

# I/O NOTES (SHT 1)

EE 460N

SPRING, 2013

## \* CHARACTERISTICS

- PARTS: MEDIUM, DEVICE CONTROLLER
- HOW: POLL, INTERRUPT, DMA, I/O PROC
- INSTRUCTIONS: MEMORY-MAPPED, SPECIAL
- SYNCH / ASYNCH

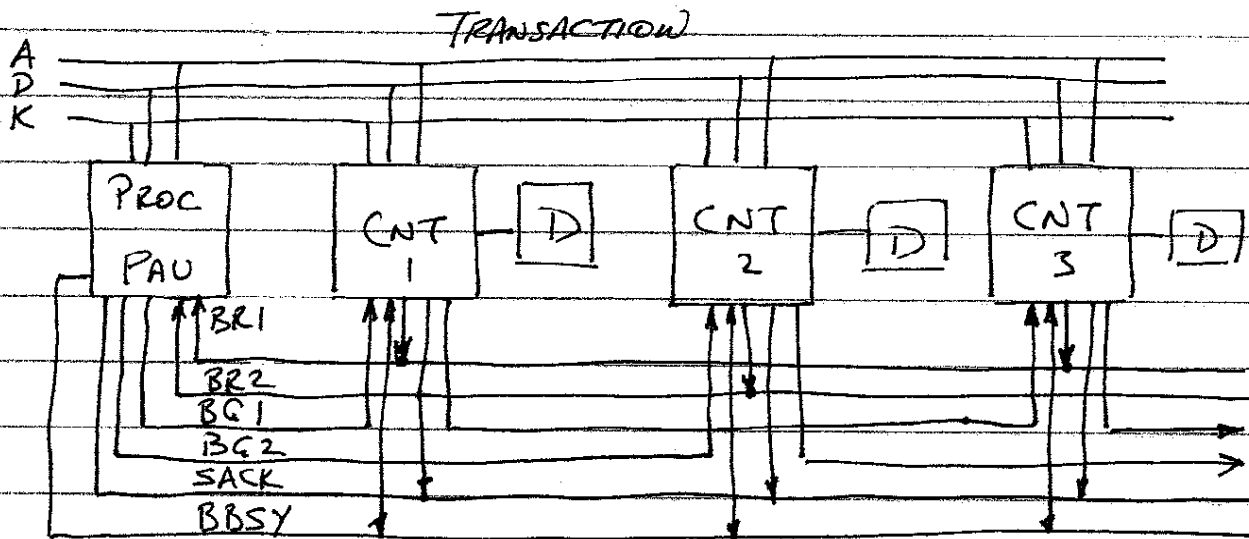
## \* BUSES

- WIRES: DATA, ADDRESS, CONTROL
  - MULTIPLEXED
- ARBITRATION:
  - CENTRAL: PAU
  - DISTRIBUTED: "DINNER TABLE"
- TRANSFER
  - ASYNCH / SYNCH
    - ASYNCH - HANDSHAKING
    - NO CLOCK
    - EVERYTHING EXPLICIT
  - SYNCH - MOST IMPLICIT
  - FAST IF SHORT DISTANCE
  - PENDING / SPLIT-TRANSACTION
  - PIPELINED VS TAGGED

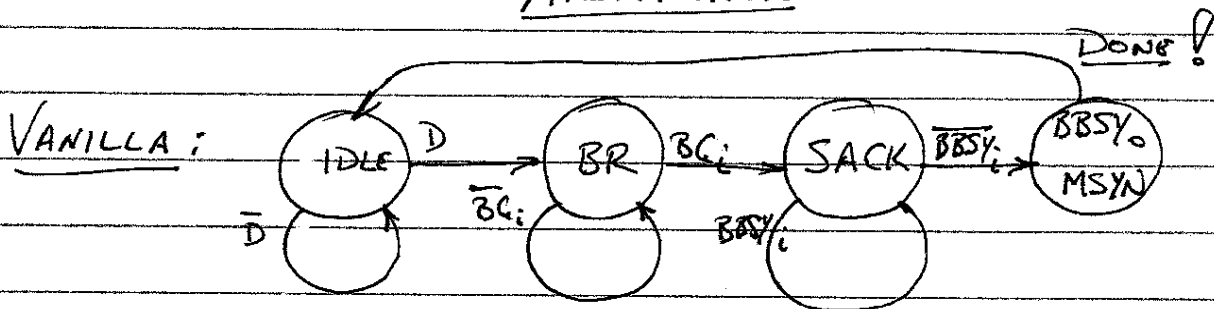
~~\* DISK ARRAYS - (SHT 5)~~

# I/O NOTES (SH. 2)

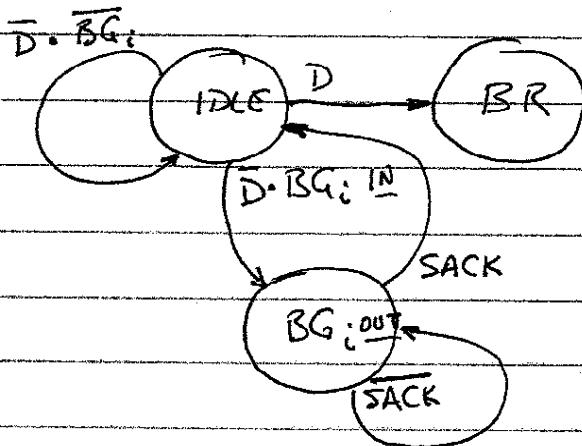
## AN ASYNCHRONOUS BUS



## ARBITRATION



## 1. DOES NOT WANT BG:



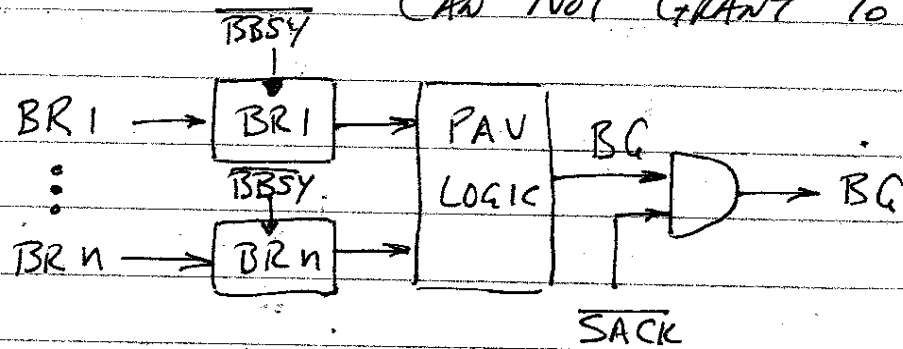
# I/O NOTES (Set 3)

2. WHAT IF DEV WANTS BUS AFTER GRANT

a. AT THIS PRIORITY LEVEL, TOUGH!

b. AT HIGHER LEVEL: PAU MUST NOT

ANSWER: ONCE PAU HAS GRANTED,  
CAN NOT GRANT TO LATECOMER



3. WHAT IS "DONE"?

