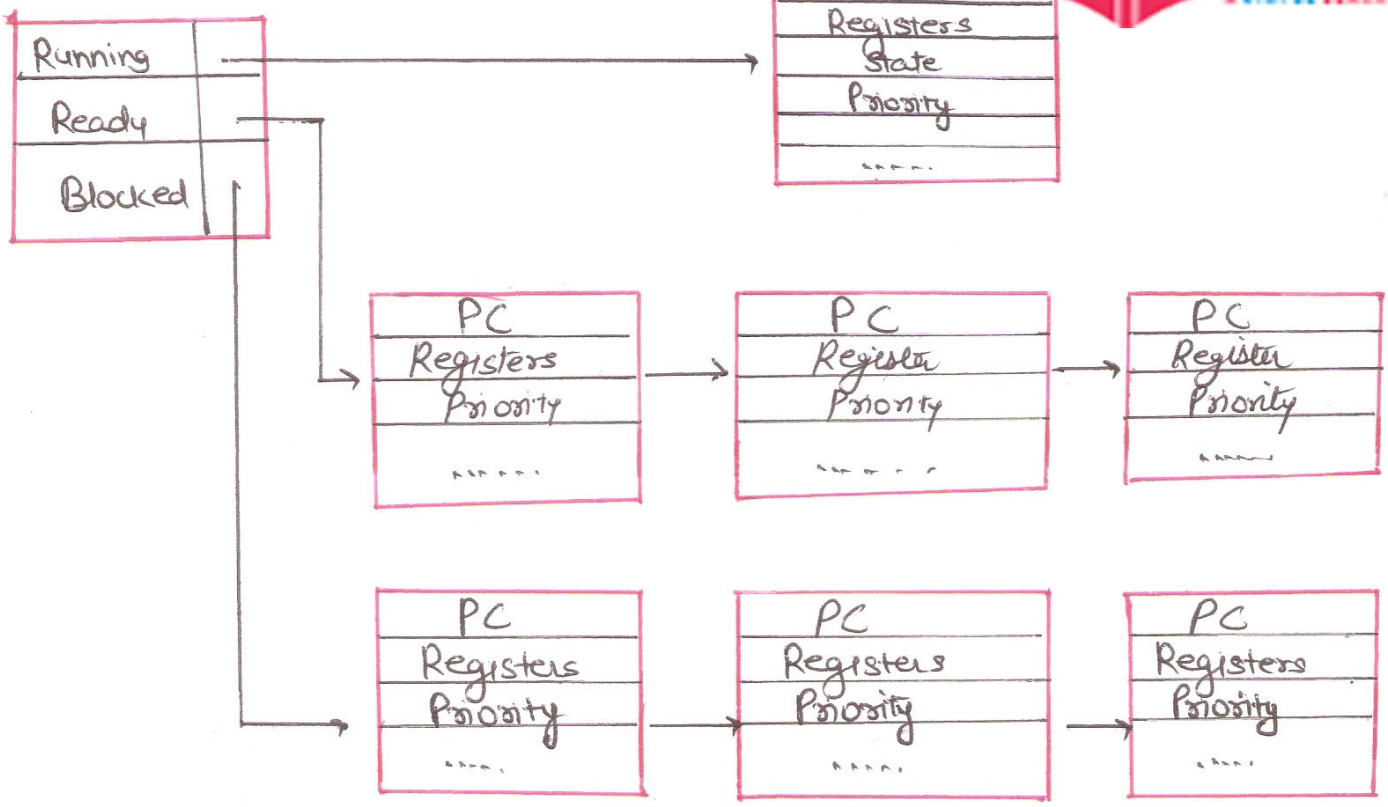
Implementation of processes

Process Model is implemented by the process Table and process Control Blocks which keep track all information of process.

→ At the time of creation of a new process, the OS allocates a memory for it loads a process code in the allocated memory and setsup data space for it.

→ The state of process is stored as 'New' in its PCB and when this process move to Ready state its state is also changes in PCB.

→ When a running process needs to wait for an I/O device, its state is changed to 'Blocked'. The various queues used for this which is implemented as linked lists.



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There are mainly following queues.

Read queue: for storing the processes with State Ready

Blocked queue: for storing the processes that needs to wait for an I/O device or a Resource.

Suspended queue :- for storing the blocked processes that have been suspended.

Free-process queue : for the information of empty space in the memory where a new PCB can be created.

Each PCB has a pointer that points to next PCB. There is a header for each type of queue. The header stores the information about the first and last PCBs in that queues.

There is one more header giving the information about the running process information; however there is no queue of running processes because there is only one process in the System.

One more queue → information about process' Area → which free after the termination of a process which is free or release the memory after process termination. and this memory area can be used for a new process.

Besides changing the state of a process, PCB saves its position for further resumption where it left off. Initially, the process program Counter, program Status word, registers and other information are stored on the stack.

After this, the stack information is stored in the corresponding PCB of the process.

This saving of the status of the running process in its PCB is called 'Context Saving'.

After saving the context of a process, the appropriate event - handling function is executed.

for example for Wait State for an I/O device, then it is sent to the queue of the blocked processes.

→ After this there is requirement that another process be dispatched to the CPU as current process has been interrupted.

Therefore, Scheduler is called to schedule a process from the ready queue.

After selecting the process from Ready queue, its PCB is loaded and dispatched to the CPU for execution.

In this way, the processes are implemented by saving their context in PCBs and making State change possible

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Computer Science Lectures By ER. Deepak Garg