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BANGLADESH UNIVERSITY OF BUSINESS AND TECHNOLOGY

Class Test-3

Course Code: CSE 315

Course Title: Microprocessor and Microcontroller

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Section: 01

Program: B.Sc. in CSE

Semester: Summer 2020

Date of Submission: 08.11.2020

1 No Ans:

Soln: Interrupts are particularly useful when interfacing I/O devices that provide or require data at relatively low data transfer rates, such as keyboard inputs.

Intrrupts working process:

When we press or release a key, that event is signalled up the keyboard cable to raise a hardware interrupt. The operating system's job is to watch for such intrrupts. For each possible kind of interrupts, there will be an interrupts handler, a part of the operating system that stashes away any data associated with them (key press/ key release ~~valud~~ value) until it can be processed. What the interrupt handler for our keyboard actually does is post the key value into a system area near the bottom of memory. There, it will be available for inspection when the operating system passes control to whichever program is ~~actually~~ currently supposed to be reading from the keyboard.

Every kind of ~~interrupts has~~ interrupt has an associated

priority level. Lower-priority interrupts (like keyboard events) have to wait on higher-priority interrupts (like clock ticks or disk events). Unix is designed to give priority to the kinds of events that need to be processed rapidly in order to keep the machine's response smooth.

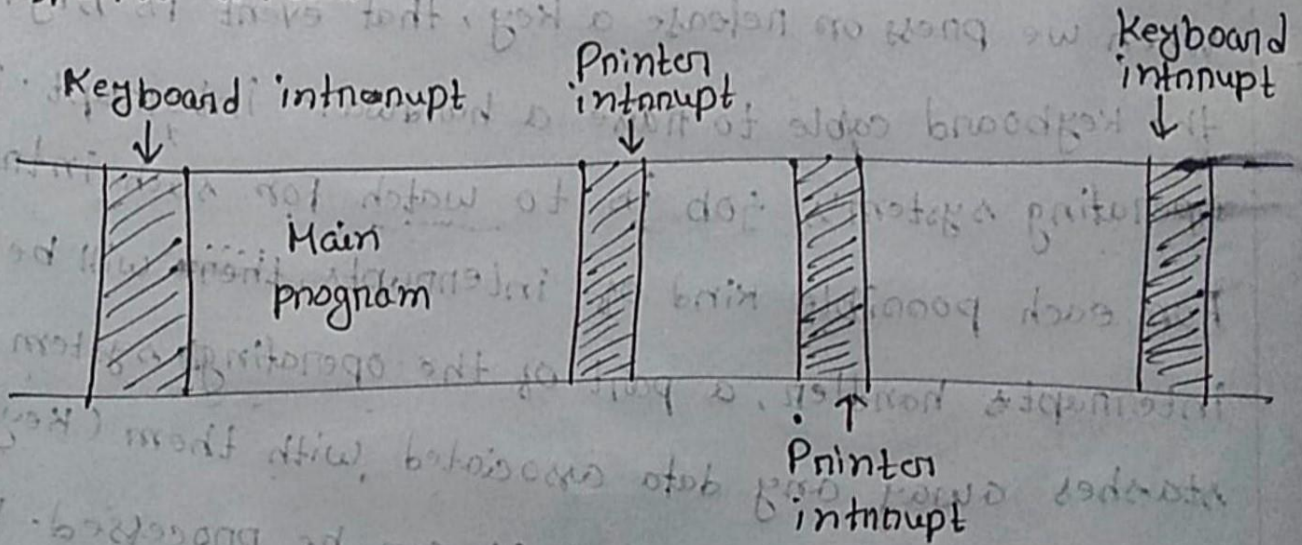

Figure: A time-line of interrupt usage in a typical system.

2 No Ans:

Soln: The direct memory access (DMA) I/O technique provides direct access to the memory while the microprocessor is temporarily disabled.

I/O devices are connected to system bus via a special interface circuit known as "DMA controller".

DMA is different from other I/O Techniques. Explained below:

DMA allows a peripheral device to read from/write to memory without going through the cpu.

Programmed I/O: Processor I/O occurs under the direct and continuous control of the program requesting the I/O operation. Data are exchanged between the cpu and the I/O module.

Interrupt driven: A program issues an I/O command and then continues to execute, until it is interrupted by the I/O hardware to signal the end of the I/O operation.

Whereas DMO: A specilized I/O processor takes over control of an I/O operation to move a large block of data. the I/O module and main memory exchange data directly, without any involvement of processor.

Other I/O 's' such as:

Memory maped I/O: Memory and I/O are treated as memory only. It means no signal like IO/M.

Isolated I/O: Address space of memory and I/O is isolated. It uses IO/M signal.