

Mid Assessment - Spring - 2023

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Course: CSE - 333

Dept: CSE

Sub: Computer Peripherals and Interfacing

Ans: to: the; Q. NO: 01

Ans: Defining the Computer Interfacing and Peripheral:-
Computer Peripheral Interfacing is the interactions between Computer processor and Computer peripherals any input or Output process that occurs through a peripheral device is known as Computer Interfacing.

An interface is the concept of communication between two components, objects, elements or two part of a single object or Component and it may be occur on both hardware and software level.

Computer peripherals are the components or devices which are connected to the processor and extend the work of the processor.

Example of Computer Peripheral Interfacing: 12

- # → Taking input from a keyboard is a peripheral Interfacing. Here keyboard is a peripheral device.
- ## → Printing a document with a printer is a peripheral Interfacing where printer is a peripheral device.
- ### → Showing a video on the monitor is peripheral interfacing and this case monitor is the Peripheral device.

(b) Ans. Interrupt:

In digital Computers an interrupt is a request for the processor to interrupt currently executing code, so that the event can be processed in a timely manner.

- * Example: One example of this is moving a mouse or pressing a keyboard key. In these examples of interrupts, the processor must stop to read the mouse position or keyboard at the instant.

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In this type of interrupt, all devices are connected to the Interrupt Request Line (IRL).

Ans: to: the: q: NO: 02

(a) The list of sources of Interrupts:-

There are many sources for interrupts varying from simply asserting an external pin to error conditions within the processor that require immediate attention.

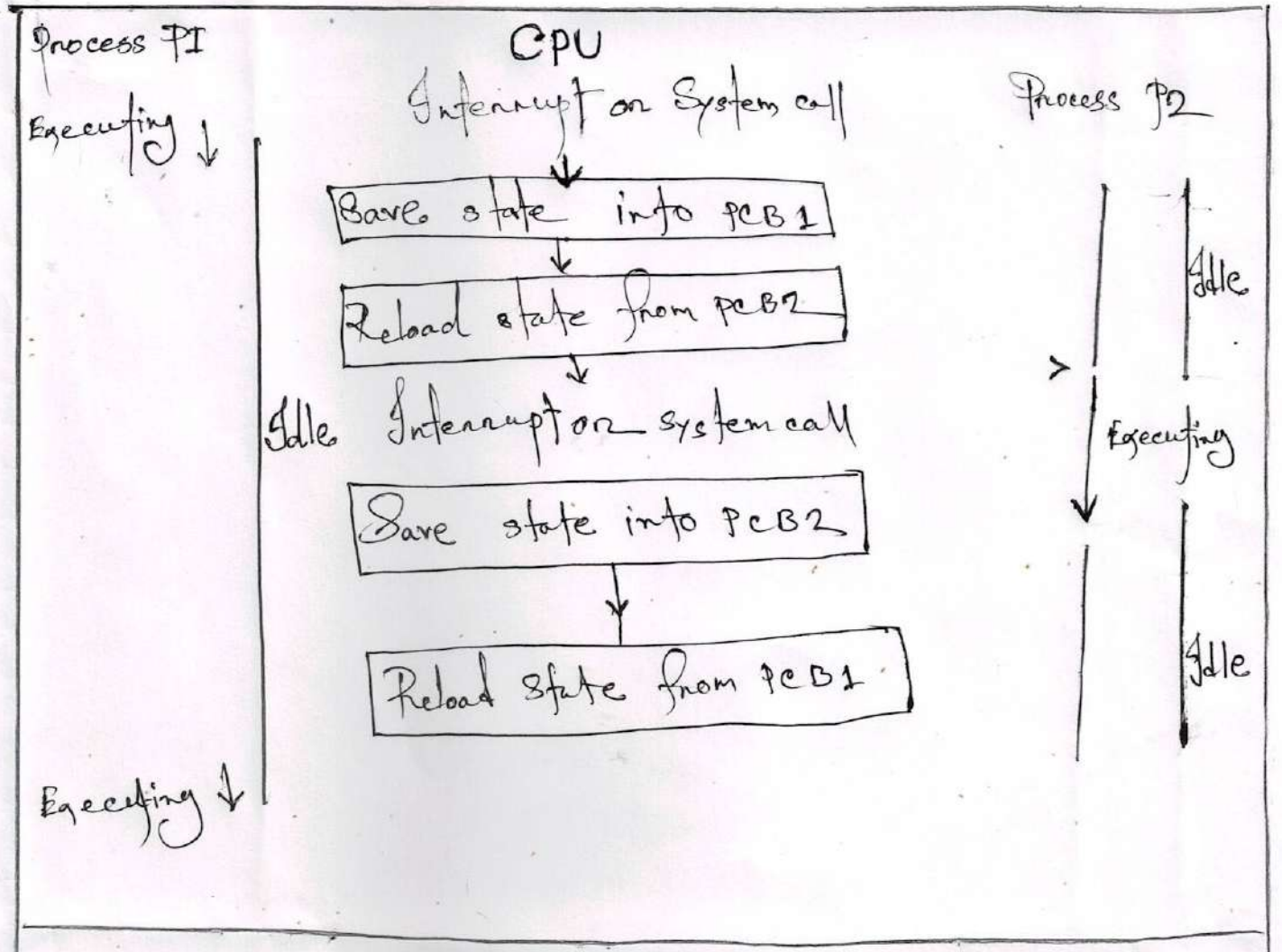
- Internal interrupts.
- External interrupts.
- Exception interrupts.
- Non-Maskable interrupts.
- Software interrupts.

(b) Interrupt programme context switching mechanism:-

Interrupt context switching mechanism is much faster than process switching. The increase in speed is largely due to the fact that the ip-input process is rarely called.

Interrupt Context switching instead interrupts the process currently running on the router to switch the packet. Interrupt Context switching usually by passes the RIB; and works with parallel tables which are build more efficiently.

There are several steps are involves in context switching of the processor. The following diagram represents the context switching of two processes, P1 to P2. when an interrupt i/o needs, or priority-based process occurs in the ready queue of PCB



The following steps are taken when switching process P_1 to process P_2 :

1. First the context switching needs to save the state of process P_1 in the form of the program counter and the registers to the PCB, which is in the running state.
2. Now update PCB P_1 to process P_2 and move the process to the appropriate queue, such as the ready queue, I/O queue and waiting queue.
3. After that, another process gets into the running state, or we can select a new process from the ready state, which is to be executed on the process having a highly priority to execute its task.
4. Now, we have to update the PCB for the selected process P_2 . It includes switching the process state from ready to running state or from another state like blocked, exit, or suspend.
5. If the CPU already executes process P_2 , we need to get the status of process P_2 to resume its execution at the same time point where the system interrupt occurs.

(a) Ans: Analog Interfacing: -

An analog Interfacing is an electrical connection that forwards analog electric signals to downstream electric and electronic devices or components for further processing.

Standardised analog interfaces (e.g. 0/4-02 mA and 0/2-10 V) are also referred to as standard signals.

Since current signals are not sensitive to electromagnetic interference and loss of voltage, they are preferred over voltage signals. The maximum length of a signal cable for the power source is only limited by the maximum load.

(b) Interrupt vector table and its works: -

The interrupt vector table, often abbreviated to IVT or simply iv, is an array of pointers to functions associated by the the cpu to handle specific exceptions, such as faults, system service requests from the application, and interrupt requests from peripherals.

An interrupt request from a hardware component or peripheral will force the cpu to abruptly suspend the execution, and execute the function

at the associated position in the vector. 7
For this reason, these functions are called interrupt service routines.

Interrupt Service routine and its work:-

An interrupt service routine (ISR) is a software routine that hardware invokes in response to an interrupt. ISR examines an interrupt and determines how to handle it executes, the handling, and then returns a logical interrupt value.

An ISR might move data from a CPU register or a hardware port into a memory buffer, in general it relies on a dedicated interrupt thread, called the interrupt service thread, to do most of the required processing.

If additional processing is required, the ISR returns a logical interrupt value to the kernel. It then maps a physical interrupt number to a logical interrupt value.