UNIT 5 COMPUTER ORGANIZATION

* External Devices

External devices are those devices which are connected externally therefore such type of the devices which joins externally is termed as the external devices.

eg Mouse, keyboard, scanner, Monitor etc

Let us seee the external see devices as follow.

① Keyboard:- keyboard is a input devices which is use to write any of the task from the system to the computer.

keyboard is one of the very crucial concept where entire typing operation gets takes place.

② Mouse: Mouse is a pointing device which is ~~tru~~ to point the necessary content and track the courser terminal from one place to another therefore such type of the concept of pointing and selecting data is termed as mouse.

In case of ~~we~~ mouse we can make use of both the buttons in order to select and deselect the content therefore such type of the ~~pattern~~ is termed as the mouse.

③ Scanner :- Scanner is an input device which is used to keep the images of the particular copy into the Digital formate therefore such type of the converter which convert the hard copy the

the soft copy is termed as the Scanner. Scanner will store the content of digital data into the disk.

④ Track Ball :- Track Ball is the replacement of mouse which is use to select or deselect the content and migrate from one place to another just by handling the bigball by the finger, track ball will occupies the less is space and it is use to perform all the operation just as mouse therefore we can replace the content of the mouse by trackball.

⑤ Microphone :- Microphone ~~are~~ is the input device which convert the sound radication into the digital pattern and like voice the voice gets come out from this therefore such type of the concept is termed as the microphone.

Digitizer :- Digitizer is also one of the input device which convert the analog information into digital format therefore such type of the digital converter is termed as digitizer. digitizer is mostly use in case of conversion from the any documental pattern into the digital manner therefore it such type of the concept is termed as digitize.

This are external devices are very much important in order to perform the operation in a proper way.

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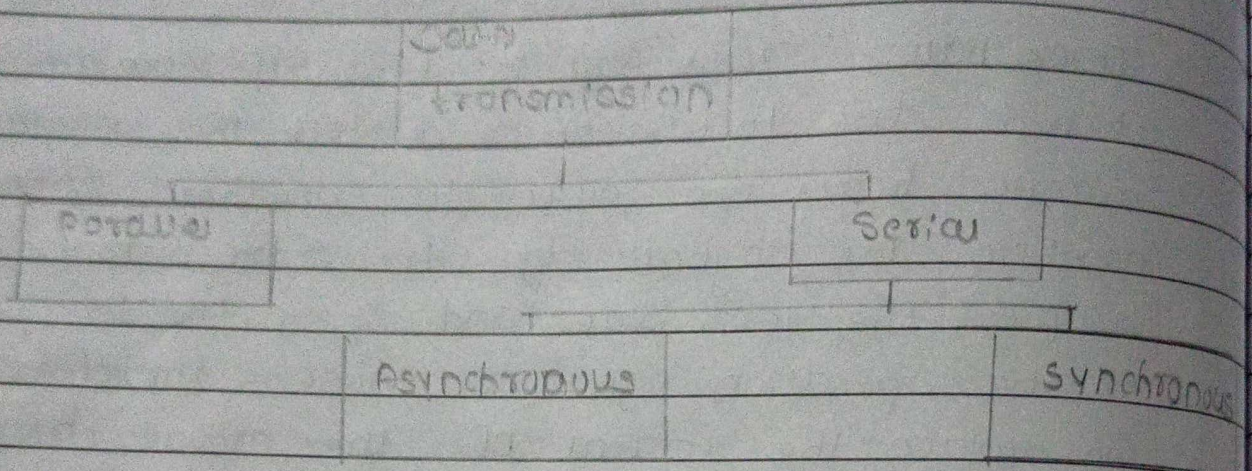
* External interface

The diagramatic representation of external interface is as follows :-



External interface is the particular mechanism of moving the computer operation and studing it then such a concept is termed as external interface.

In this case data transmission gets takes place therefore when the data get transmitted it can follow two step. i.e parallel transmission and serial transmission.

① Parallel transmission :- In case of parallel transmission the multiple data can send be th out one time such type of transmission is parallel.

② Serial transmission :- In case of serial transmission the data gets transmitted one by one. such type of transmission is serial transmission

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serial concept gets two place pattern i.e. Asynchronous transmission and synchronous transmission

Asynchronous transmission:- In case of asynchronous transmission the data gets exicuted in a random manner therefore the first come first sub concept gets takes place and the data get exicuted in a particular flow therefore such type of the concept is termed as Asynchronous data transmission but in case of Asynchronous transmission the data gets exicuted in the asynchronise manner therefore such type of concept is termed asynchronous transmission.

~~S~~ synchronous transmission :- In case of synchronous transmission the data has been given a number and on the basis of the given number the data get exicuted therefore such type of sequential notation which exicute the data in a proper sequence therefore such type of mechanism is termed synchronous transmission.

This two type transmission is mostly used in order to exicute ~~of~~ the content and the data in a general proper way therefore such type of the sequence notation is mostly use in order to exicute the entire process.

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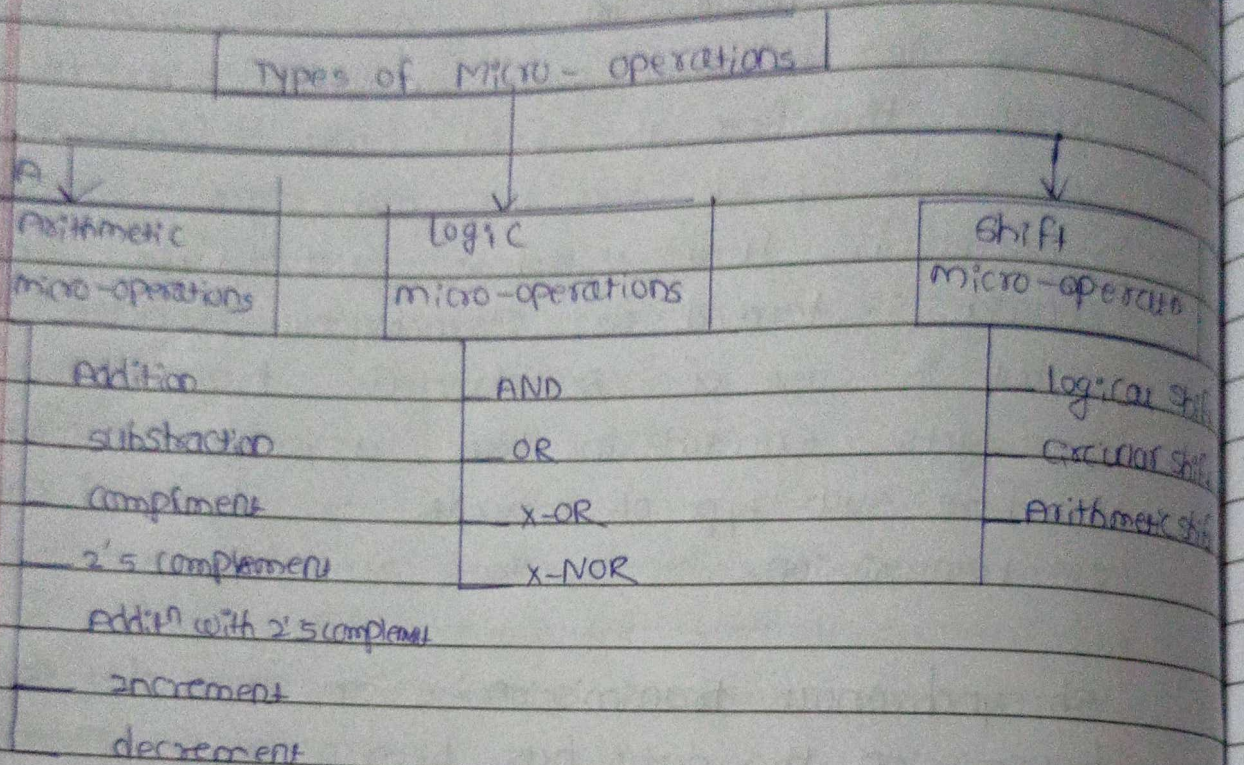
* Micro-operations

The diagrammatic representation of micro-operations is as follows :



Micro-operation consist of three basic types

① **Arithmetic micro-operations** : In case of Arithmetic micro-operation we can perform the mathematical operation related to this there are seven types of operations.

- Addition : It is used to add two instruction
- subbstraction : It is used to substract two instruction
- compliment : It is use to perform the opposite operation of existance that means 0 is converted 1 and 1 is converted to 0.
- 2's complement :- while performing the operation 2's complement we have to perform the 1's complement first and after 1's complement is give then we have to

add 1 into it therefore such type of the concept is termed as 2's complement

- Addition with 2's complement:- In this case we have to perform the addition of 2's complement. were we have to first find out first 2's complement and then after we can perform the addition related to it therefore such type of the arithmetic addition is termed as 2's complement addition.

- Increment :- In case of increment we have to increase the value of variable by one

- decrement :- In case of decrement we have to decrease the value of variable by 1 such type of the concept is termed as decrement :-

2 logical micro-operations :- In this case all the logical micro-operations like And, OR, X-OR and X-NOR this type of gets are used to perform the operation

3 Shift micro-operations :- In case of shift micro operation we have to perform the Shifting operation like logical shift, Circular shift, Arithmetic shift

- logical shift :- logical shit is basically perform in a straight line which is use to perform the operation in a straight way.

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- Circular shift :- There are two operations available in the circular shift i.e left shift or Right shift which is used to increase the value or decrease the value in case of
- arithmetic shift :- we can shift the contents in a both direction along with the arithmetic operations.

In this way the operation of the micro operation gets takes place.

* Multiple processor organization

It is a type of processor which can handle multiple number of data inside it therefore such type of the concept is termed as multiple processor organization.

There are four types processes that undergoes multiple processer organization are as follows

① SISD [Single instruction single data stream]

In this concept we can perform the operation with single instruction and single instruction can handle single data therefore such type of the concept is termed as single instruction single data stream which can handle the single instruction at a time.

② SIMD : In this concept we can execute single instruction at a time and this single instruction can handle multiple number of data inside it therefore such type of the concept is

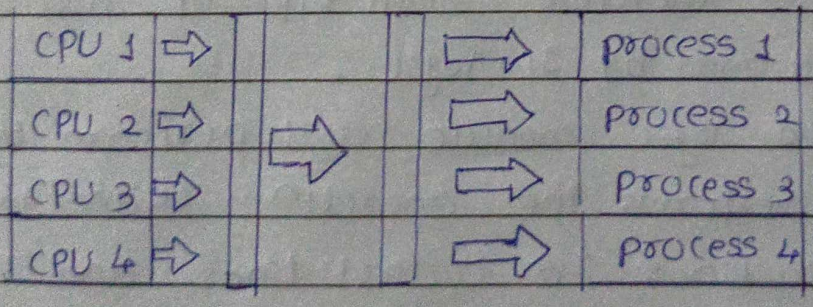
termed as single instruction multiple data stream

③ MISD : Here MISD stands for multiple instruction single data stream which can handle multiple instruction at a time and in this multiple instruction single data stream gets ericuted therefore such type of the concept is termed as multiple instruction single data stream which always performs the operatn by using multiple instruction.

④ MIMD : In this case we can execute multiple instruction and multiple instructn can works on multiple number of data therefore such type of the concept is basicaly use to handle multiple instruction which performs the operation by managing multiple instruction which consist of multiple data.

* Symmetric Multi-processing

The diagrammatic representation of Symmetric multiprocessing is as follows



In this case we have multiple no. of CPU who wants to perform independ and the meaning of Symmetrical content is that it can execute the entire processes at a single time therfore we make use of the holder content who manages each and every CPU at a

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particular time spent therefore that hold the keep will to keep the of 10 to 12 nano sec who performs the operation in a continous way without any hazy tation at any as resp result see that the operation of the processes gets takes place in a very fastest way we're we can see that the operation of the Computer system gets perform at a same time but actually there is a distance of 10 to 12 nano sec of time spent is already existed there thats why such type of the process is termed as symmetric process which performs the operation in a synchronous way therefore such type of the mechanism is termed as the symmetric processess or symmetric multiprocessing.

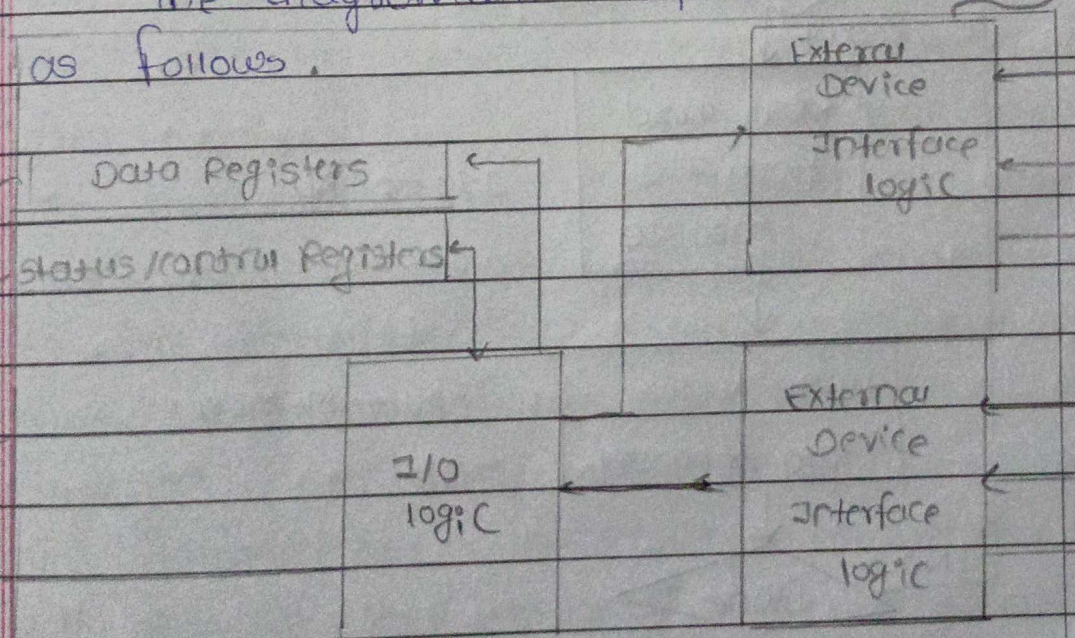
Input-output Module (I/O module) Structure

Input output module is a processer which handle each and every operation related to the input and output therefore such type of handling operation gets performed by I/O logic.

I/O logic module will perform the operation and it performs the operation with the help of two basic lines i.e control lines and Address lines. Control lines are the operational lines which handle all the operation of sequencing. Address lines will handle the address and give the address to the I/O. If any operation is given in the form of data then it will send the operation to the data register. status / control

register will handle each and every operations regarding the complition of the task. if any external inputs gets come then at that time it gets managed by external device interface logic this is a particular component computer system which performs the operation and it steres the data properly. It handles the status of complition, it controles the entire operation. this type of entire work gets handle by I/O logic and the necessary operation gets done related to it.

The diagramatic representation of interface to external device modeule is as follows.



* program I/O

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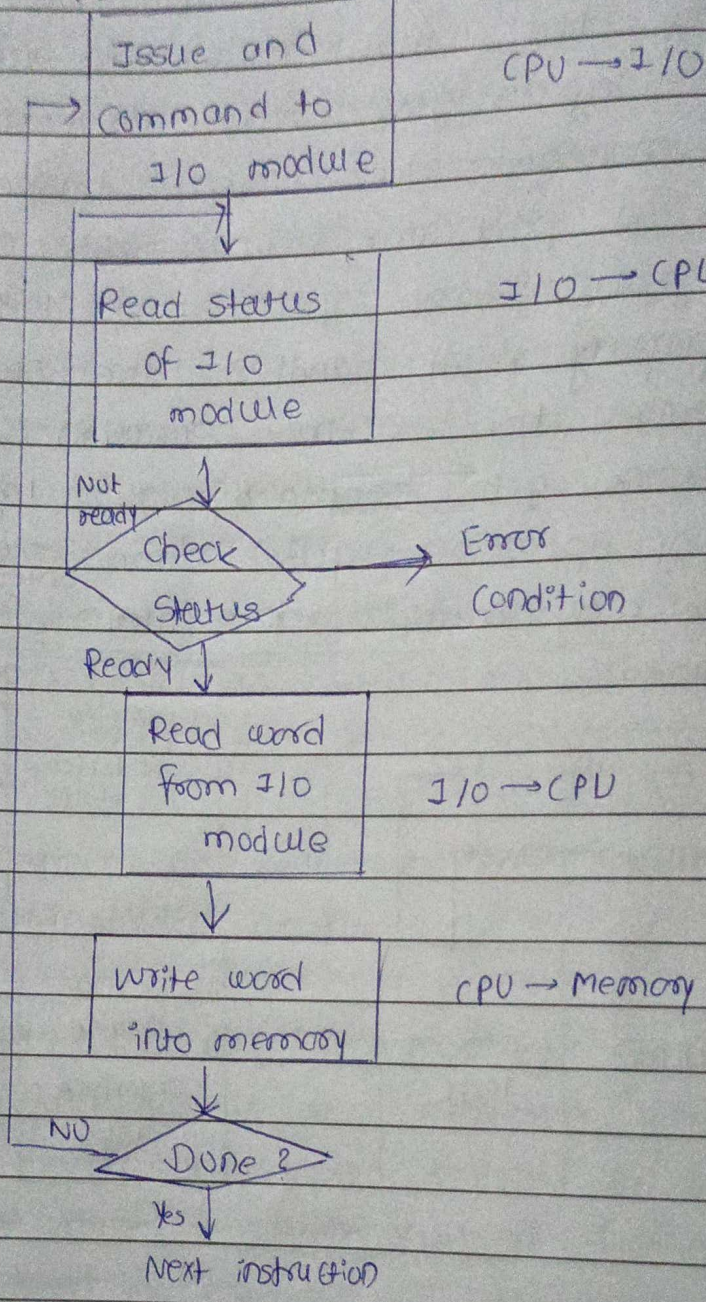
* program I/O



At first we have to make use of CPU and Input output module in order to work on the contents of program input and output then at first the CPU will generate the read command through the input output module were the content get past regarding input and output method here the read command will get exicuted and input and output will send the read status

to the cpu.

In the middle the status gets checked if the status is in the readymode then it can perform the further work but when the status is in not readymode at that time the cursor will again goes back not readymode if the error is obtaining then those error can be handle and solved when the status is in the readymode at that time the input output module will send the read content to the cpu after that cpu will send the write word to the memory and then the new functional block gets ready in order to perform the work if the operation is completely done then they can move to the next instruction and if the operation is not done at that time we have to again start the content from the begining therefore this type of procedure gets handle in order to work and perform the necessary operation theroli therefore this type of the contents are very essential in order to work on the contents very properly therefore such type of the parameter are considered as one of the important parameter were we can perform the work and handle all the contents very neetly. these are the important parameter of the program input output.

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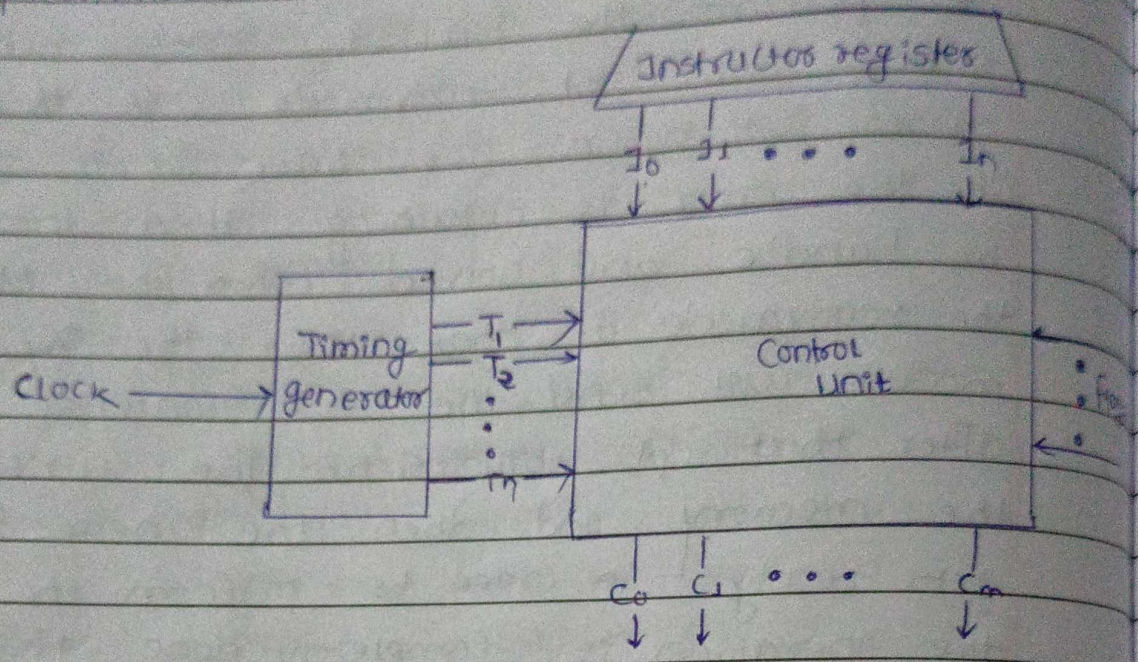
Hardwire Implementation

The diagramatic representation of Hardwire implementation is as follows



In this case the hardwired implementation gets totaly works are the instructions on which gets tota the operational gets performed here there are the five concept on which the instruction gets executed.

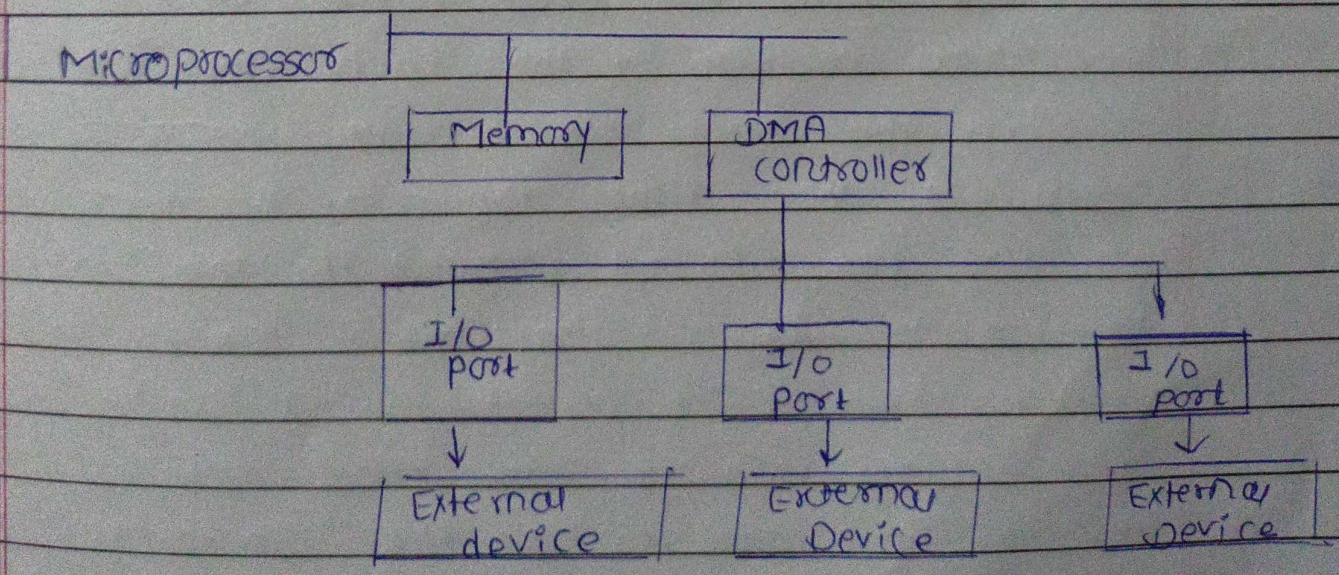
Instruction Register will consist of all the instructions were we have to collect the entire instruction and placed it to the particular box. such type of box is termed as instruction Register

The instruction Register will make all instruction ready with the help of decoder, Decoder will change the instruction into meaningful format.

When the instruction Register will are ready then it gets placed to the control Unit where the exact operation on instruction gets takeep place therefore such type of the implementation mechanism related to the instruction gets takes places. Time

limit is given by the timer named as timing generater. It provides the timing to the given sequence which is processing in the control unit, the timing is basicaly produced by the clock The output which is driven or not driven is decided by the flags, the mechanism of it gets decided in the pattern of one and zero when the output is shown is in the form of that means if is considered as output is completely driven when the value of the flag is set as zero that means output is not detected and it is set as error content therefore this type of mechanism is mostly used by checking the entire output in this way the operatn of the entire content gets tekes place in ~~the~~ this way the operatn Hardwire Implementation gets takes place.

* Direct Memory Access (DMA)



In this case the instruction are placed with microprocessor, microprocessor will send those instruction to the DMA controlles port. therefore the DMA will send all the instruction one by one to the input output port, I/O port will process the input & generate the output from it therefore this type of mechanism is is constructed and the output of it - gets shown by external devices, therefore the inputs gets processed and the memory which is required is handeled by the memory therefore the mechanism of the content gets takes place in their way the direct memory access gets work.

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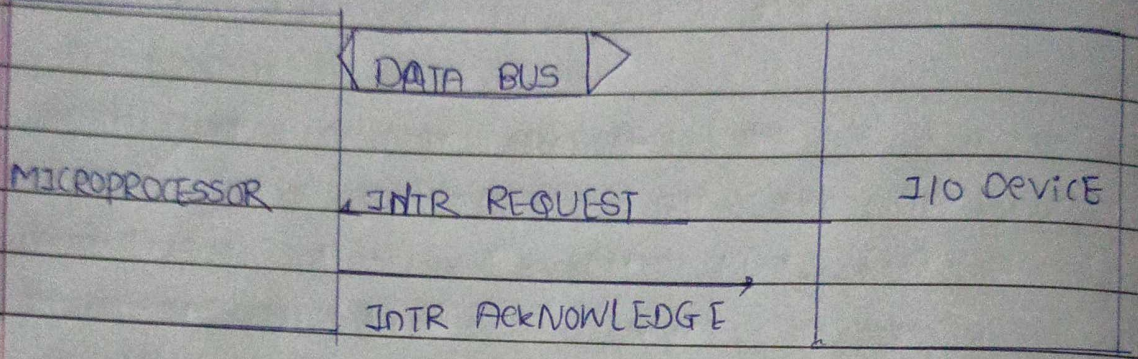
~~Interept Driven~~ I/O

Interept driven I/O

Interept stand for error & how the operation of I/O can be gets done in the computer system is gets crosscheck and the operation are reajected to gets handle



Here enterept stands for error which are use to solve the error content of the particular component computer.

In this case to parameter gets work that is micro-processor and input output device microprocessor will make the Acknowledge error that we want. when the error has been solved It can be handle and manage by the necessary component.

When the error gets checkout and it is completely solved at that time the input output device will send the Enterept request to the microprocessor therefore this type of operation is always performed with the help of Enterept control single where the entire contents gets handle and operated in order to manages all the components of the enterept therefore this type of technique is necessarily use to handle and manages the entire contents of the enterept this results in handling and

managing the components of the interpt signal therefore this type of the mechanism is termed as interpt driven input output.

All the Data manupuation operation can be done by the data bus.

* Applications of Microprogramming

Microprogramming applicatn are the uses of the microprogramming instructn which are basicaly used for the performing multiple number of operations like

① **Realization of computers**:- microprogramming can be used on any type of computer like, tablet, desktop, etc therefore we can say that microprogramming is flexible on any computer operationau devices.

② **Emmulation**:- With the help of microprogramming we can create the different environment were we can perform our operation.

③ **Operating system support**:- microprograming can run on any operating system like linux, unix, mac operating system as well as windows operating system this is one of the bestest advantage where the microprogramming gets used

④ **Realization of special purpose devices**:- In this case we have to make use of the microprogramming for performing the necessary operations and working on

those parameter properly by using the microprogramming for printer, scanner, projecter and any other electronic devices therefore we make use of the mimprogramming for performing all the necessory operation related to it therefore such type of the pattern is basicaly termed as the microprogramming elivestration

5 High level language support :- Microprogramming can be used for performing all the operations of programming like, C, CH, Java, Advance Java etc ~~di~~ these all type of work can be managed and it can be usefull for performing all type of operation in a very systematic way therefore such type of the mechanism is termed as high level language support .

⑥ Microdiagnastick : Microdiagnastic is the particular mechanism which is basicaly used to perform the operation of error checking and perform the necessory operation related to it therefore such type of the concept is also termed debaging which is basicaly use to perform and exicute all the necessory operations these the debaging process is ~~proc~~ termed as very imp. process of determination where the operation of the content is generaly done and it is solved in a very esiast way therefore such type of the concept is basicaly termed as the very crucial mechanism system which operate and place the role of it .

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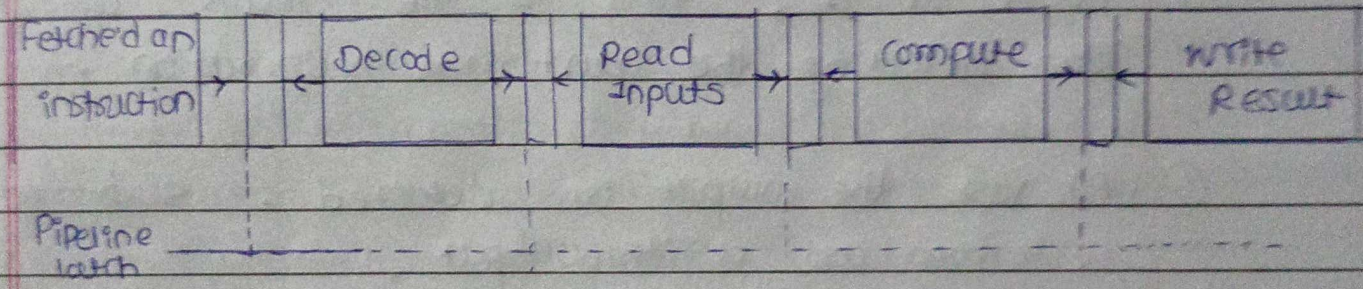
③ User tellaring : user trailering can be work on very efficient this is basis where the data content gets done and the user can perform any type of operation related to it therefore such type of the concept is also termed as User performing the operation and perform the necessary work related to it . such type of User trailering can be done in any microprogramming .

* Pipelining

Pipelined five stages processor



one clock cycle one clock cycle one clock cycle one clock cycle one clock cycle

Pipeline stage

Pipeline concept is basicaly used to perform the operation in a continuous time spend, with the help of this pipeline concept we can perform our operation in a continuous and easy way .

Working

① In this concept we can firstly fetch the instruction , when the instruct has been fetch at that time we have to take out the instruct with the help of which we have to perform the operation , this is the first step.

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② In this case we have apply the decoder. decoder will take out the operator behind the instruction.

③ After this the inputs gets read out and all the necessary data will get pass on to the original inputs, the input gets read and it is send to the computing zone for performing the necessary operations and detecting the final output by processing the particular input, with the help of it we can detecting the respected output on the basis of it, this is the main operation of detecting the particular operation.

④ At last the output is detected. such method is termed as write output.

⑤ For performing this type of task we will use the one clock cycle time in order to perform the work in the particular input zone as well as in a partinular interval such type of the concept is termed as pipeline stages and the particular time spend which is used to in betn the operation are known as the pipeline latch which is used to crosscheck the entire content and perform the operation properly.

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Control Unit operations

Diagrammatic representation is as follows

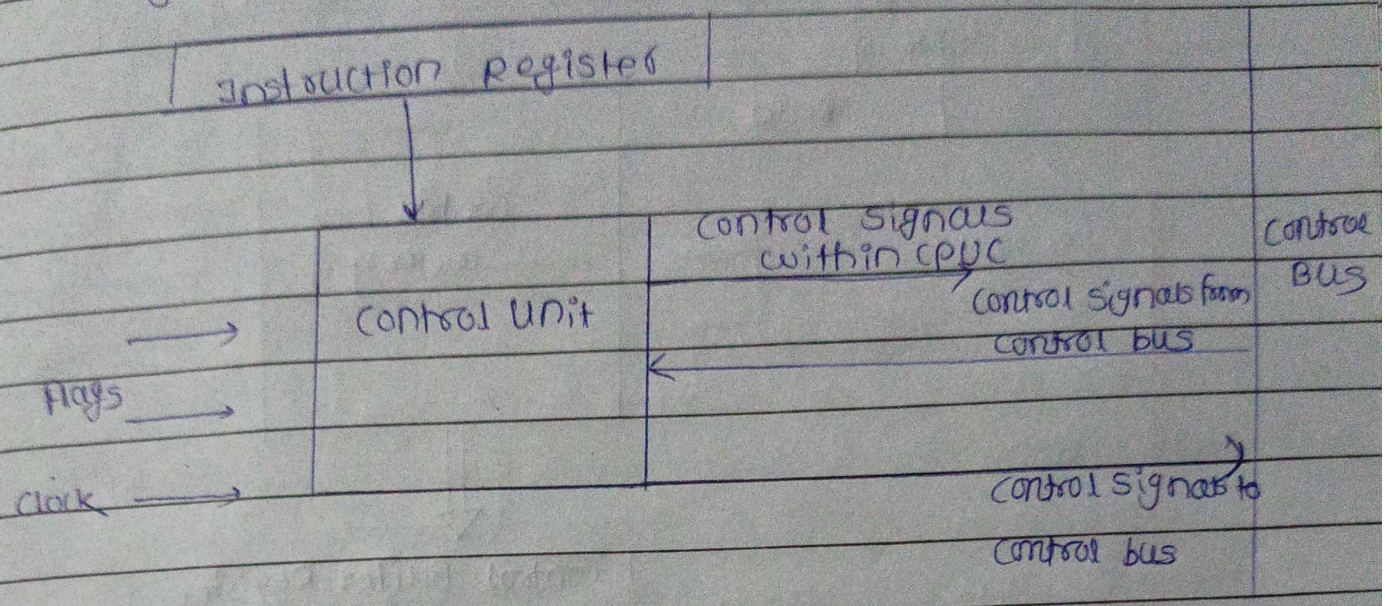

fig Block Diagram of the Control Unit

Control Unit operation can be performed and managed by using control bus, control bus will send the input and generates the necessary output therefore such type of the pattern is termed as operation of control bus, control bus will send the input to the control unit. Control Unit will perform the operation and the backup of it is stored inside the instruction register so that it can be used in further future. clock will gives us the particular time span and flag will detects that whether the operation is completely done or not such type of the mechanism is performed and send it to the control bus for showing the output.

In this way the control unit works.

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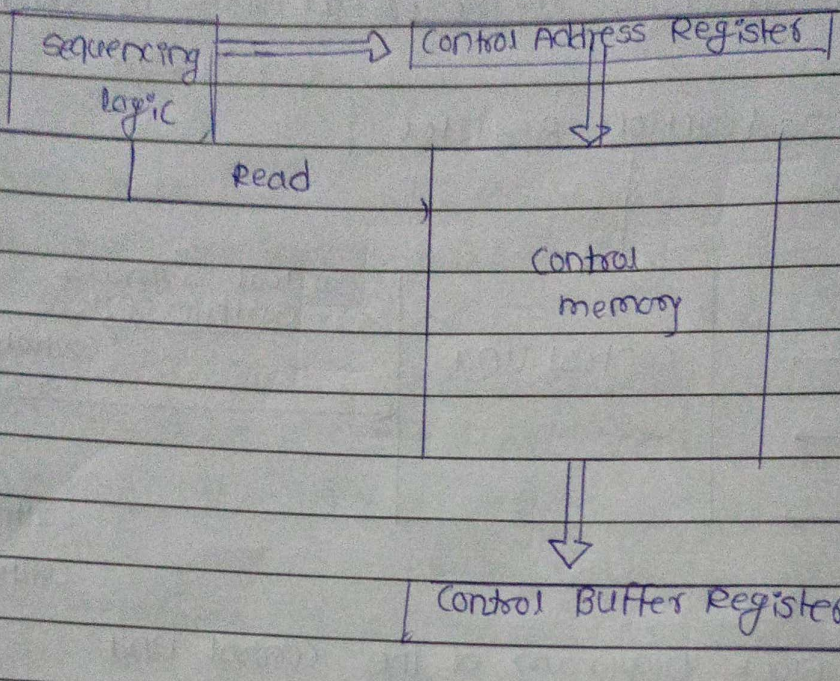
Basic Concept of Control Unit



In this case we have one basic component known as Sequencing logic it is basicaly used to store all the content in a particular sequence logic, when the operation has to be performed at that time it is used to send forward towards the Control Address Register, the control address register will provide the necessary address in order to ~~allocate~~ provide the proper memory therefore it sends the data related to the address towards the Control memory, Control memory will provide the necessary space will provide the proper memory location which results in all the proper operation related to the proper memory space at last the Control buffer register will perform all the necessary operation therefore the data gets completely matched and it is properly solved the sequencing logic will detect the entire

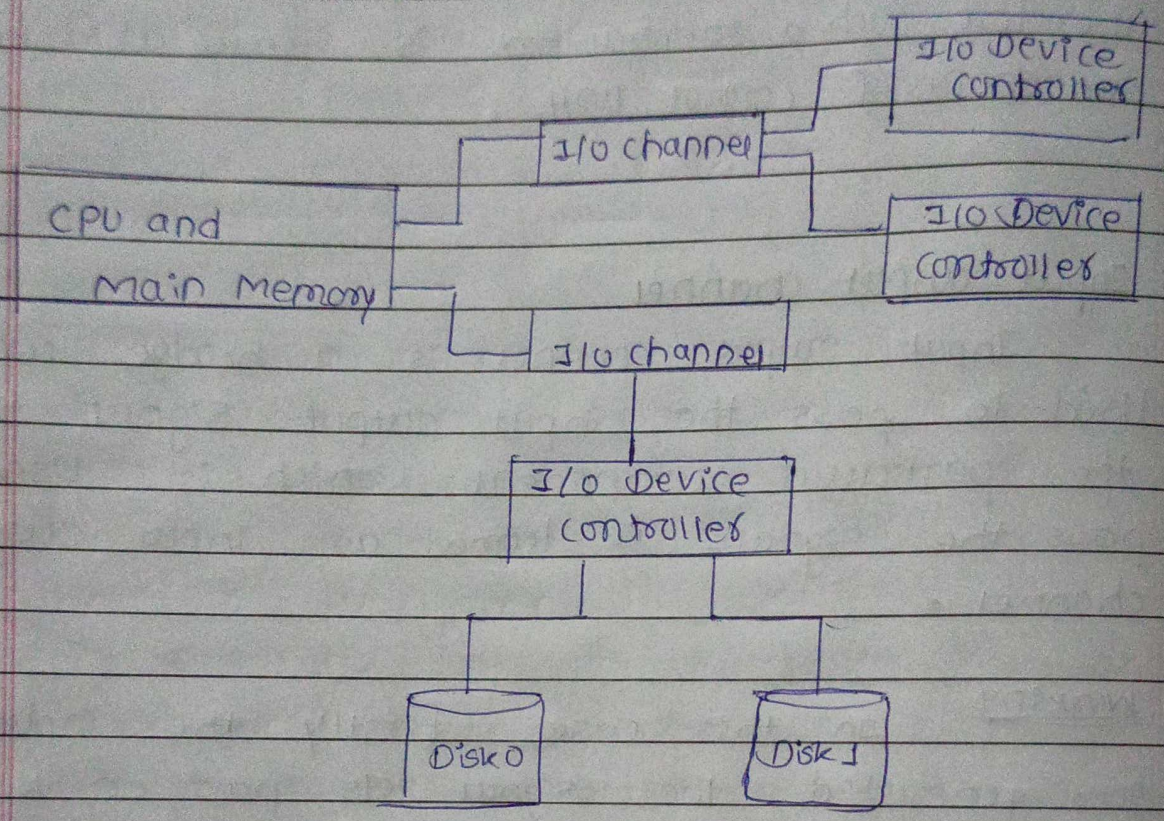
operation whether it is completely solved or not therefore such type of the pattern can be taken by reading the content of the control memory therefore such a mechanism is termed as basic component of control unit.

* Input output channel

Input output channel is a bridge which is used to pass the input output signal therefore the particular component which is used to pass the signals is termed as input output channel.

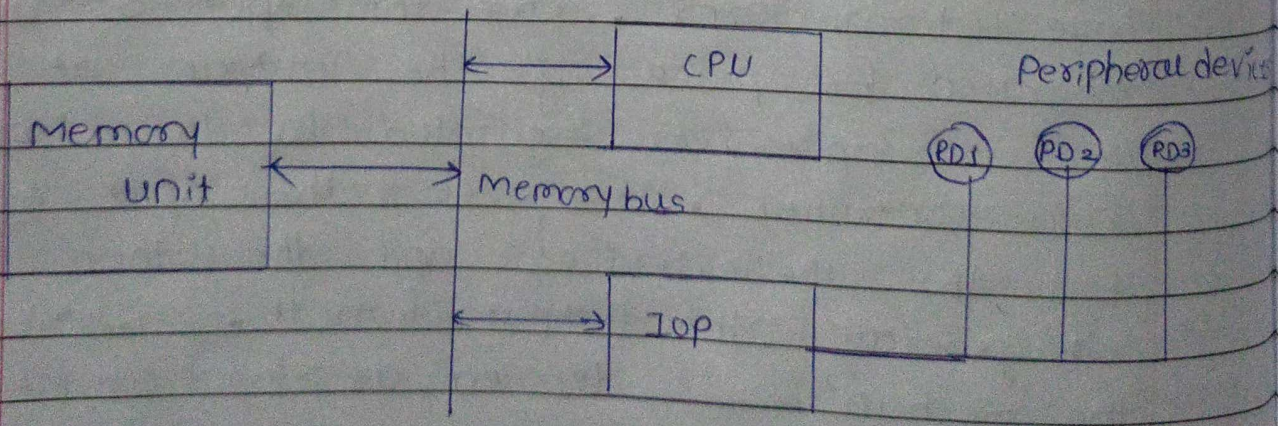
Working In this case firstly the inputs signal gets generated, the signal gets pass on to the input output channel, when the data belongs to the storage then it is send to the input output device controller which excepts the data input and storating in the disk which is a huge storage area, when the input signals are generated for processing the output at that time the input gets excepted by the input output device controller, it process the input by sending it to the other devices and the other devices will generate the output from it. such type of the mechanism is termed as input output channel implimentation.

The diagramatic representations input output channel is as follows :



* Input output processor

The diagramatic representation of input output processor is as follows



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Whenever we want to perform any type of operation at that time we have use of the processor which except the input and generated the output from it after the processing therefore such type of the component is termed as the input output processor. in this case the memory Unit will covers the space and generate it for performing further operation this space is handled by memory bus and memory bus will checkout whether the component belongs to input output processing are the general operation.

Here the component data is for input output then it is send to input output processing and the entire data gets process and output is detected from it and those output is send to the other periferal devices in order to dreve the output.

If the data belongs to general operation then it is send to the cpu. processing and detecting the output is done by the cpu. In this way input output processor gets work.

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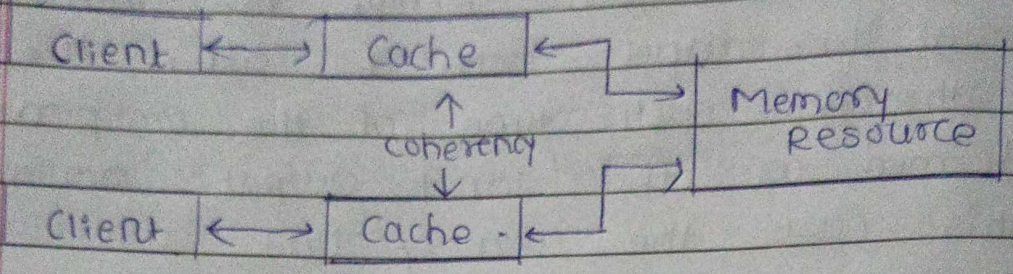
cache choc

* Cache coherance

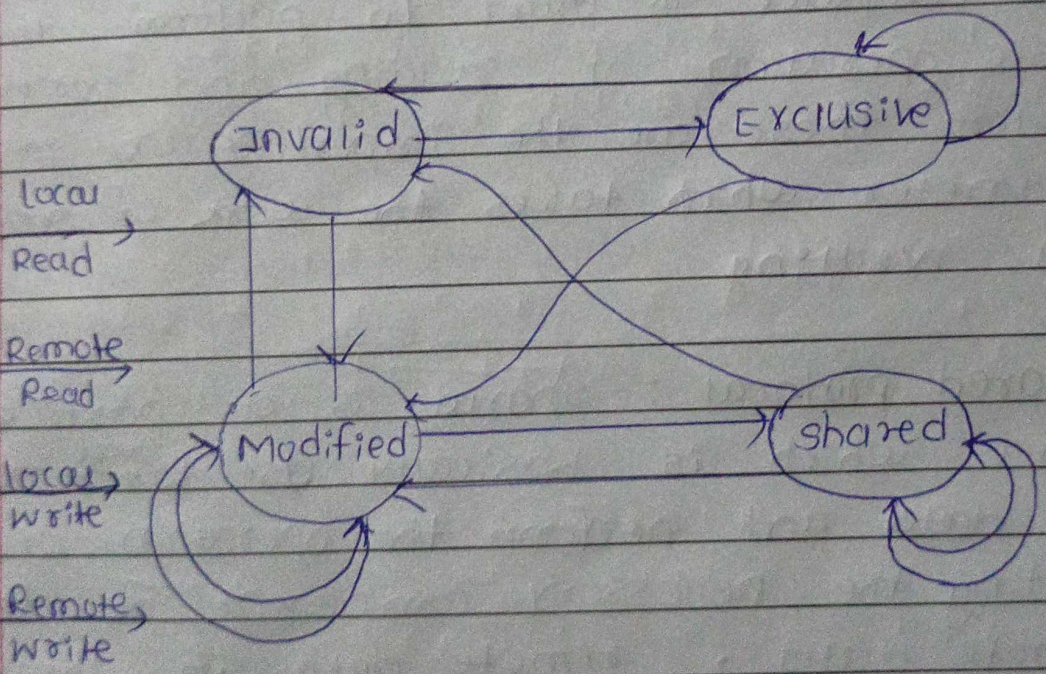


Cache coherance is the particular process which works on a klind side. This type process is a two way process there were the two klind gets works at a single time therefore whenever two klinds performance the operation with the computer at that time while performing the operation the error make was therefore this type of the concept is basicaly used for managing the error and make the particular operation error free therefore this type of mechanism is mostly useful for detecting and solving the error such type of process is termed as the cache coherance technique which results in performing the operation of error solving and make the entire code totaly independant therefore such type of the mechanism is generaly used for solving the error and make the content of it error free therefore - such error free code is generally placed in the memory resource which can be easily excesible other user and they can maximumly use this content for there need.

this may result in applying the necessary data content and it results in solving the operation very significantly therefore such type of the content is considered as one of the time efficient concept which results in fast operation and fast running process therefore this is considered as one of the very efficient process of data handling. therefore this cache coherance is one of the very demanding step.

* MESI Protocal

The diagramatic representation of MESI protocal is as follows



This type of protocal stands for Modified, Exclusive, shared, and invalid therefore these four types of protocal are basically used to follow the necessary component related to this therefore such type of the parameter is

termed as the MESI protocal.

① Modified protocal :- In case of modified protocal all the local data, the data means of very small distance area therefore this type of data is use for handling.

② Exclusive protocal :- In case of exclusive protocal we can read ~~out~~ write the node of other computers can easily collide and the local data content can be easily ~~can~~ access therefore we can say that modifide and exclusive particular zone are basically workes on the local computer in order to perform the basic operation of reading and writting therefore these are the important and initial parameter which takes the work of reading and writting

③ Shared protocal :- shared is a particular space which is basically use to read remote the data and perform the operation of reading the necessory component of the remote data, remote data if the particular data which is used to except the particular component and perform the necessory operation regarding it therefore such a concept is termed as the data belongs to huge distance range.

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(4) Invalid protocal :- In case of Invalid protocal we can write the remote data content which results in the exceptance of huge data which is basicaly use to operate & work on the content therefore this mechanism is basicaly termed as the MESI protocal ranges.

In case of computer architecture this place a very importent role while excessing and storing the data belongs to the necessary rules and regulation protocal range.