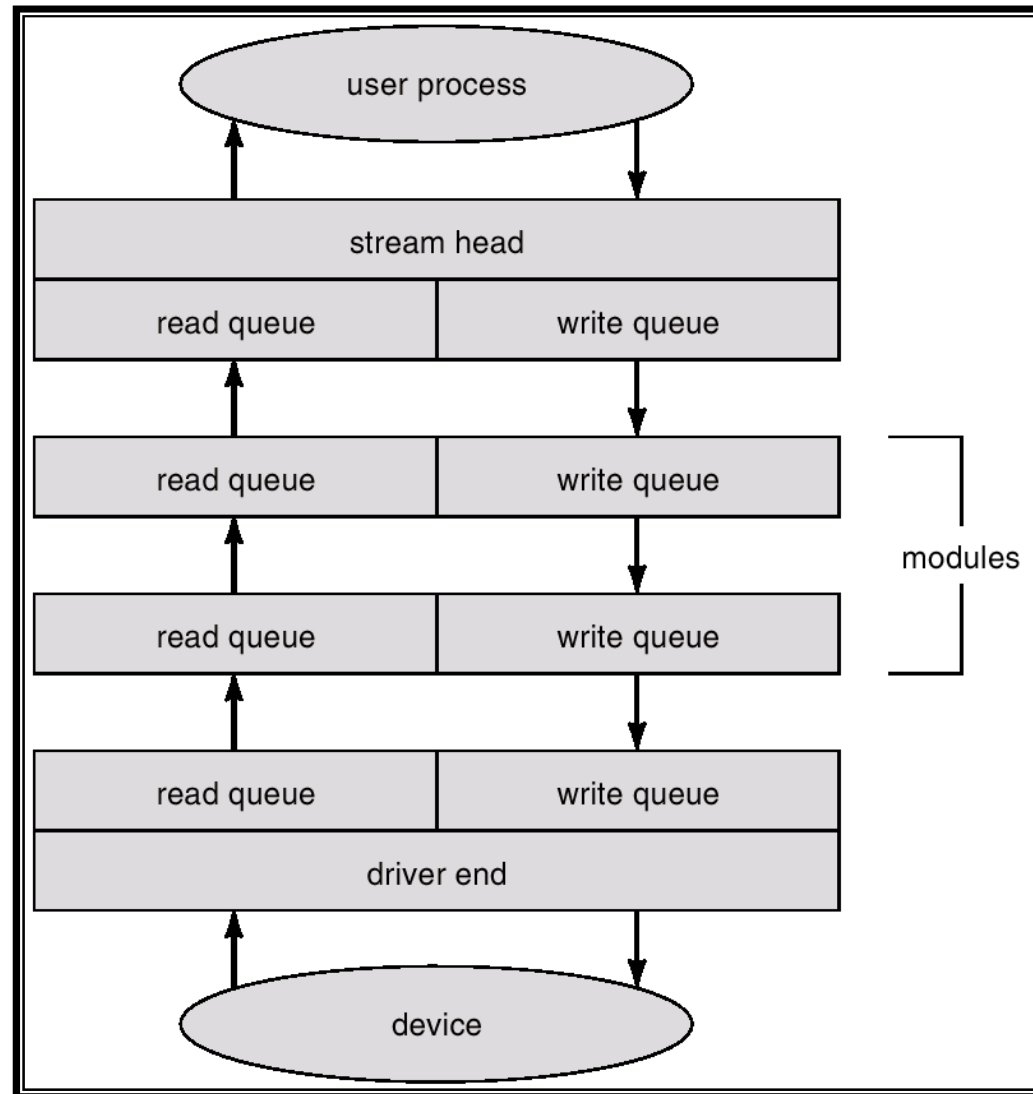


- STREAMS
- PERFORMANCE

# STREAMS

- **STREAM** – a full-duplex communication channel between a user-level process and a device
- A STREAM consists of:
  - **STREAM head** interfaces with the user process
  - **driver end** interfaces with the device
  - zero or more STREAM modules between them.
- Each module contains a **read queue** and a **write queue**
- Message passing is used to communicate between queues

# The STREAMS Structure



Streams

# Performance

- I/O a major factor in system performance:
  - Demands CPU to execute device driver, kernel I/O code
  - Context switches due to interrupts
  - Data copying
  - Network traffic especially stressful

# Improving Performance

- Reduce number of context switches
- Reduce data copying
- Reduce interrupts by using large transfers, smart controllers, polling
- Use DMA
- Balance CPU, memory, bus, and I/O performance for highest throughput

# Device-Functionality Progression

