

Define a process, its states with the help of a diagram ?

## Process:

- A process is an instance of a running program on a computer system.
- It represents the execution of a specific task or application by the CPU.
- Each process has its own memory space, program code, data, and system resources, which are managed by the operating system.
- Processes can transition through different states during their lifecycle.

A process passes from number of states during its life, states are as follows

- 1) New state
- 2) Ready state
- 3) Running state
- 4) Wait state
- 5) Termination state
- 6) Suspend ready state
- 7) Suspend wait state

Description of all the states are as follows-

New State:

First state is known as *new state*. New state is the state when the process is under creation.



Ready State:

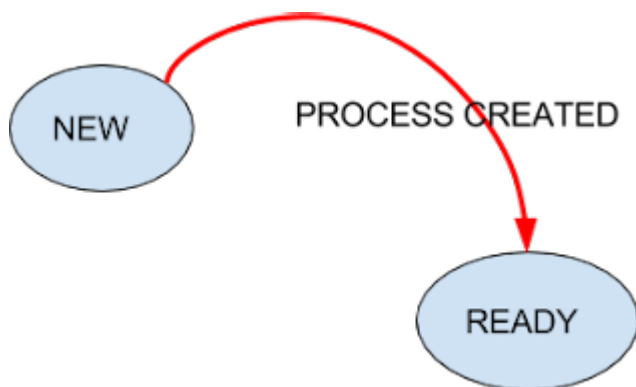
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When the process is created new state comes, which is called *ready state*.

After creation process comes under ready state.

In ready state more than one process can also come.

For example: One process is created at the same time second process is created then both the process will come under ready state.



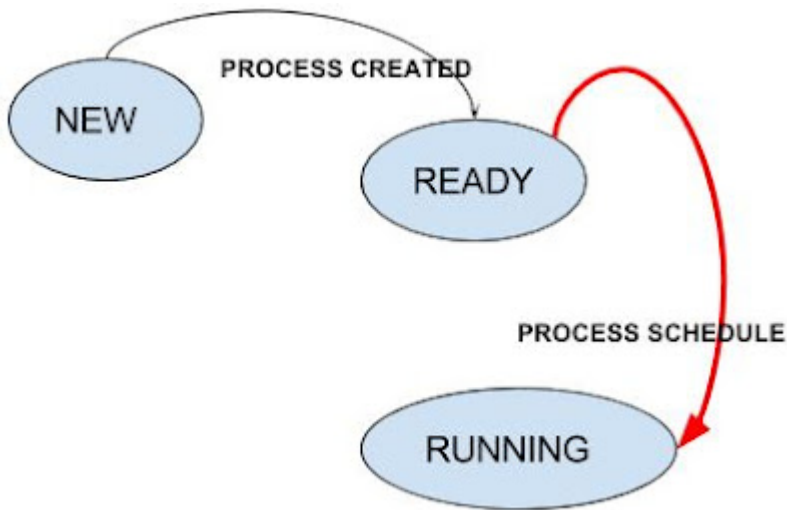
Running State:

From ready state we have to select a process, and then have to allot CPU to that process for run.

When CPU is allotted to process in ready state that process comes in *running state*.

In running state only one process can stay at a time. Because CPU can be allotted to single process at a time.

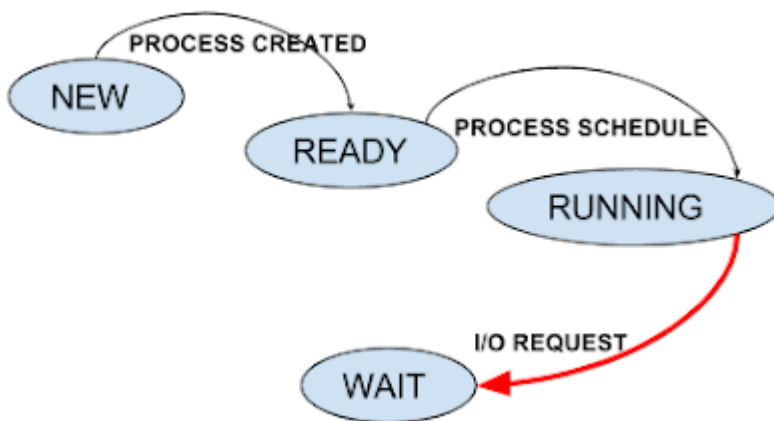
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Wait State:

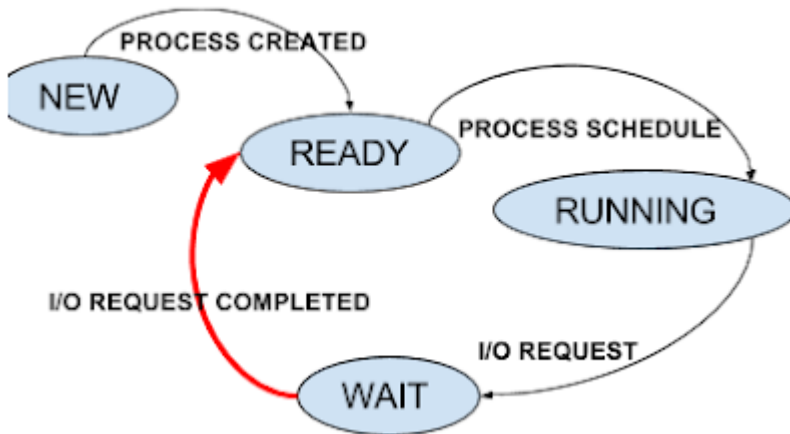
When a process request for input/output than that process will left the running state, and will join new state known as wait state.

In wait state more than one process can stay.

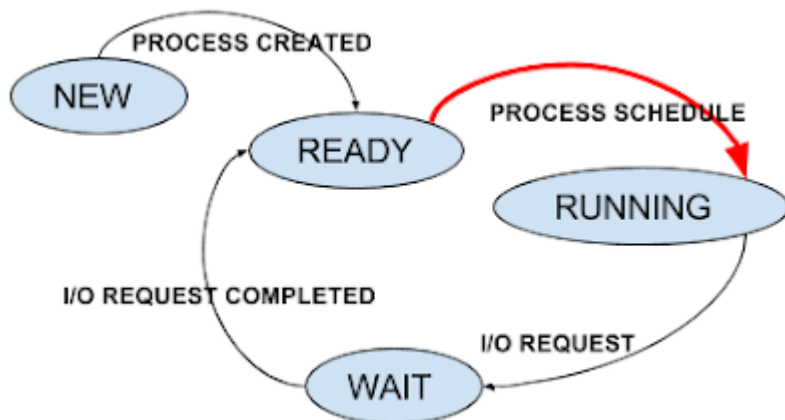


After completion of I/O request process will go to ready state.

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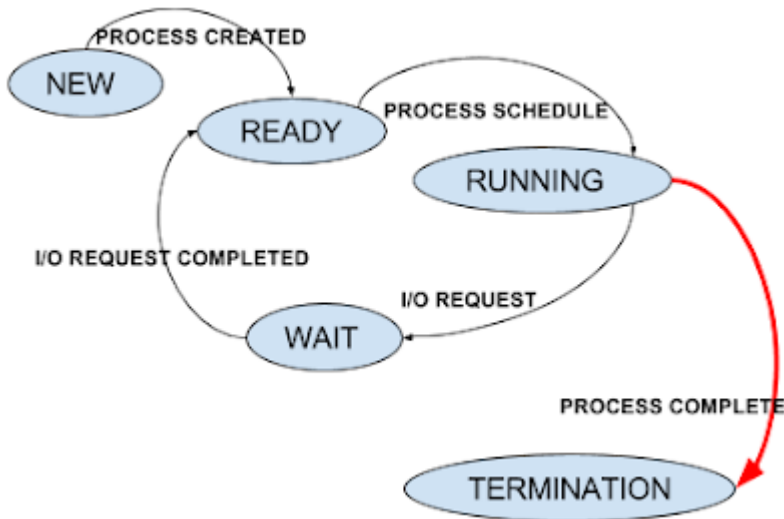


From ready state the process will go to again running state.



Termination State:When process comes in running state, there is no more input output request by the process, because it's already get completed. So process will go to *termination state*.

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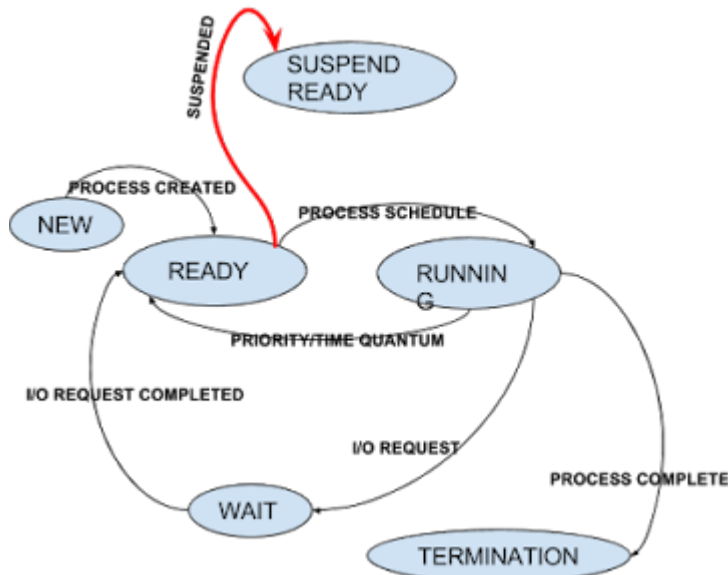
These are the basic states in process state diagram.

Ready state and wait state can contain many processes, so their size gets increases.

Suspend ready state:

When ready state is not able to occupy more states in it, than some states are suspended in *suspended state*.

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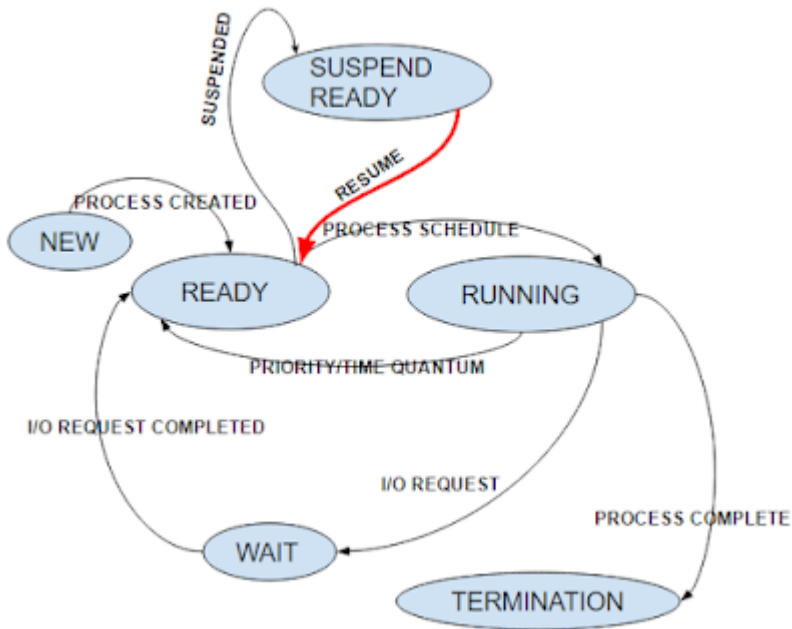


Suspend ready state will be in *secondary memory* not in primary memory.

When ready state get space for new processes than, processes from suspended ready state gets switch back to ready state.

Such transaction is known as *resume*.

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Suspend wait state:

Similarly suspend wait state is also reside in process state diagram.

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