

## IST Hardware Notes

### 11.1 What Hardware Does

- Hardware – physical parts of the computer, software – instructions for hardware
- Peripherals – hardware device attached to a computer
- Hardware have five possible functions
  - o **Input** – allows entering data or instructions – scanner, keyboard, mouse
  - o **Output** – allows getting data or instructions – printers, speakers
  - o **Storage** – stores data and instructions – hard drive, memory disk
  - o **Processing and Control devices** – create, alter or move data – CPU (central processing unit)

### 11.2 Hardware Components

- Most important component of a personal computer is the motherboard
  - o Bus lines – allow data to be moved between different devices
  - o RAM and ROM – sockets for the CPU and memory chips
  - o Expansion slots – controller cards are plugged in
- **Other components of a personal computer** include:
  - o Power supply – converts electricity to 4 or 12 volt DC supply
  - o Controller cards – allow motherboard to connect to other devices
    - Hard disk drive has a coprocessor chip
    - Graphic adaptor cards
- **Input/output ports** are sockets on the back or side of the computer, allowing you to connect external hardware devices – different ports
- **Microprocessors** – processor built onto a single microchip
  - o Many devices contain microprocessors, such as refrigerators, refrigerators, phones
- **Classification of microprocessors:**
  - o Microprocessors in electronic devices are “single purpose processors”
  - o Do one task, cannot be reprogrammed
    - Microwave ovens – can be changed to alter time and strength, but not to play games on
  - o Computer programmed to perform different tasks

### 11.3 Hardware Solutions

- Rely on hardware and software supplied with the system, or install a program
- **Defining a hardware problem** – understanding the problem
- **Designing a hardware solution** – selecting suitable hardware to solve a problem
- **Evaluating a hardware solution** – installed, tested and finding whether successful or not

### 11.4 Troubleshooting and maintenance

- Problems of devices can be fixed using technical help provided with most hardware
- **Hardware manuals** – printed manual or a help file, listing common problems and how they can be solved
  - o Interactive troubleshooting guides, asking questions
- **Computer maintenance** – often called “preventative maintenance” as it can stop problems
  - o Removing dust dirt that can interfere with operation, checking manual of instructions of how to maintain devices