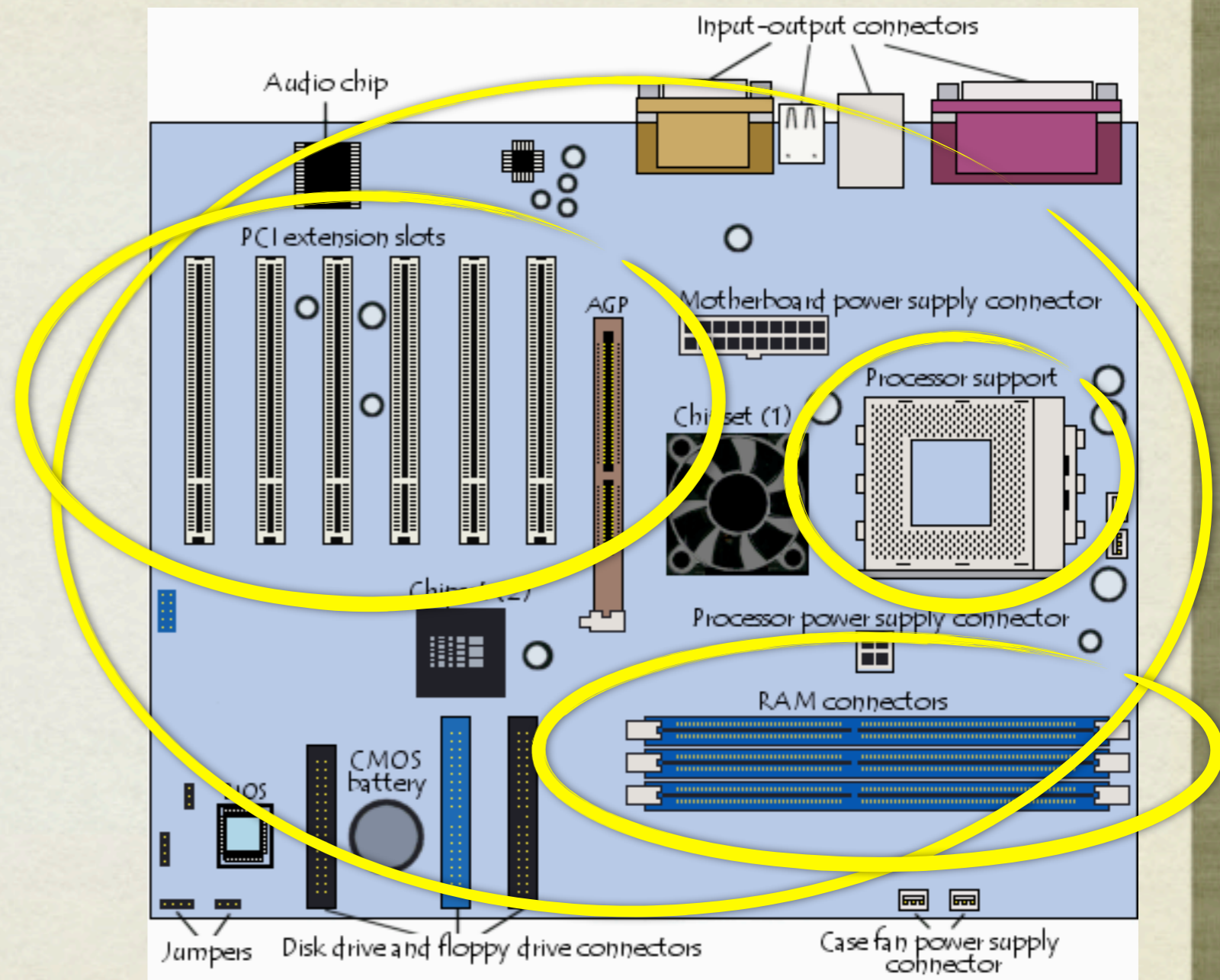# HARDWARE

# CORE COMPONENTS

- Motherboard

- CPU

- RAM

- Expansion slots

# CORE COMPONENTS

- Hard drive

- Removable media drives

- Power supply

- Case



ATX 20 pin   P4 X1   IDE 4 PINX5   FLOPPY X2   AUX X1   4 Pin Video X1

# PERIPHERALS

- Keyboard

- Mouse

- Monitor/Video

- Sound

- Printer

# RAID ARRAYS

- Redundant Array of Inexpensive Disks

- Stringing together two or more drives

- Provides mix of performance and reliability improvements

- Configured by level...

# RAID LEVELS

- 0 (Spanning): Drives simply combined, one after another, to form one large, continuous storage space. No performance or reliability advantages. Used to get large amounts of storage space for cheap.

- 0 (Striping): Drives are combined into one large storage space, but the data is split up and striped across the disks. Provides improved read and write performance through parallel operations. Still no reliability benefit.

# RAID LEVELS

- 1 (Mirroring): Each drive in the set is a complete copy of the data.  Read performance benefit through parallel read operations.  Exceptional reliability benefit through redundancy.  Storage limited to size of smallest member.

- 5 (Stripe w/ parity): Most common.  Similar to Striped RAID 0, but adds *parity* information, allowing for improved reliability.  Minimum 3 members to operate, but can tolerate a drive failure without data loss!  Improved performance through parallel operations.

# RAID LEVELS

- 6 (Stripe w/ double parity): Same as RAID5, but with doubled parity information, tolerating up to two drive failures in set.

- Levels are often combined (nested) to get the best of different levels: 01, 10, 15, 50, 51, 16, 60, 61

- Nested levels are expensive to implement, but can provide extremely high reliability and performance numbers.

- Common nested levels include...

# RAID LEVELS

- 10 (Stripe Set across mirrors): A set that stripes data across two or more RAID1 mirrors.

- 50 (Striped Stripe with Parity Set): Data is striped across two or more RAID5 sets.

- 51 (Mirrored Strip with Parity Set): Data is mirrored across two or more RAID5 sets.

# BACKUP MEDIA

- Optical discs: Simple, tough, cheap, small. Limited size. Easy to use.

- Hard drives: Expensive, sensitive. Rapid restore times. Still fairly limited size. Easy to use - often a mirror of the data.

- Tapes: Cheap, reliable, tough. Huge sizes available. Most common backup media for any serious need. Generally requires backup software for managements.

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