



Victoria University
of Bangladesh

Assessment Topic:

Final Assessment

Course Title: Computer Peripherals and Interfacing

Course Code: CSE-333

Submitted To:

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1. AI Keyboard: A keyboard is a bank of switches whose individual states can be detected by the computer system. A series of single state switches on any domestic electrical appliance can be regarded as a keyboard.

Contact Type Keyboard Switch: Widely used switches. Pressing the key plunger causes the contacts to touch and to produce a voltage. Key bounce -- the contacts may bounce when the plunger is depressed giving the appearance of several rapid key depressions. This effect is known as key bounce. This must be

eliminated by special circuitry which effectively ignores the key after its first depression for a very short period of time.

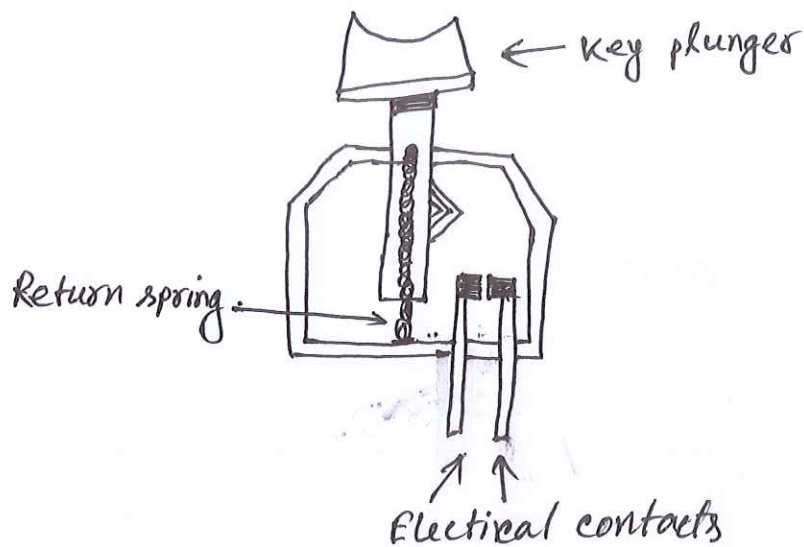


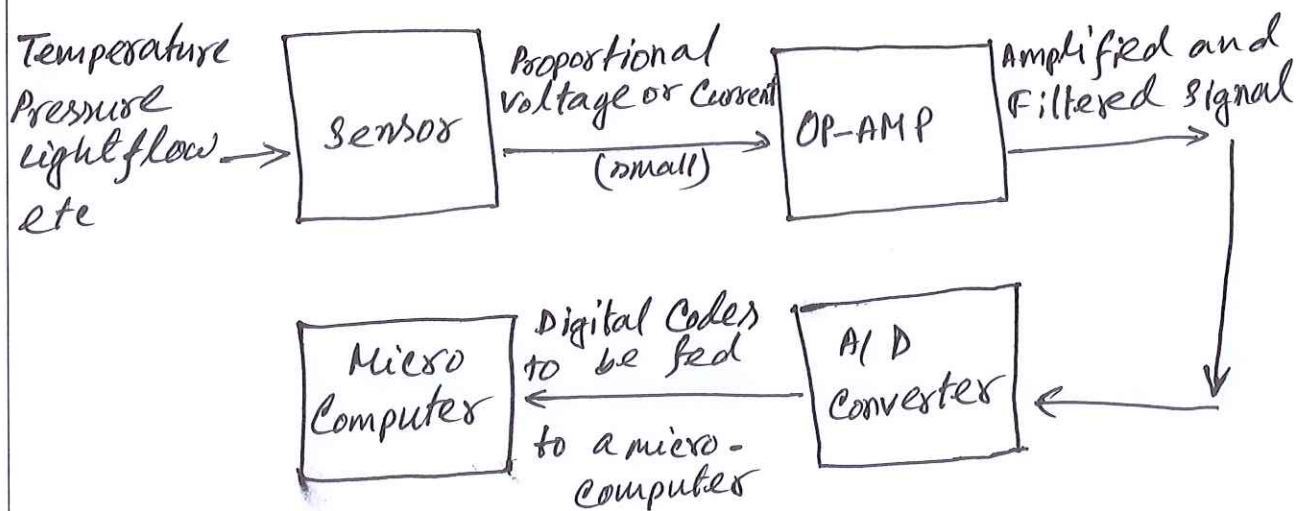
Figure: Contact type keyboard switch

Membrane Switch: Generally contains three layers of material such as polyester or polycarbonate film. The whole assembly is often less than 1mm thick. The bottom layer is fixed, the middle layer is flexible and the top layer is flexible and the top layer, which is also flexible.

The switch contacts are between the inner surfaces of the bottom layer and the middle layer. Pressing the top layer causes the middle layer to press against the bottom layer and the middle layer. When the top layer is released, the contact is broken. Membrane switches are inexpensive, thin, inherently sealed and can be waterproof.

Often used for control switches on peripherals such as printers.

1. Basic Concept of Analog Interfacing: In order to control the machines in Electronics Factory, Medical Instruments, Automobiles etc., we need to determine the values of some variables like pressure, temperature, light, flow etc.



Analog interfacing refers to the process of connecting analog devices or signals to a digital system or vice versa. It involves converting analog signals into a format suitable for digital

processing or converting digital signals into analog format for compatibility with analog devices.

The basic concept of analog interfacing revolves around the conversion and manipulation of continuous analog signals within the constraints of digital systems. Here are some key aspects of analog interfacing:

1. Analog-to-Digital Conversion (ADC)
2. Digital-to-Analog Conversion (DAC)
3. Signal Conditioning
4. Voltage Levels and Compatibility
5. Noise and Interference
6. Analog Input and Output Interfaces.

Analog interfacing involves the conversion, manipulation, and conditioning of analog signals to interface with digital systems or analog devices.

2. a) Sensor: A sensor is a device that detects and measures physical or environmental phenomena and provides an interface for connecting and communicating with a computer or digital system.

Sensors in computer interfacing are typically used to capture real-world data and convert it into digital signals that can be processed and utilized by the computer.

Here is a list of sensors and transducers commonly used in computer interfacing:

1. Temperature Sensor :
2. Humidity Sensor
3. Pressure Sensor
4. Light Sensor
5. Proximity Sensor
6. Accelerometer

7. Gyroscope

8. Magnetometer

9. Touch Sensor

10. Optical Sensor

11. Biometric Sensor

12. Microphone

13. Camera Sensor

14. Distance Sensor

15. Force Sensor

16. GPS Receiver

These are just some examples of sensors and transducers used in computer interfacing. The choice of sensors depends on the specific application requirements and the type of data needed for processing and interaction with the computer of digital system.

2.61 Advantages :

1. Wide Temperature range: Thermocouples can measure a wide range of temperatures.
2. Quick Response time: Thermocouple have a fast response time, allowing them to detect and measure temperature change rapidly.
3. Rugged and Durable: Thermocouples are known for their durability and ruggedness. They can withstand harsh environments, high vibration, and mechanical stress.
4. Simple Construction: Thermocouples have a simple structure consisting of just two dissimilar metals joined at one end.
5. Wide variety: Thermocouples come in a wide variety of types and materials,

allowing for flexibility in selecting the appropriate thermocouple for specific temperature ranges.

6. Wide Industry Adoption: Thermocouples have been widely used in various industries for temperature measurement and control applications.

Disadvantages:

1. Limited Accuracy: Thermocouples generally have lower accuracy compared to other temperature sensors.

2. Non-linear Output: The voltage output of a thermocouple is non-linear and requires linearization to convert it into an accurate temperature reading.

3. Relatively Low Sensivity: Thermocouples typically have lower sensivity compared to other temperature sensors.

4. Susceptible to Electromagnetic Interference: Thermocouples can be affected by electromagnetic interference (EMI) due to their low voltage output.

5. Cold Junction Compensation: Thermocouples require a reference temperature (cold junction) measurement at the junction where the thermocouple wires connect to the measurement circuit.

6. Limited Repeatability: Due to their dependence on the junction temperature and potential drift over time thermocouple may exhibit less repeatability compared to other thermo temperature switches.

4. 21 D/A applications:

Audio Output: D/A converters are extensively used in sound cards and audio interface to convert digital audio data into analog signals for speakers.

Video Output: In graphics card and video interfaces, D/A converters are employed to convert digital video signals into analog signals compatible with displays.

Data Acquisition: Utilized in data acquisition system to generate analog output signals.

They enable computers to control and interface with external devices that require analog control.

Control Interfaces: D/A converters play

a role in computer-based control systems.

They convert digital control signals into analog control voltages that are used to

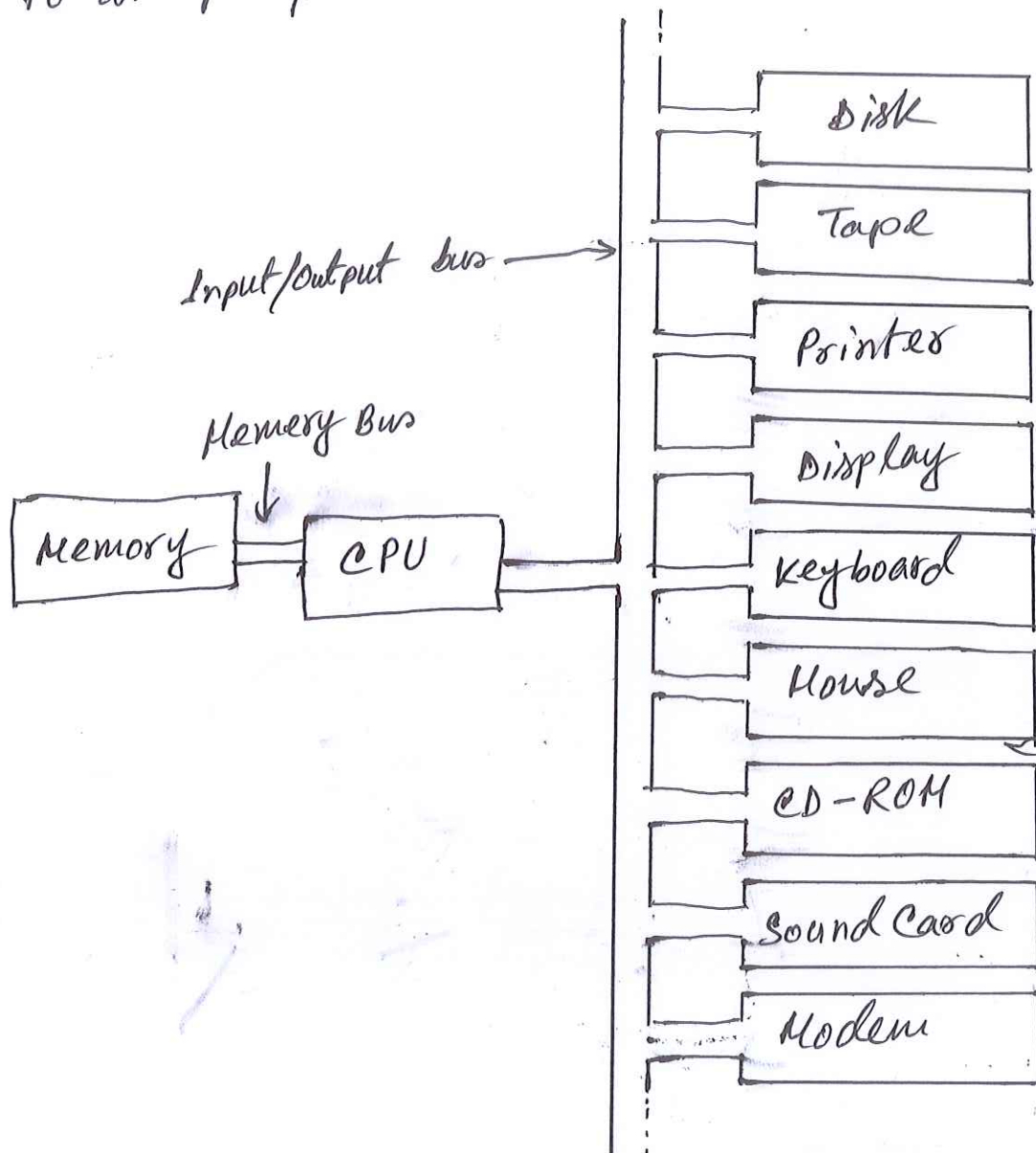
regulate variables such as motor speeds

temperature, or fluid flow in various automation.

Beside this D/A converters have other applications like below.

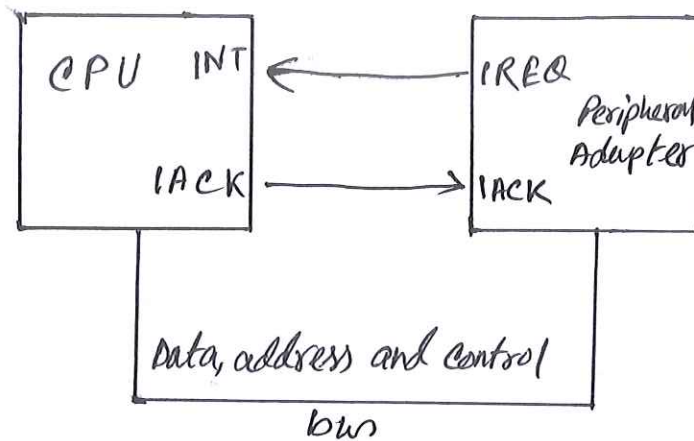
- # In compact disk audio player
- # In speech synthesizer IC,
- # To build micro computer controlled testbeds
- # To control small resistive heaters.
- # Motor speed control.

4. b Excluding CPU and Memory all other Input-Output devices connected with the computer systems are altogether referred to as peripheral devices.



Typical Computer System.

4.c) Interrupt requests are assumed to remain asserted until reset by instructions in the service routine. But this is not the most efficient technique.



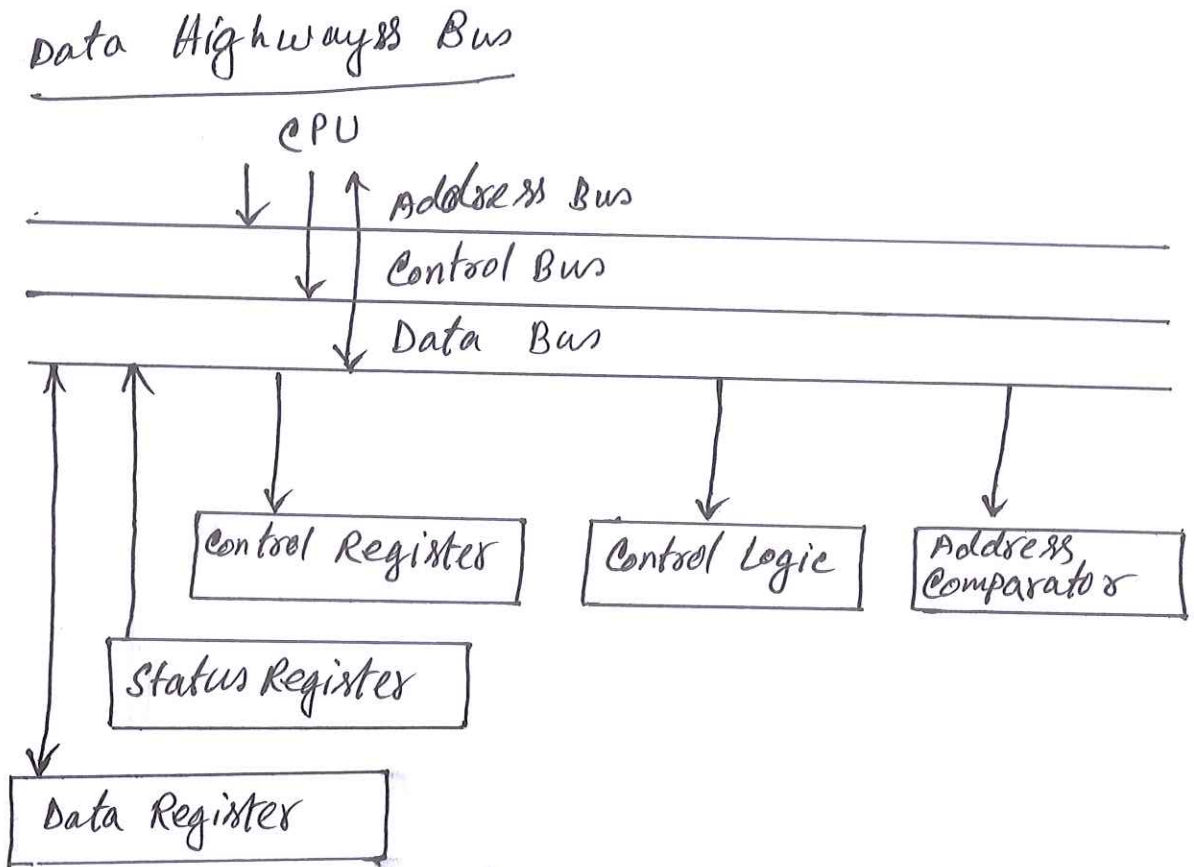
Interrupts with acknowledge.

5. a Peripheral Adapters: Modern computers perform operations very much faster than most peripherals can generate or accept data.

Programs and data are moved between memory and the CPU at such a speed that it would be inappropriate to connect peripherals directly to the CPU.

Some form of interface is required to connect between the fast internal communications and the relatively slow external devices.

A peripheral adapter works as an interface between CPU and peripheral device for data communication.

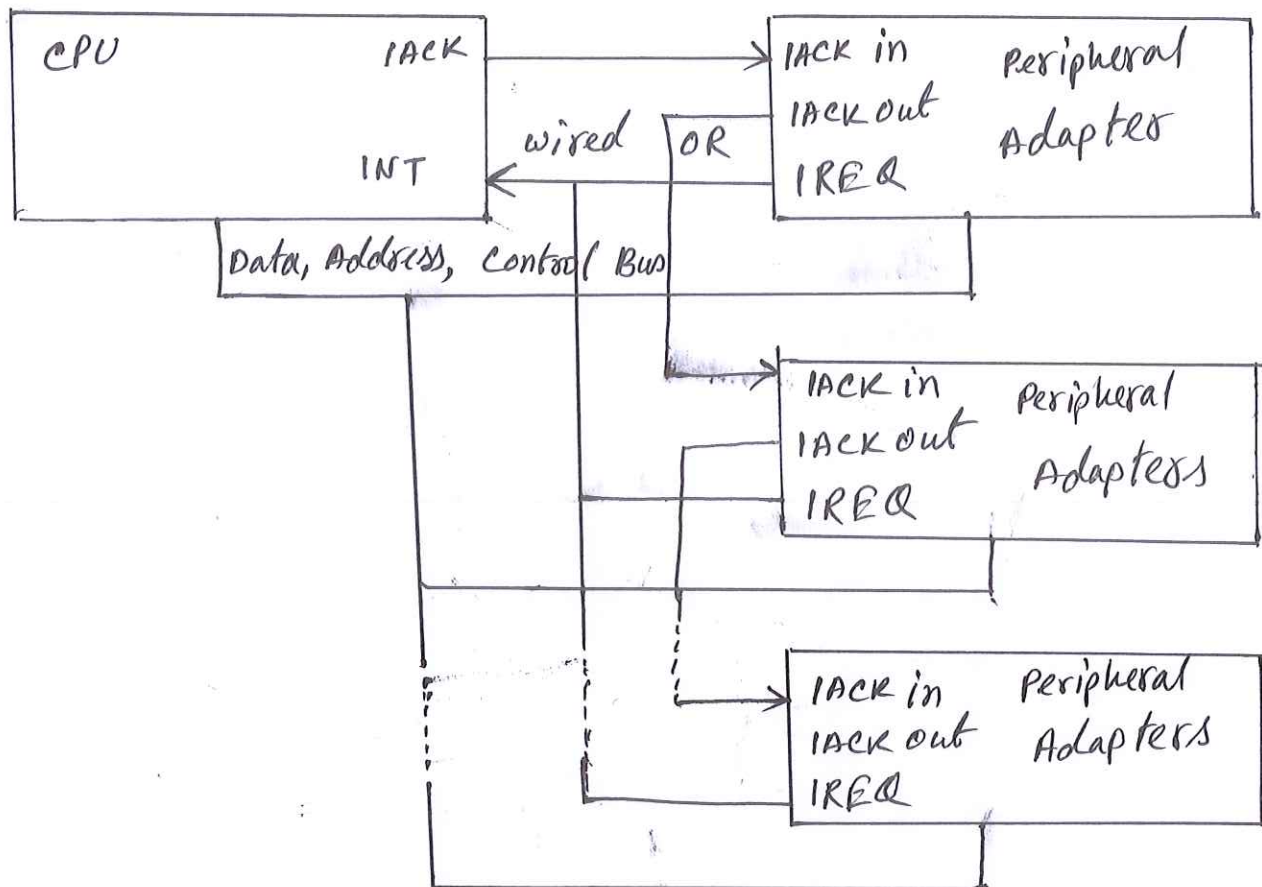


Data Highways Bus Architecture .

5. b) Priority Interrupts: Using an interrupt acknowledgement it is possible to construct a simpler priority scheme.

In this ~~same~~ scheme the CPU is able to determine priority not from the interrupt request but by which device the acknowledge is sent to. In daisy chain fashion all the interrupt request line are OR'ed together. The CPU IACK is connected directly to the highest priority device.

So if more than one request has been made the highest priority device sees it first.



Priority Interrupts using a daisy chain