6 Factors Affecting Performance
6.1 Measures of Processor Speed

- **Clock Speed**
  - Generally the faster the clock speed the faster the processor – 1.6 GHz is faster than 933 MHz

- **Mips – Millions of Instructions per Second**
  - Better comparison but beware of false claims e.g. only using the simplest & fastest instructions and different processor families.

- **Flops – Floating Point Operations per sec.**
  - Best measure as FP operations are in every processor and provide best basis.
6 Factors Affecting Performance
6.2 Interfaces & Input/output Devices

- An interface makes the link between the processor and a peripheral (disk drive, printer etc.).
- Peripherals work at different speeds, use different formats.
- Interface transfers data so the processor is delayed as little as possible. It has buffers to store blocks of data in transit.
- Memory mapped I/O uses memory linked to peripheral.
- Spool files are used when large quantities of data are sent to a slow peripheral, like a printer. Enables background printing.
6 Factors Affecting Performance

6.3 Memory & System Performance

- **Speed of access**
  - 15-120 nanosecond but memory speed dictated by motherboard and processor

- **Amount of memory**
  - Adding memory usually improves system performance esp. graphics & multimedia

- **Cache (pronounced *cash*) memory**
  - Cache exists between memory and processor
  - Very fast memory speeding data transfer in shorter fetch cycle.
6 Factors Affecting Performance
6.4 Bus Width & System Performance

- Width of data bus defines how much data can be carried in one fetch.
  - 32 bit data bus (word length) carries twice as much data as a 16 bit bus and a 32 bit system should be faster.

- Width of Address bus affects the amount of memory which can be accessed.
  - 26 bit address bus can access 32Mb.
  - 32 bit address bus can access $32 \times 128 = 6096$ networking Mb or 6Gb (enough for most purposes).
Peripherals work at much slower speeds than the CPU.

- Buffers and spooling can help.
- Sound cards can have their own processor, RAM and ROM.
- Video cards have their own RAM (up to 256 NetworkingMb)
6 Factors Affecting Performance
6.6 Networking Networked Computers

- Topology
- Networking mode
- Network traffic level
- Bandwidth
- Security checking

Will all affect performance