

ROUND ROBIN ALGORITHM

A round-robin is a CPU scheduling algorithm that shares equal portions of resources in circular orders to each process and handles all processes without prioritization. In the round-robin, each process gets a fixed time interval of the slice to utilize the resources or execute its task called time **quantum or time slice**. Some of the round-robin processes are pre-empted if it executed in a given time slot, while the rest of the processes go back to the ready queue and wait to run in a circular order with the scheduled time slot until they complete their task. It removes the starvation for each process to achieve [CPU](#).

ROUND ROBIN CPU SCHEDULING ALGORITHM

Step 1: Organize all processes according to their arrival time in the ready queue. The queue structure of the ready queue is based on the FIFO structure to execute all CPU processes.

Step 2: Now, we push the first process from the ready queue to execute its task for a fixed time, allocated by each process that arrives in the queue.

Step 3: If the process cannot complete their task within defined time interval or slots because it is stopped by another process that pushes from the ready queue to execute their task due to arrival time of the next process is reached. Therefore, CPU saved the previous state of the process, which helps to resume from the point where it is interrupted. (If the burst time of the process is left, push the process end of the ready queue).

Step 4: Similarly, the scheduler selects another process from the ready queue to execute its tasks. When a process finishes its task within time slots, the process will not go for further execution because the process's burst time is finished.

Step 5: Similarly, we repeat all the steps to execute the process until the work has finished.

CHARACTERISTICS OF ROUND ROBIN ALGORITHM

1. It is a pre-emptive algorithm.
2. It shares an equal time interval between all processes to complete their task.
3. It is a starvation free CPU scheduling algorithm. Hence it is known as the fairest and simple algorithm.

ADVANTAGES

1. It does not face any starvation issues or convoy effect.
2. Each process gets equal priority to the fair allocation of CPU.
3. It is easy to implement the CPU Scheduling algorithm.
4. Each new process is added to the end of the ready queue as the next process's arrival time is reached.
5. Each process is executed in circular order that shares a fixed time slot or quantum.
6. Every process gets an opportunity in the round-robin scheduling algorithm to reschedule after a given quantum period.

DISADVANTAGES

1. If the time quantum is lower, it takes more time on context switching between the processes.
2. It does not provide any special priority to execute the most important process.
3. The waiting time of a large process is higher due to the short time slot.
4. The performance of the algorithm depends on the time quantum.
5. The response time of the process is higher due to large slices to time quantum.
6. Getting a correct time slot or quantum is quite difficult for all processes in the round-robin algorithm.