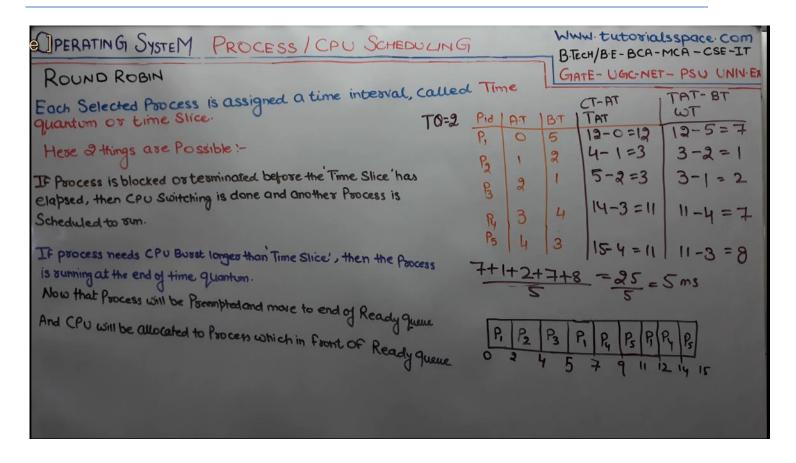# Round Robin Scheduling Algorithm

- Round Robin scheduling algorithm is one of the most popular scheduling algorithm which can actually be implemented in most of the operating systems.

- This is the **preemptive version** of first come first serve scheduling.

- The Algorithm focuses on Time Sharing. In this algorithm, every process gets executed in a **cyclic way**.

- A certain time slice is defined in the system which is called time **quantum**.

- Each process present in the ready queue is assigned the CPU for that time quantum, if the execution of the process is completed during that time then the process will **terminate** else the process will go back to the **ready queue** and waits for the next turn to complete the execution.

OPERATING SYSTEM PROCESS / CPU SCHEDULING

ROUND ROBIN

Each Selected Process is assigned a time interval, called Time quantum or time Slice.

Here 2 things are Possible :-

If Process is blocked or terminated before the Time Slice has elapsed, then CPU Switching is done and another Process is Scheduled to run.

If process needs CPU Burst longer than Time Slice, then the Process is running at the end of time quantum.

Now that Process will be Preempted and move to end of Ready queue.

And CPU will be allocated to Process which in front of Ready queue.

TQ = 2

Pid	AT	BT	TAT (CT-AT)	WT (TAT-BT)
P_1	0	5	12-0 = 12	12-5 = 7
P_2	1	2	4-1 = 3	3-2 = 1
P_3	2	1	5-2 = 3	3-1 = 2
P_4	3	4	14-3 = 11	11-4 = 7
P_5	4	3	15-4 = 11	11-3 = 8

$$\frac{7+1+2+7+8}{5} = \frac{25}{5} = 5 \, ms$$

P_1	P_2	P_3	P_1	P_4	P_5	P_1	P_4	P_5

0   2   4   5   7   9   11   12   14   15

Advantages

1. It can be actually implementable in the system because it is not depending on the burst time.
2. It doesn't suffer from the problem of starvation or convoy effect./
3. All the jobs get a fare allocation of CPU.

Disadvantages

1. The higher the time quantum, the higher the response time in the system.

2. The lower the time quantum, the higher the context switching overhead in the system.

3. Deciding a perfect time quantum is really a very difficult task in the system.