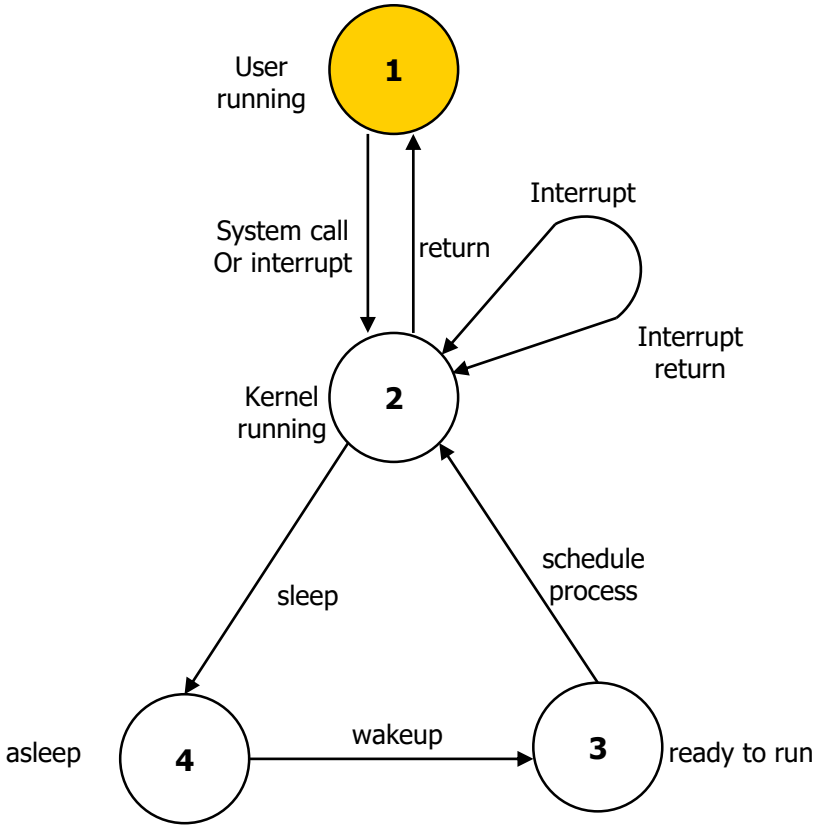

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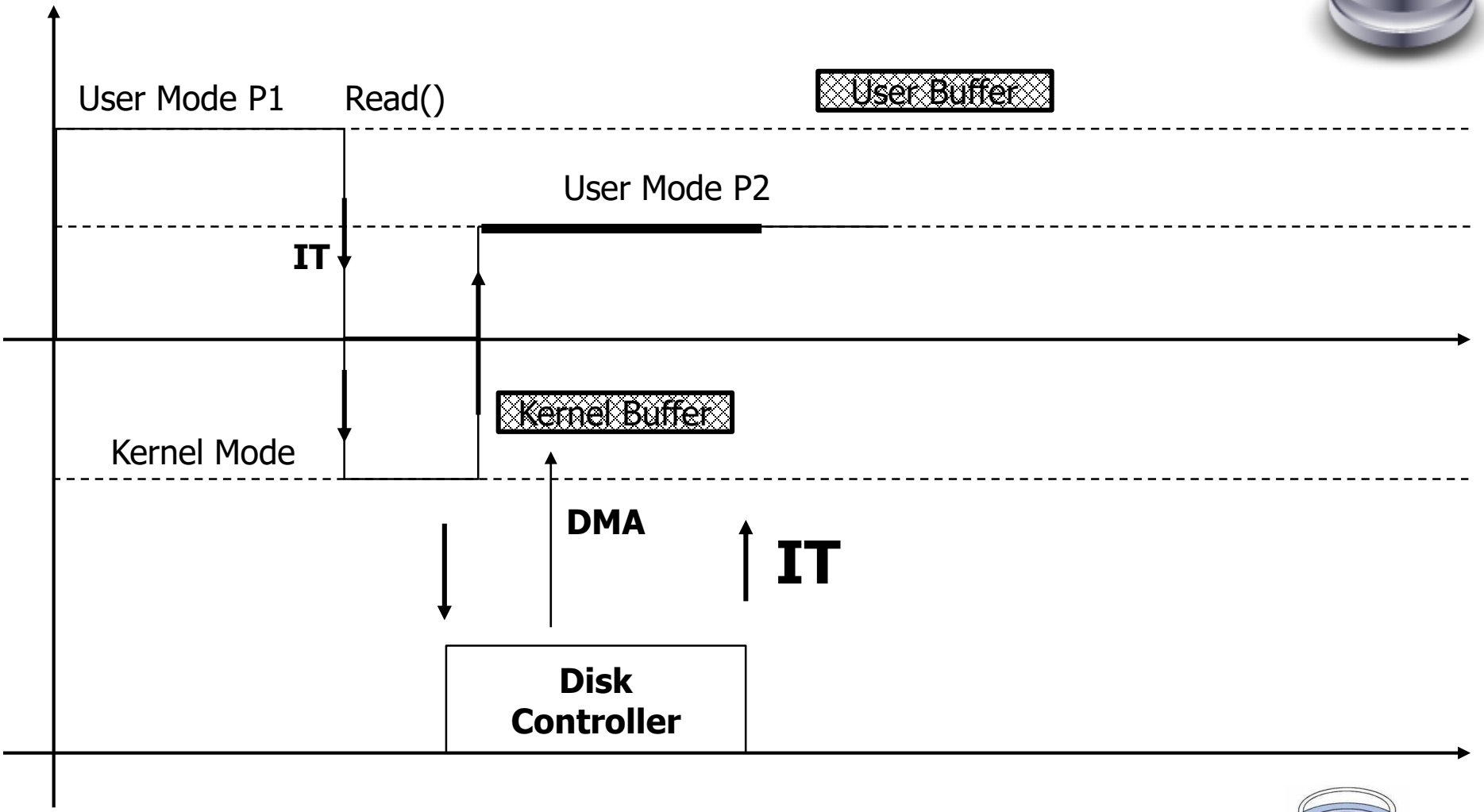
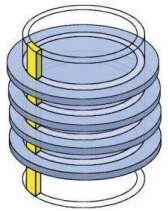

User Mode P1
Read()
User Buffer
User Mode P2
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller



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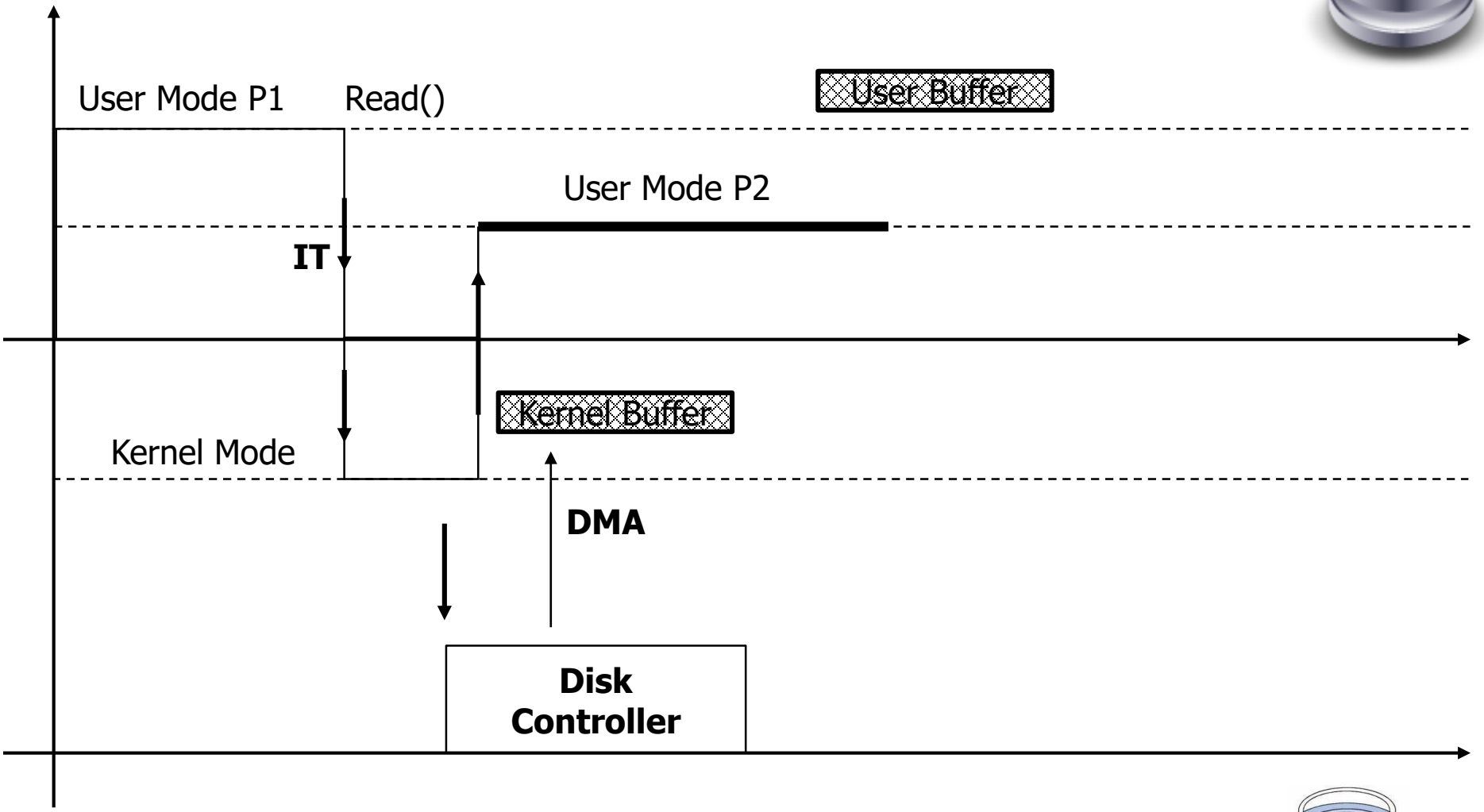
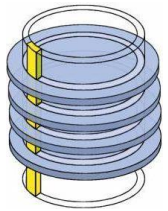

User Mode P1
Read()
User Buffer
User Mode P2
IT
Kernel Buffer
Kernel Mode
DMA
Disk
Controller



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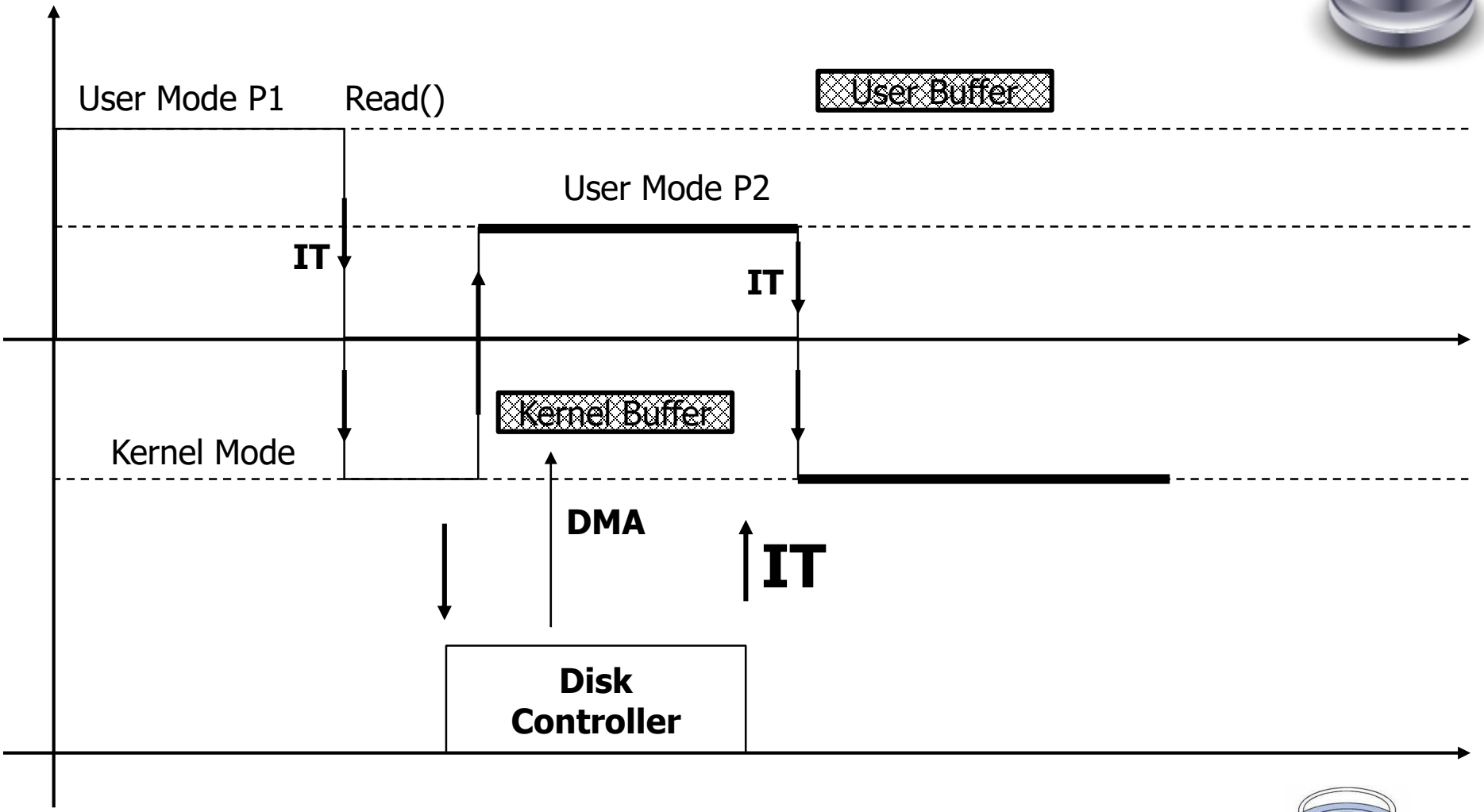
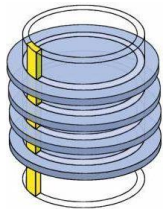
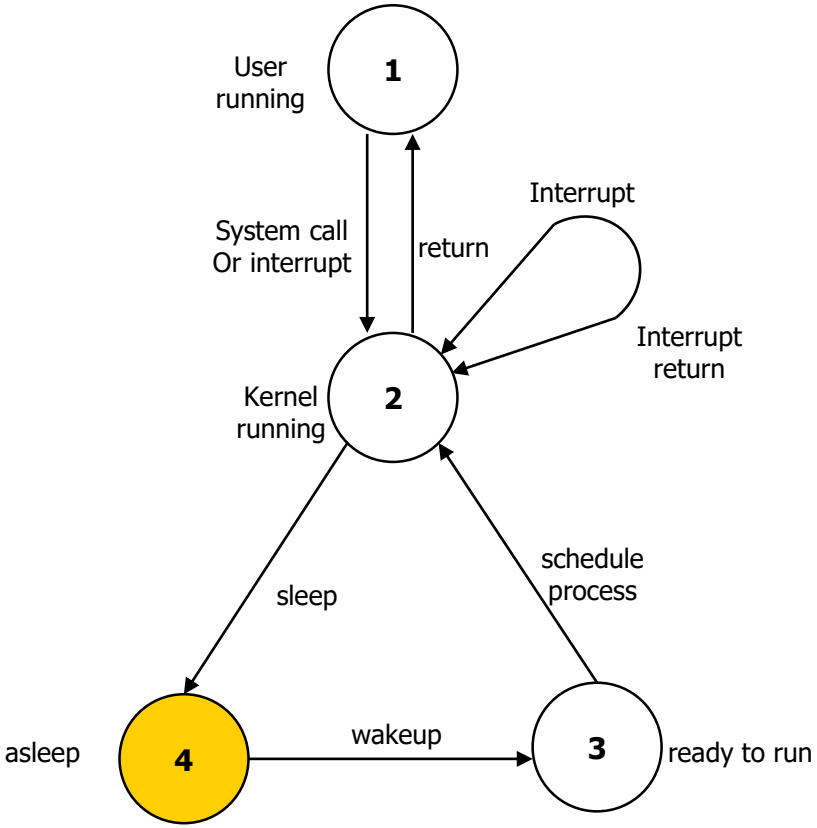
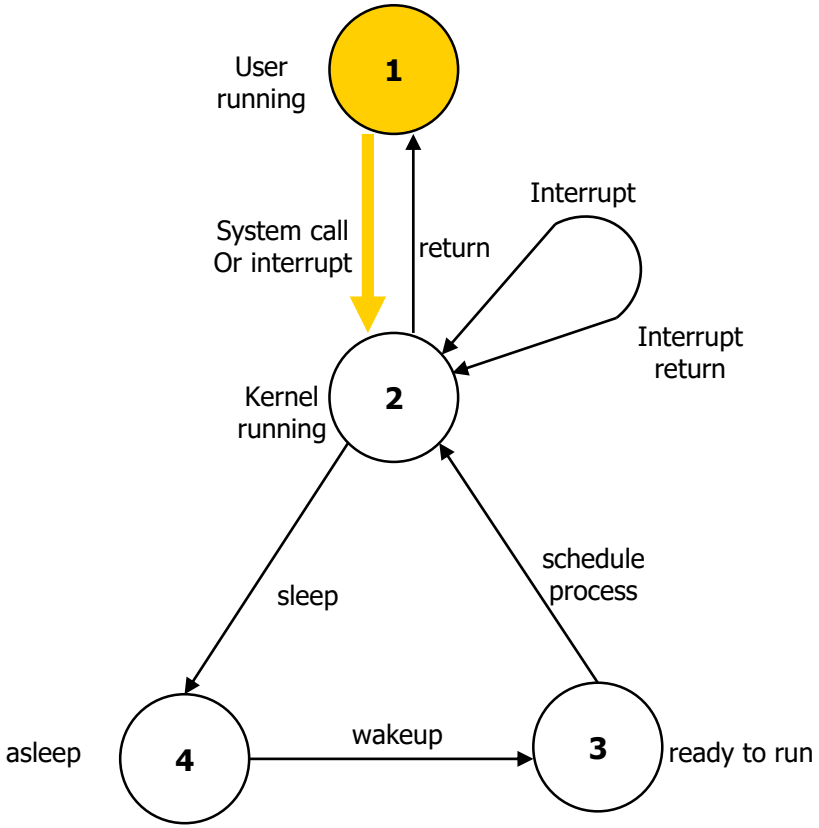

User Mode P1
Read()
User Buffer
User Mode P2
IT
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

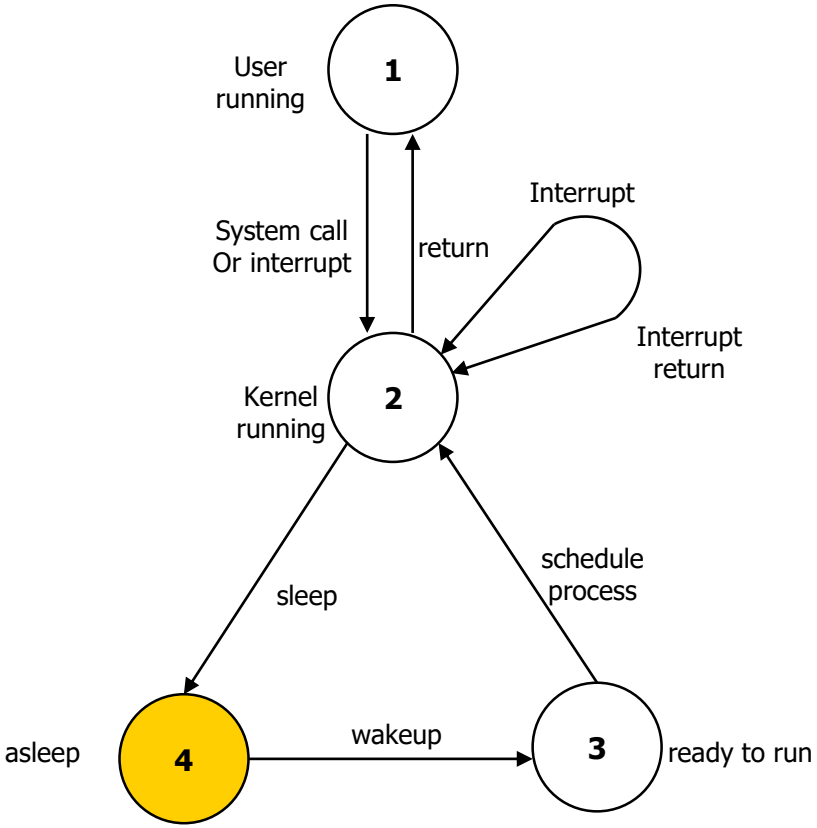


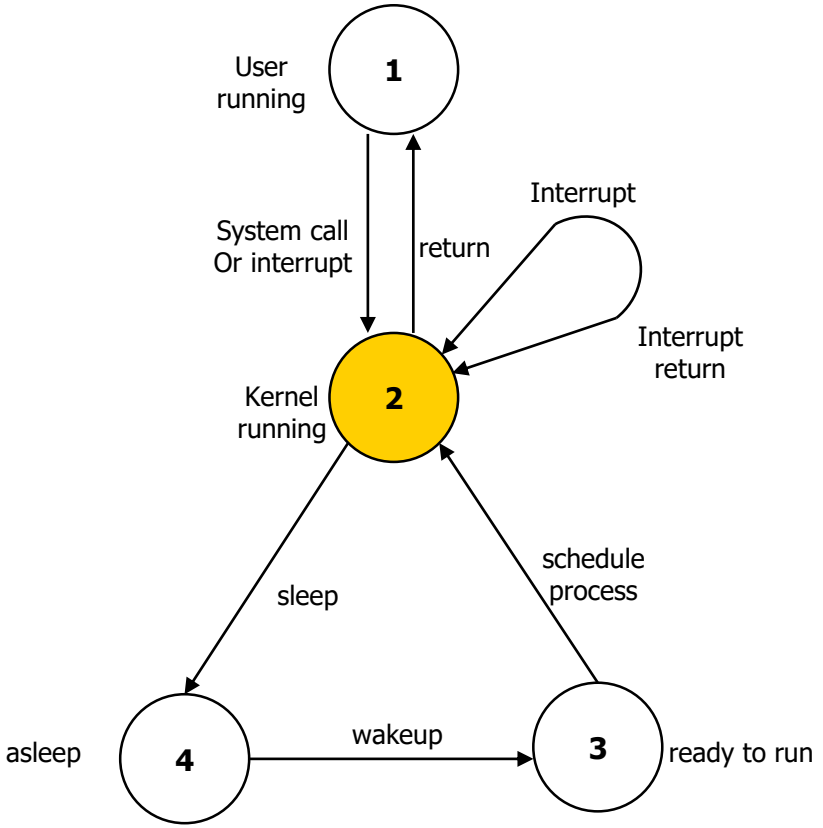
BACH process state diagram





BACH process state diagram





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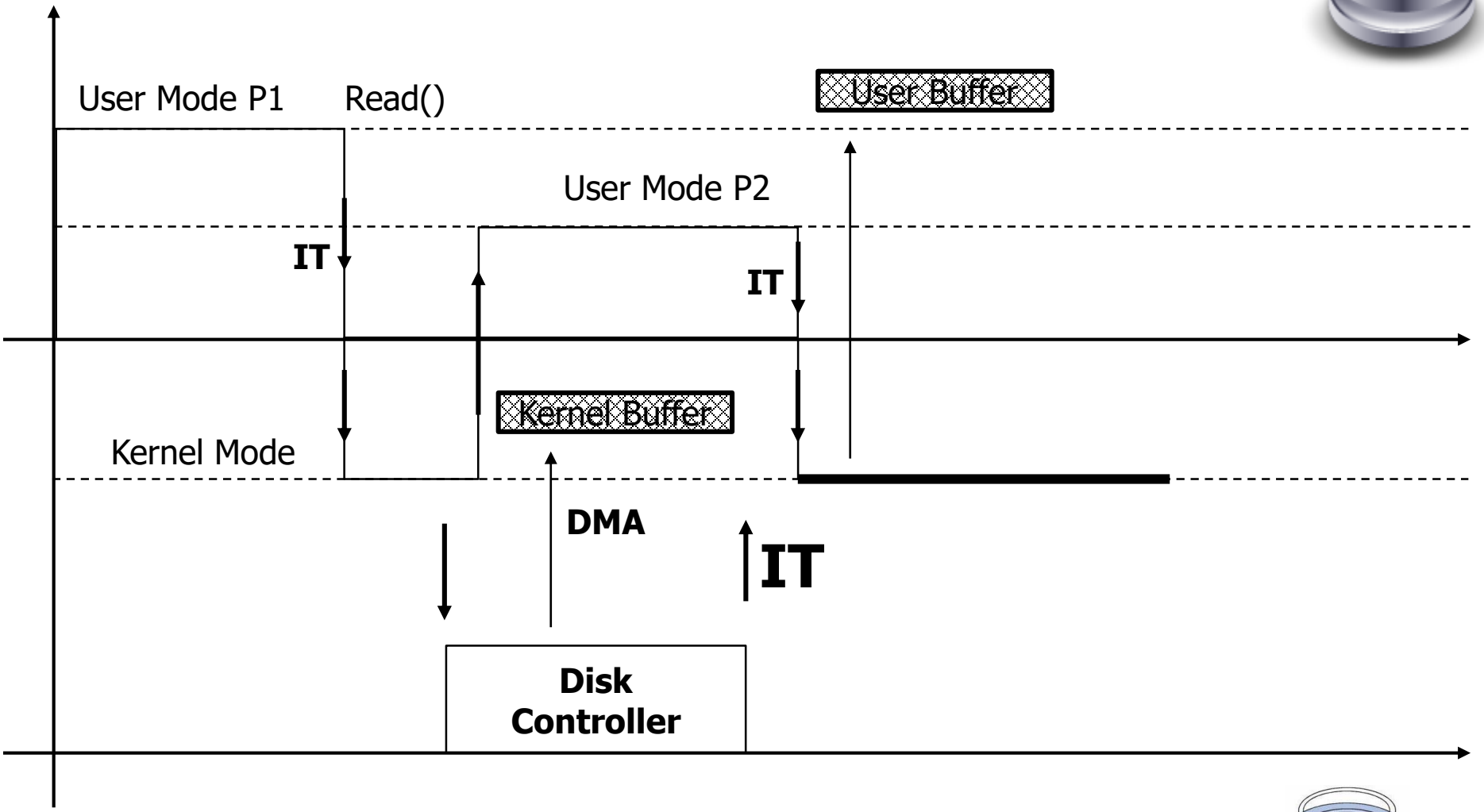
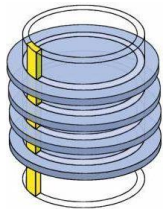
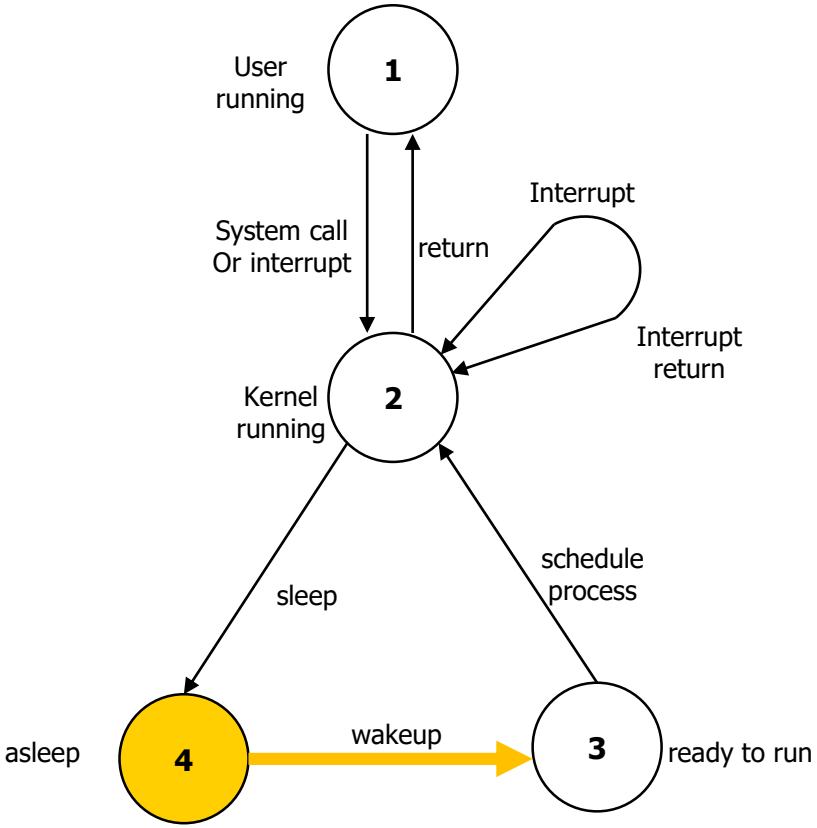
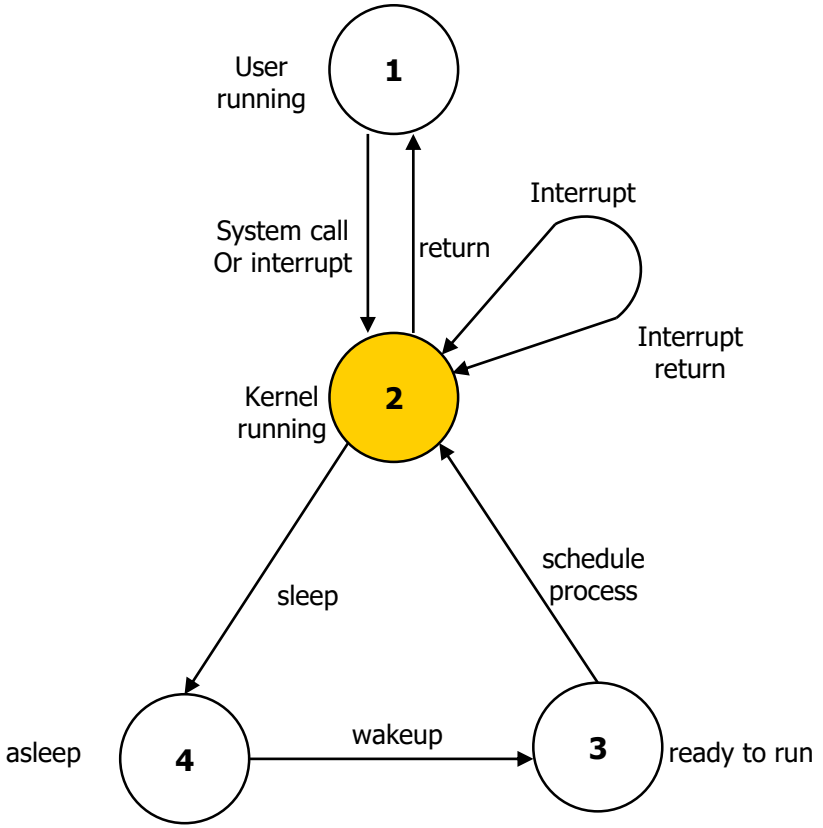

User Mode P1
Read()
User Buffer
User Mode P2
IT
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

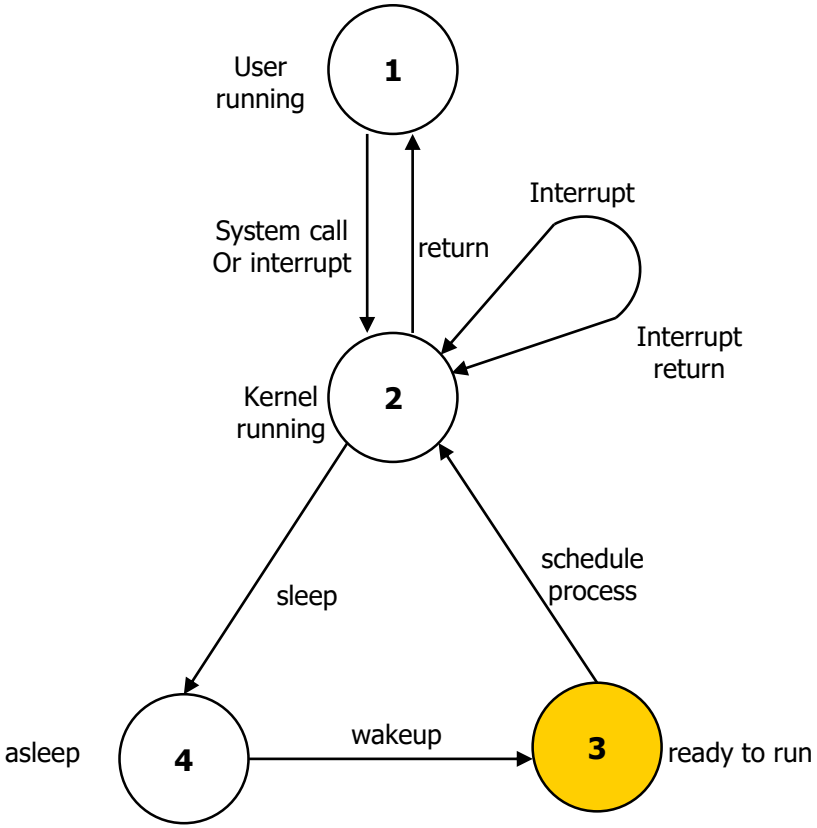


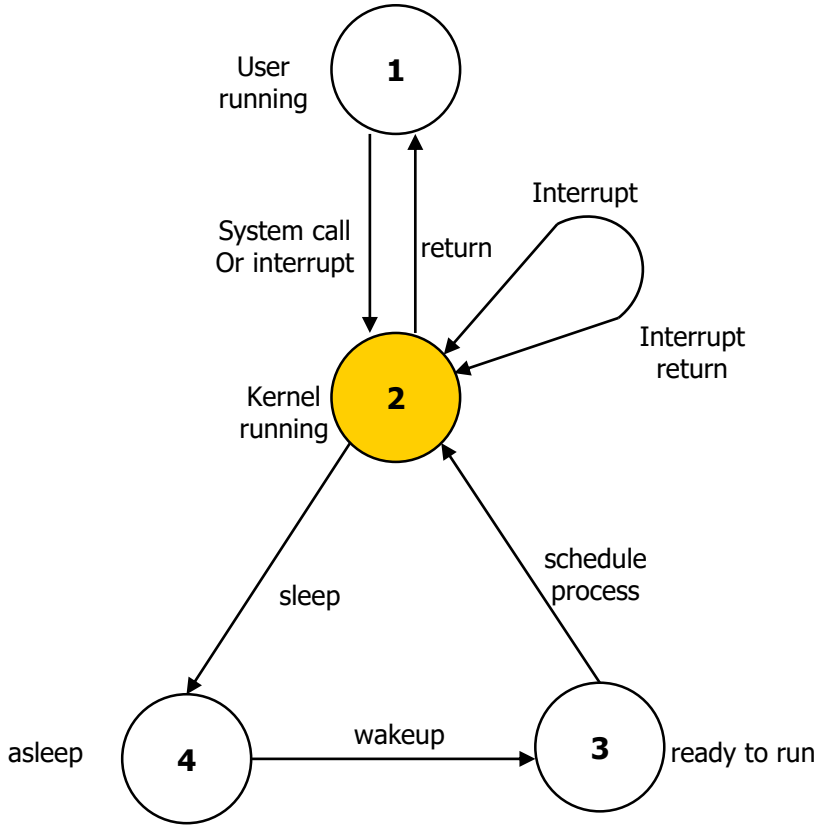
BACH process state diagram



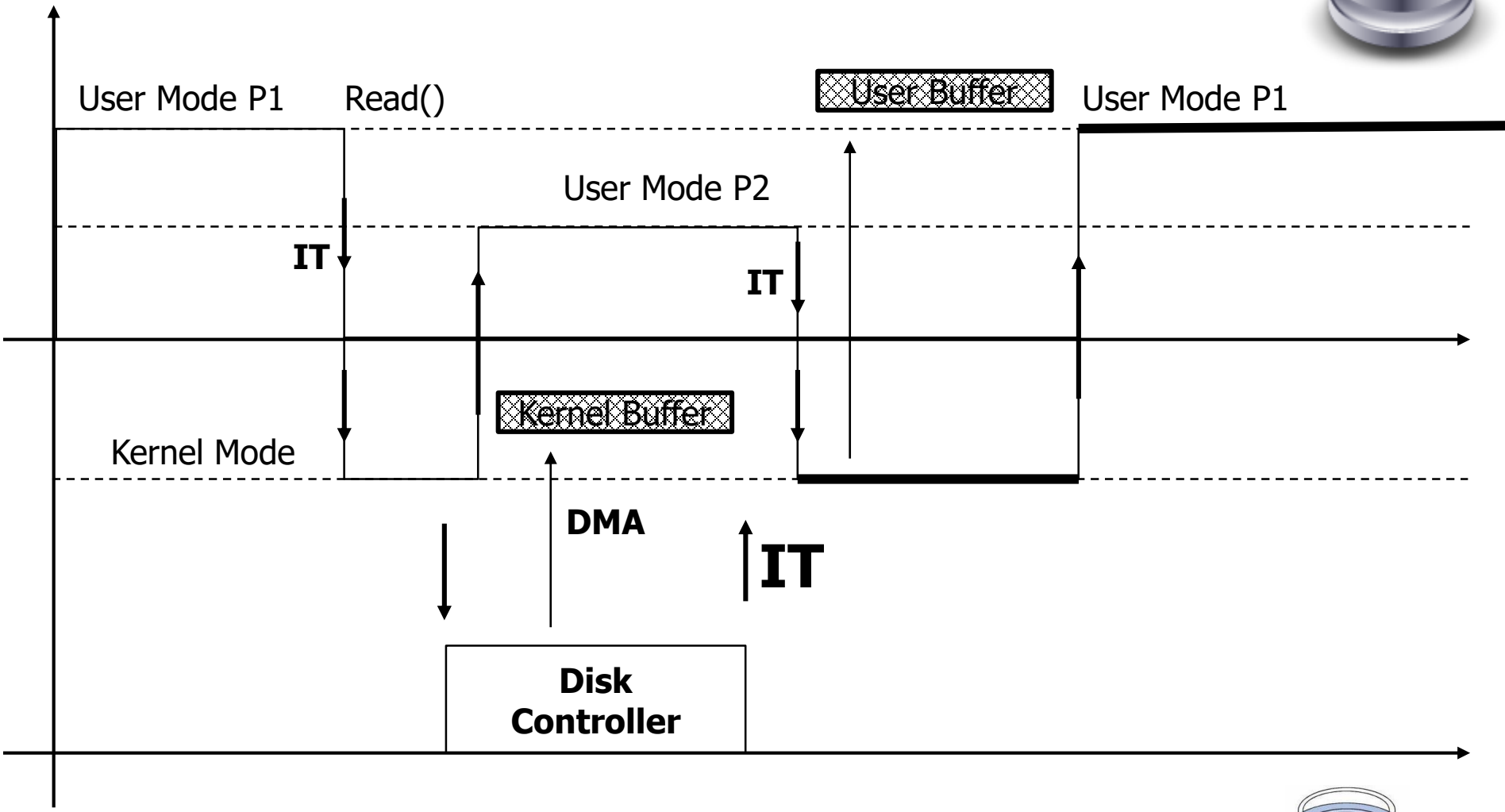


BACH process state diagram

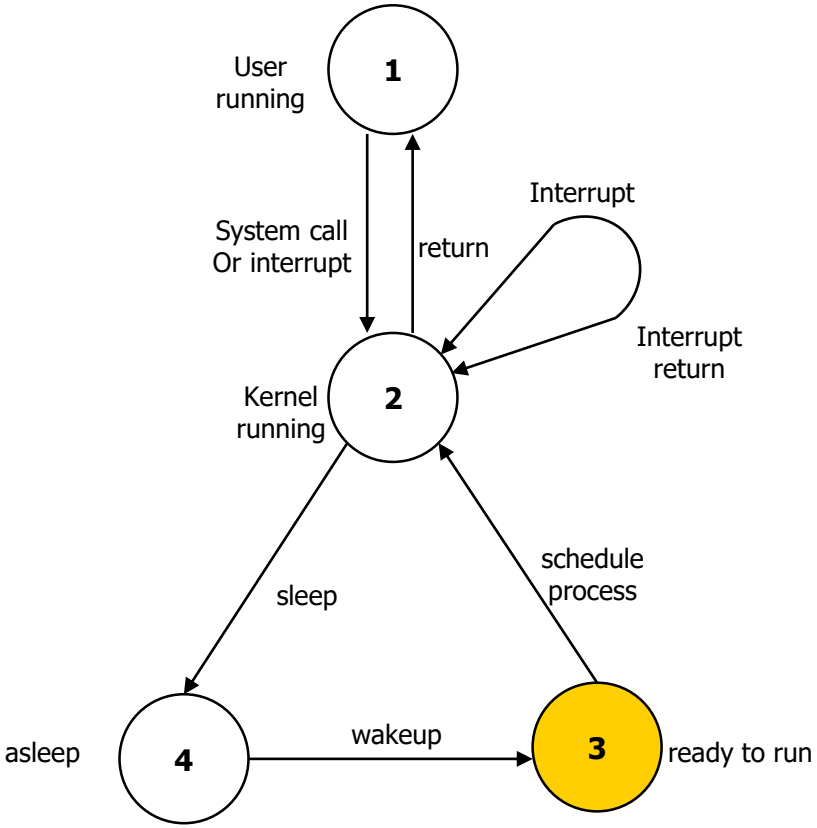


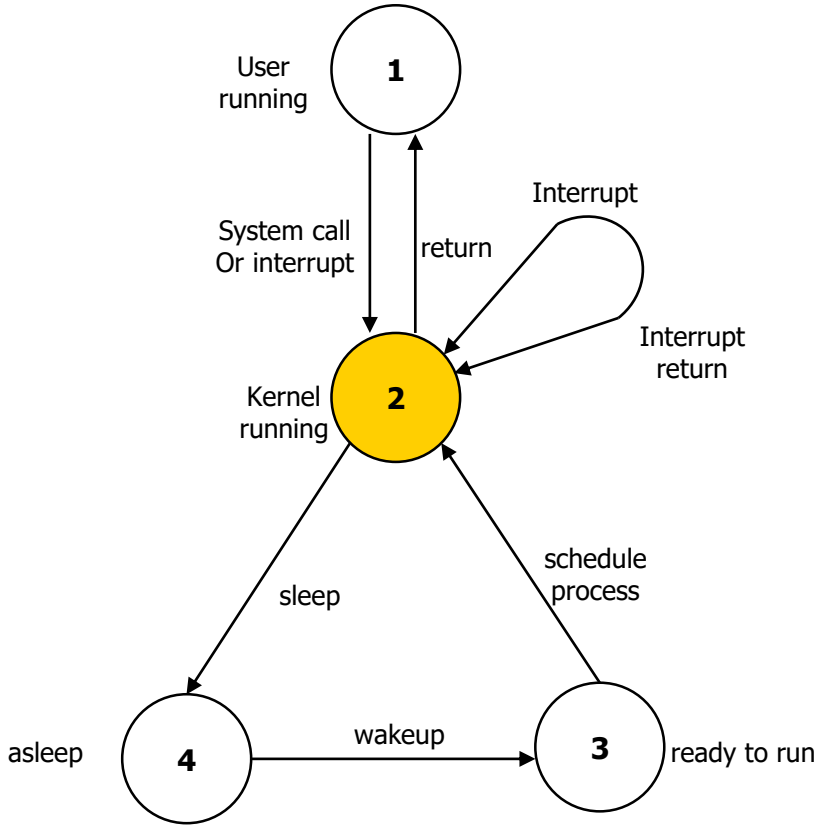


I/O


User Mode P1
Read()
User Buffer
User Mode P1
User Mode P2
IT
IT
Kernel Buffer
Kernel Mode
DMA
IT
Disk
Controller

BACH process state diagram





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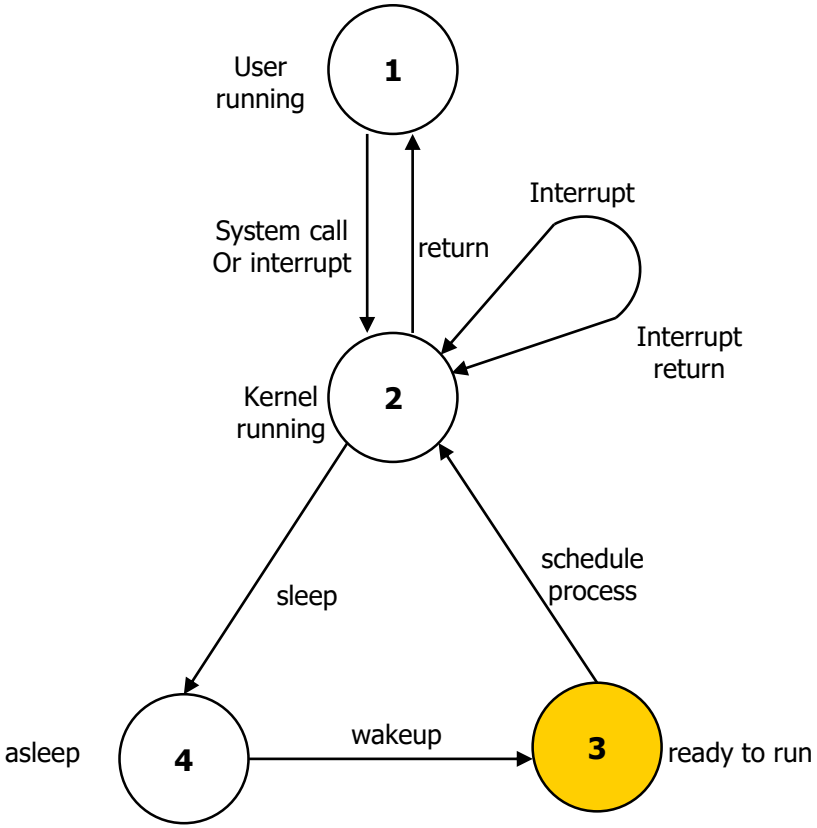
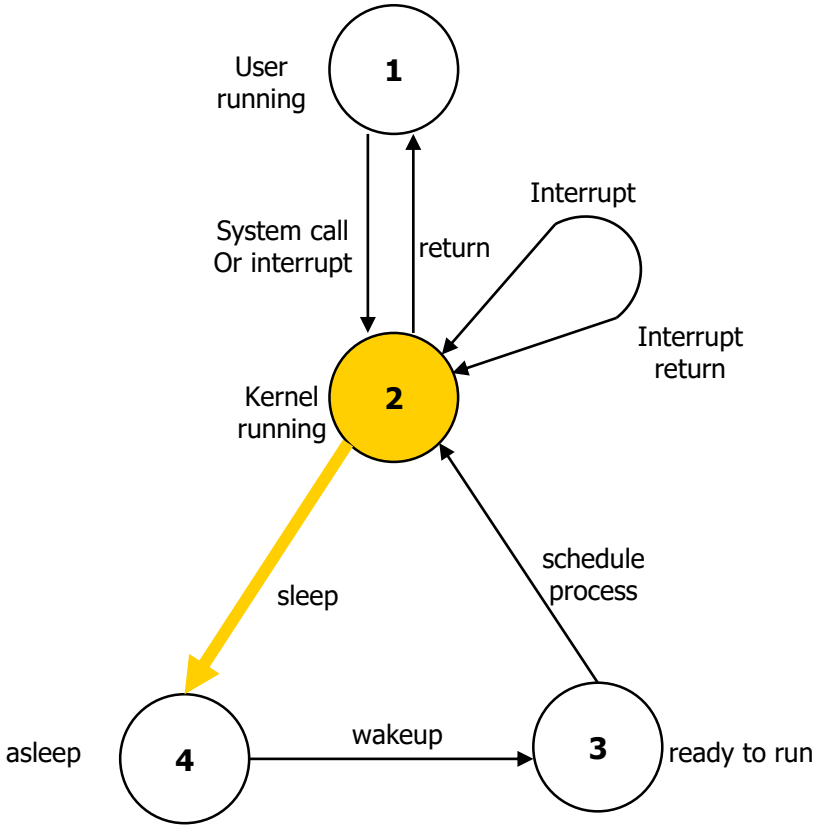
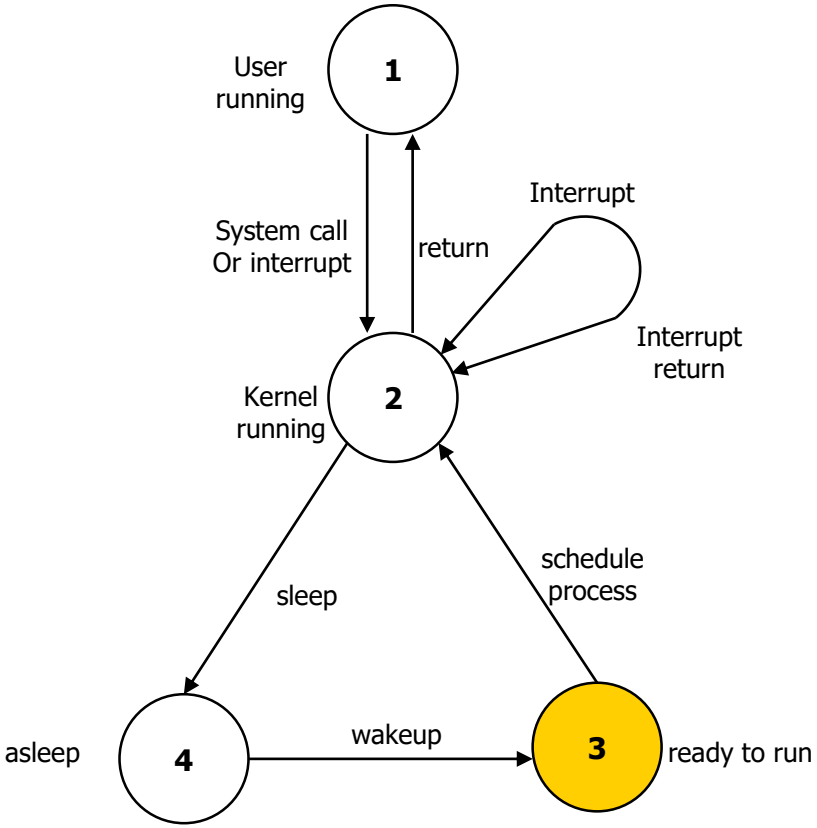
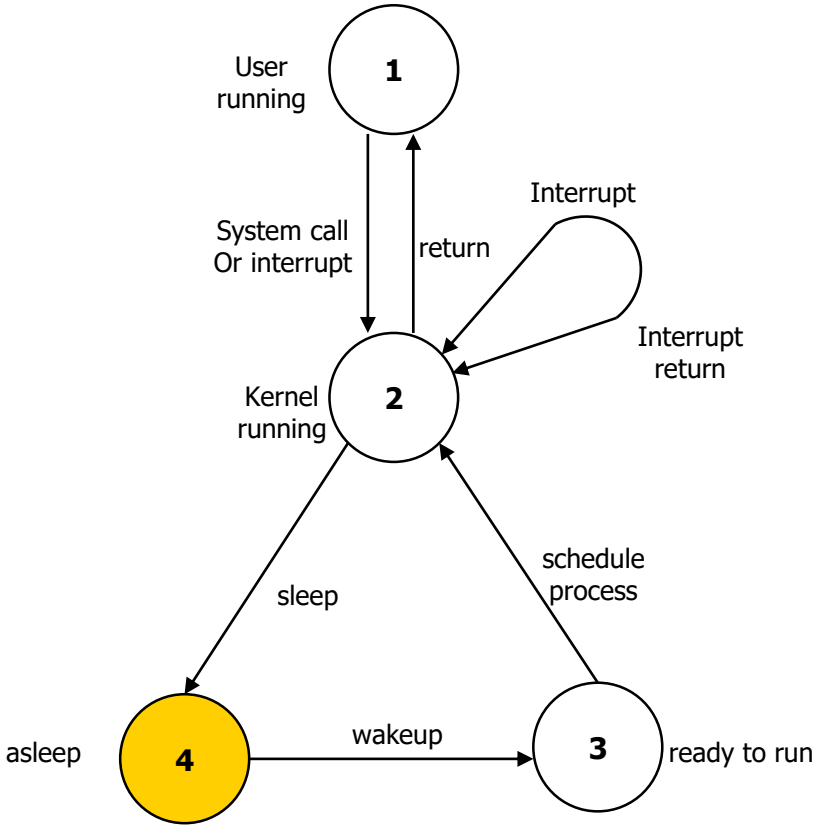


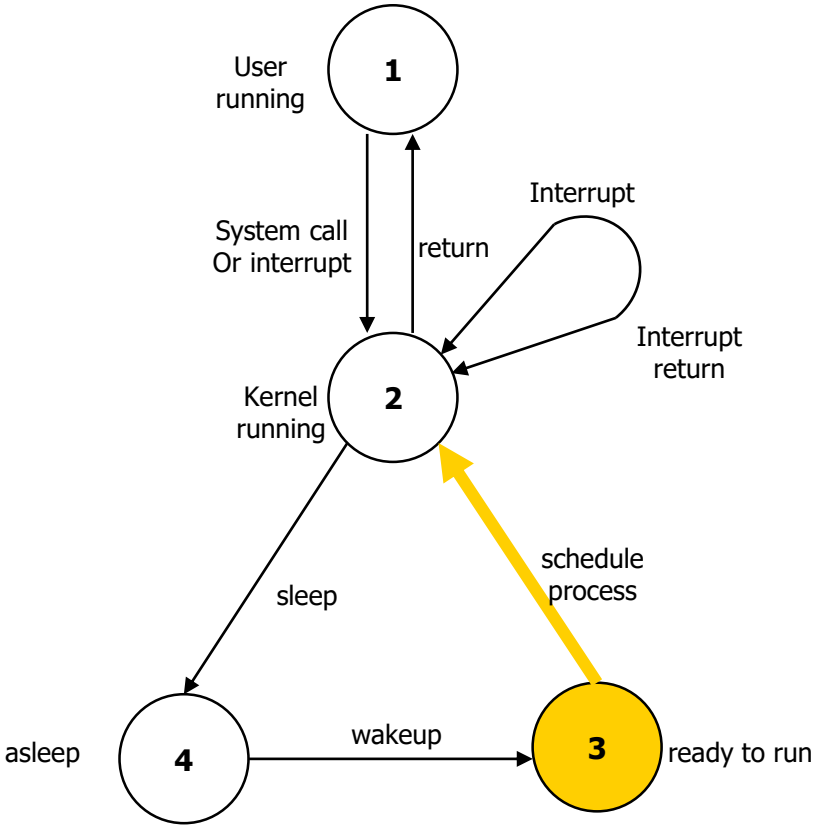


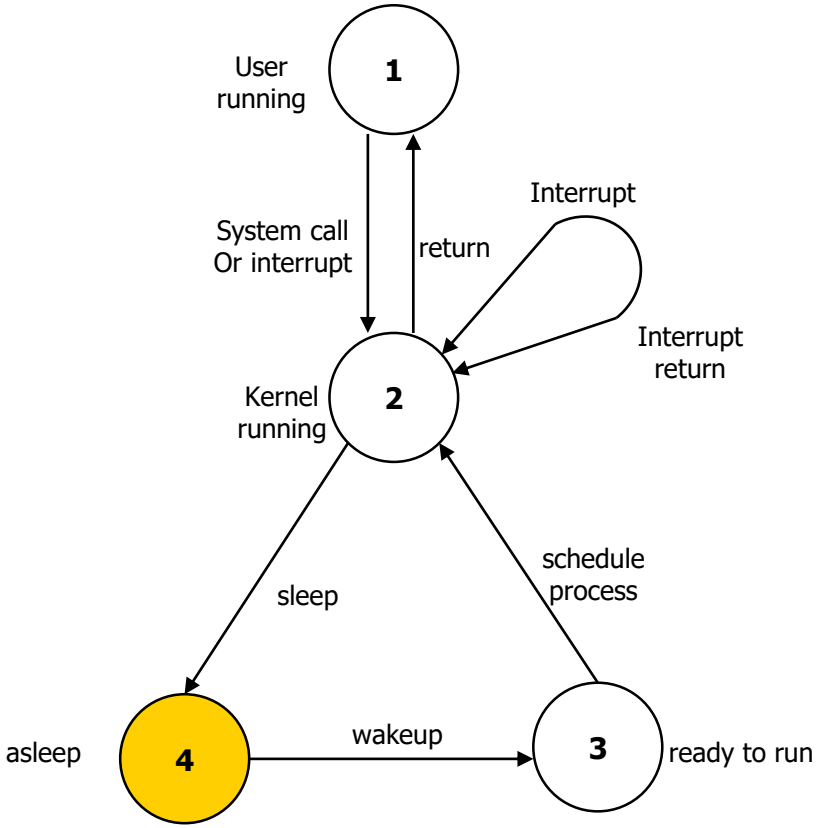
BACH process state diagram



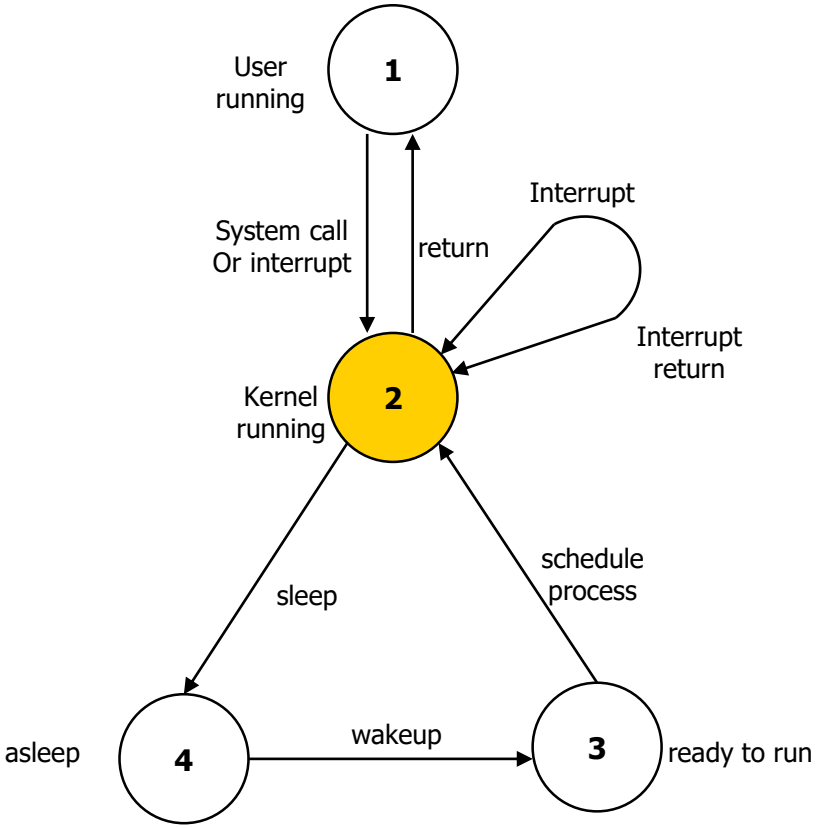


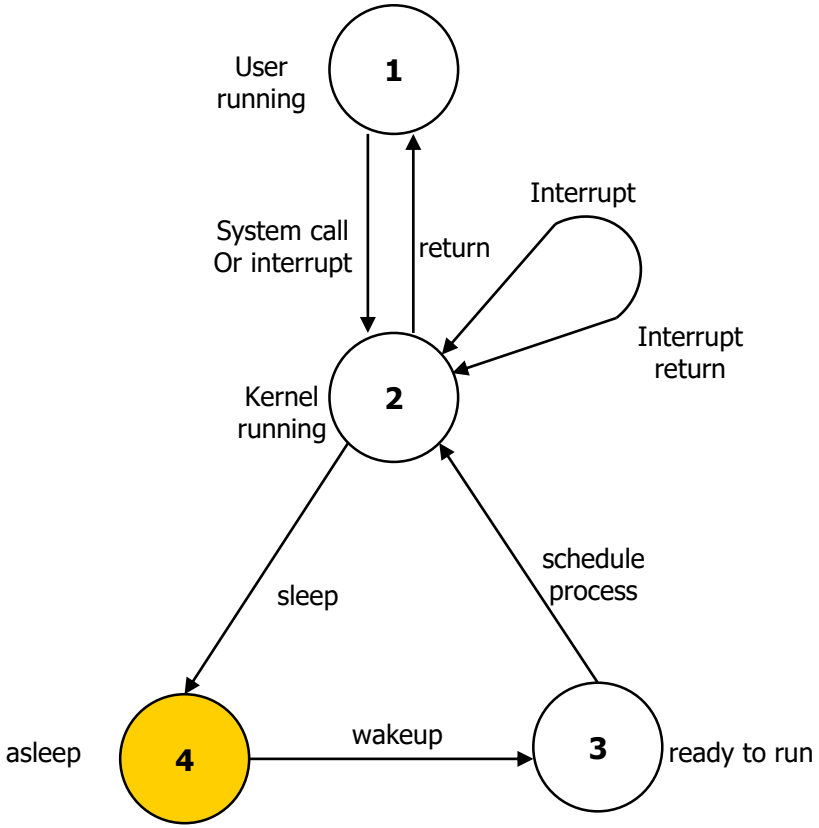
BACH process state diagram





BACH process state diagram





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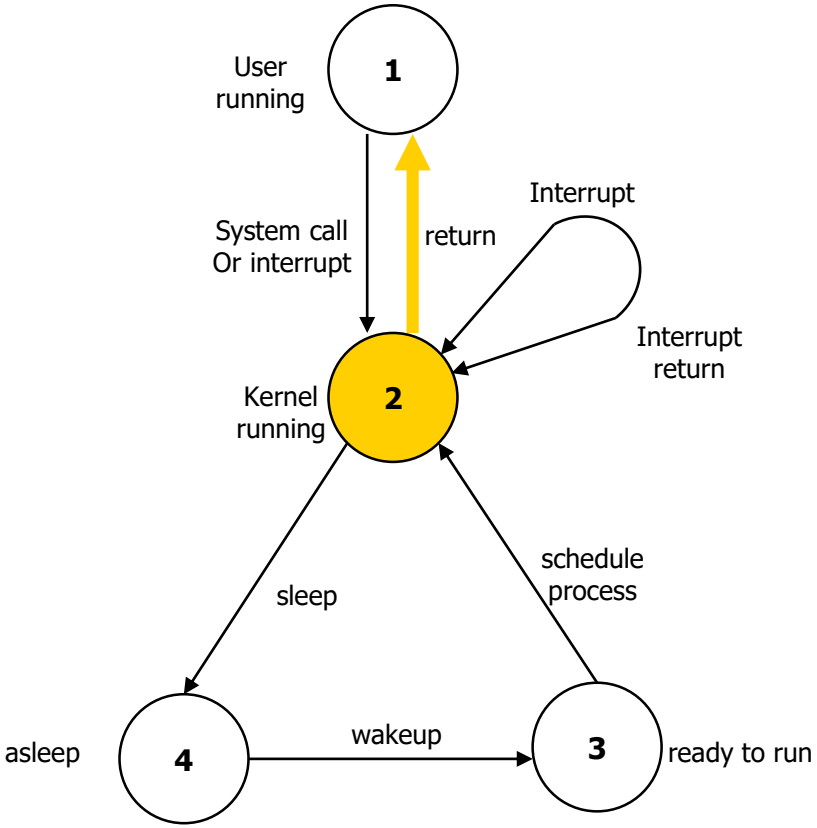
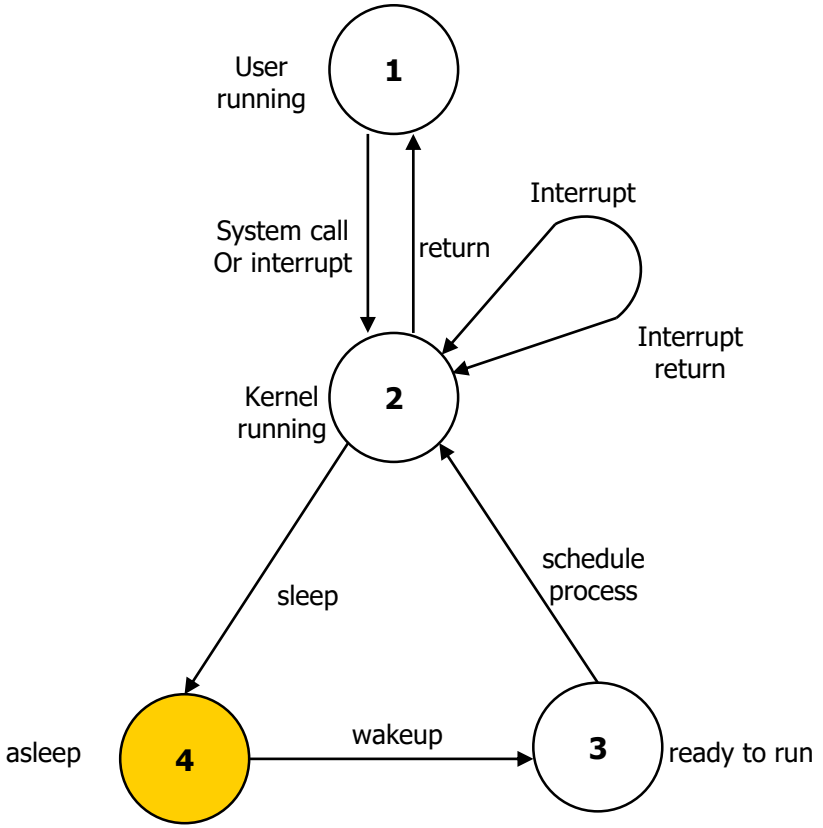
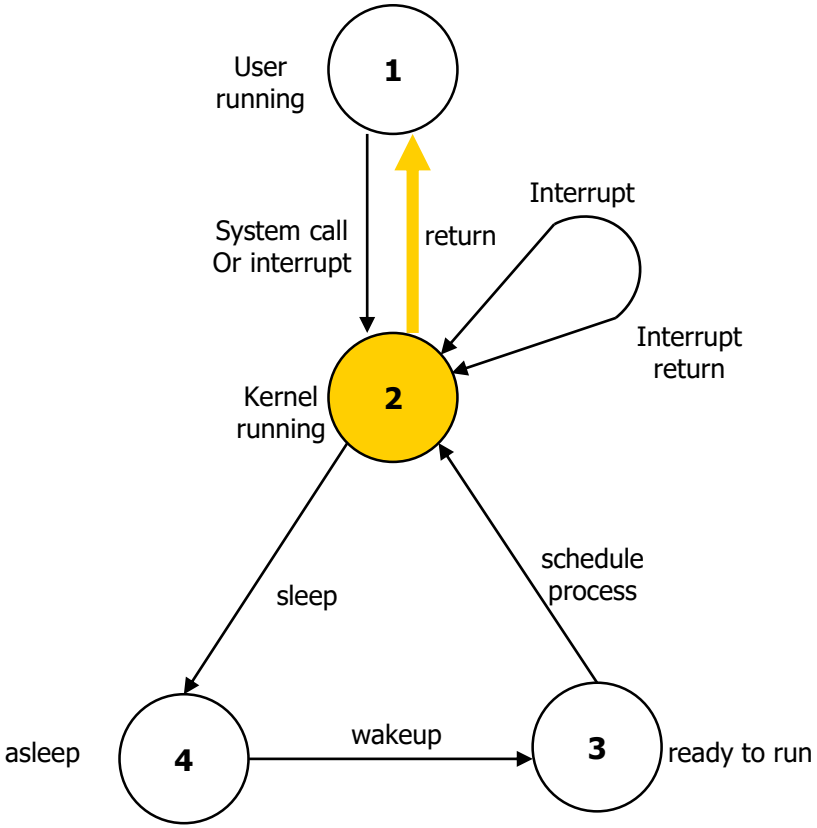
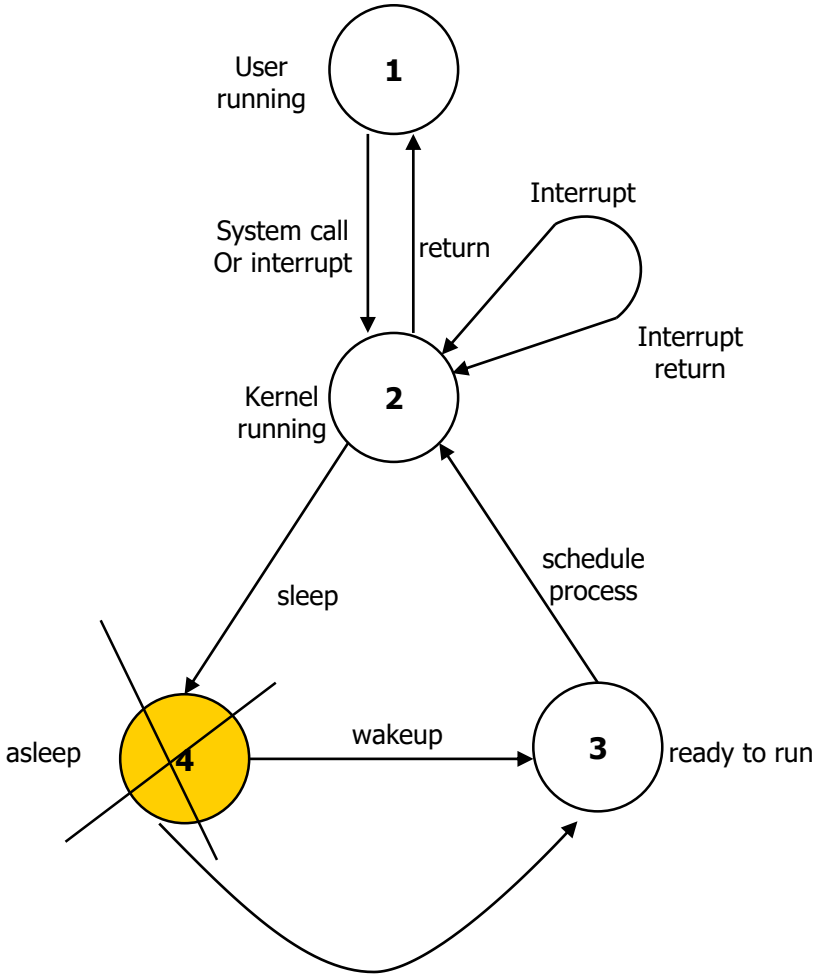


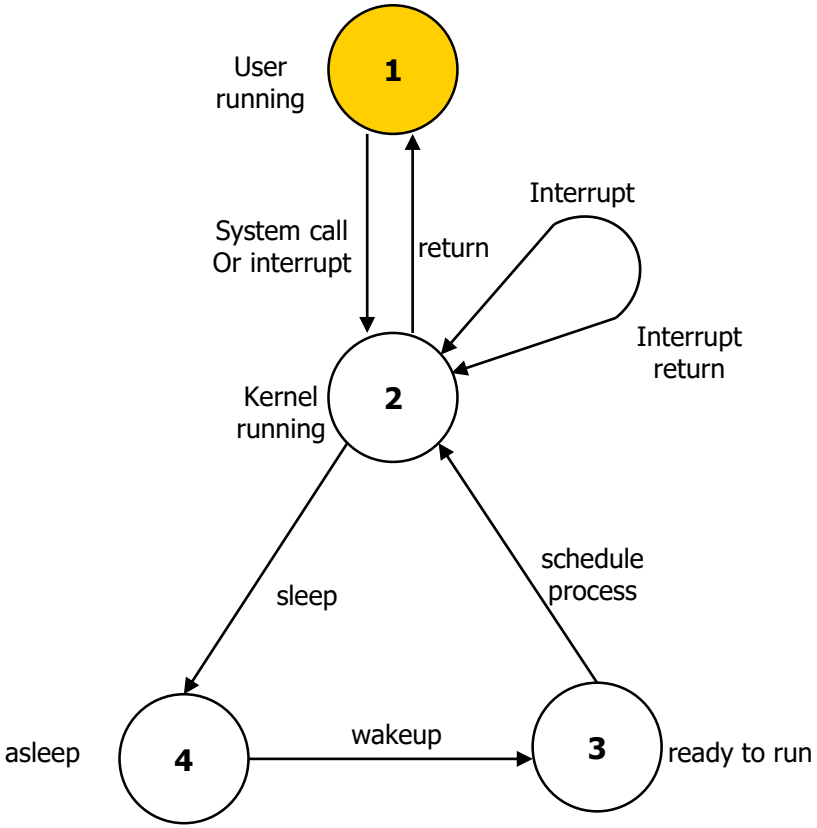


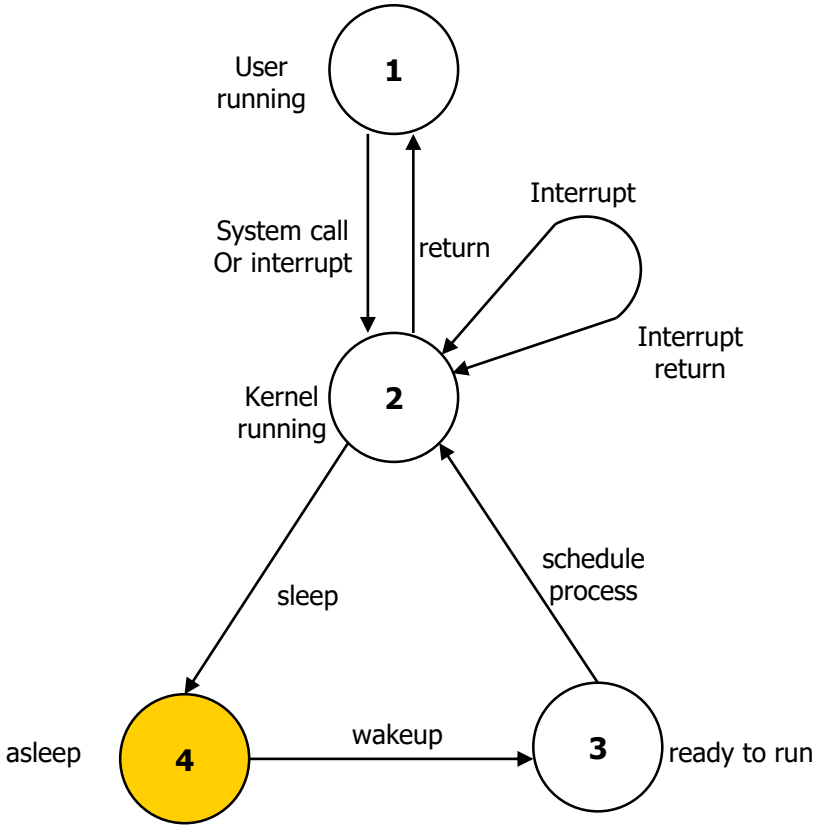
BACH process state diagram



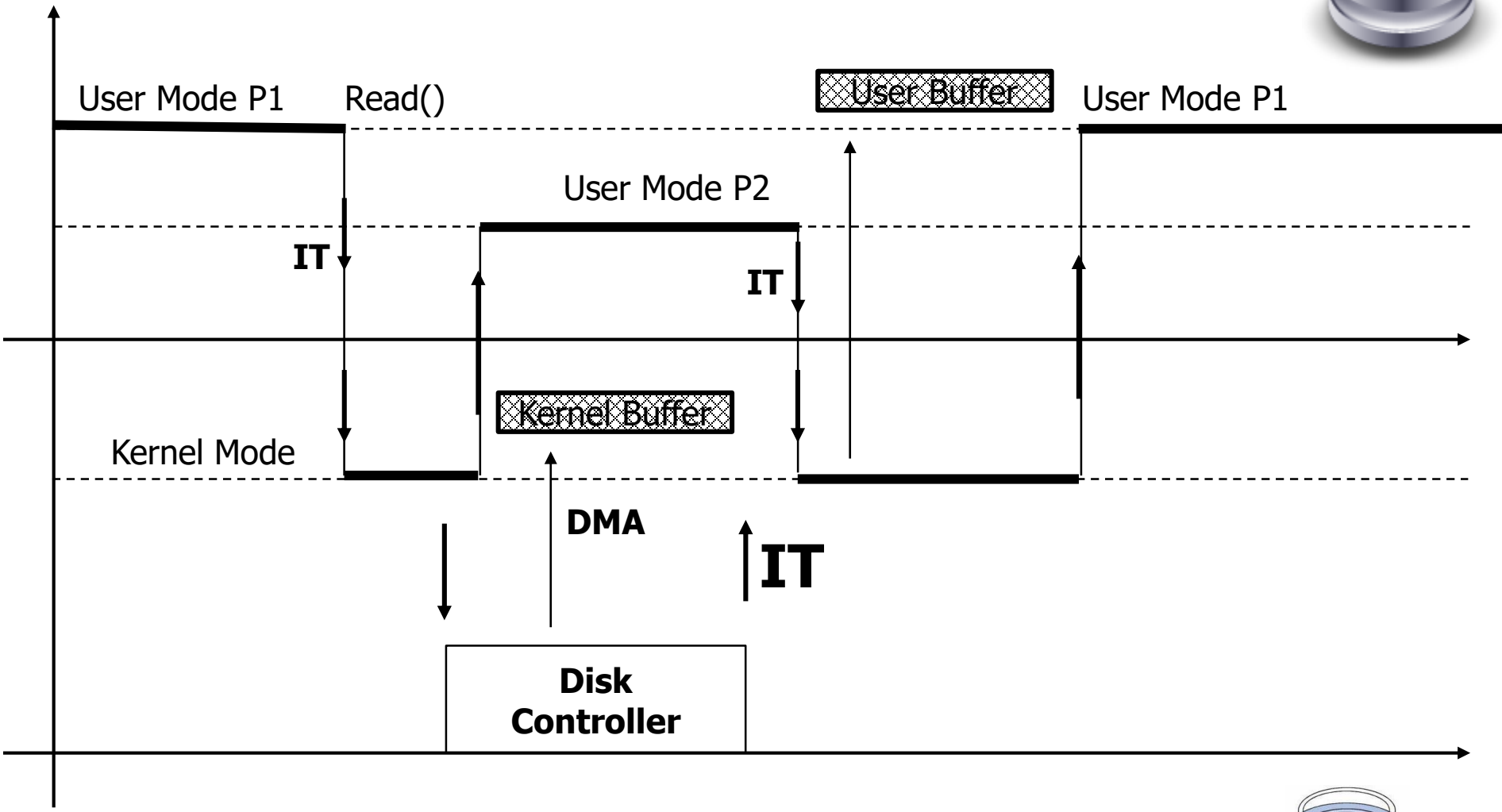


BACH process state diagram





I/O


User Mode P1
Read()
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Kernel Buffer
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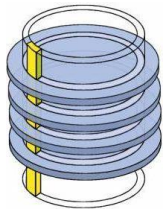

A.S.T : IT DMA, device driver