

For example, Suppose there are 5 different processes as given below: Let us Suppose for the above processes, the time quantum to be 10 ns then the Gantt Chart for Round robin scheduling is:

Chart 1: Gantt Chart

The characteristics of good scheduling algorithms are: Total Wait time, Minimum context switches, Maximum CPU utilization, Maximum throughput, Minimum turnaround time, Minimum Now Average Waiting time will be: 300.5, 60, 101.21, 300 waiting time, Turn around time: 52, 57, 90, 108, 101, 408. Average turn around time: 408.5, 81.

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The main disadvantage drawback in this RR is that 2.2 Flowchart: Average turn around time and Average Waiting time is more and mainly context switching is too much which makes the algorithm very inefficient.

End Chart 1: Flow chart for the algorithm Illustration

Let us assume five processes with their burst time as given below:

| Process | Burst time |
|---------|------------|
| P1 | 13 |
| P2 | 35 |
| P3 | 46 |
| P4 | 63 |
| P5 | 97 |

Table 2: Processes burst time chart

Now, as per the algorithm Time Quantum is calculated as follows:

$$\text{Time Quantum (TQ)} = \text{Ceil}(\sqrt{\text{median highest Burst time}})$$

$$\text{TQ} = \text{Ceil}(\sqrt{46 \times 97}) = 67$$

So the Gantt chart is:

A. P1 B. P2 C. P3 D. P4 E. P5 F. P5

| Process | 0 | 13 | 48 | 94 | 157 | 224 | 254 |
|---------|---|----|----|----|-----|-----|-----|
| P1 | | | | | | | |
| P2 | | | | | | | |
| P3 | | | | | | | |
| P4 | | | | | | | |
| P5 | | | | | | | |

Chart 2: Gantt Chart

Here, Number of Context Switches = 5

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Average Waiting Time = $(0 + 13 + 48 + 94 + 157) / 5 = 62.4$

Average Turn around Time = $(13 + 48 + 94 + 157 + 254) / 5 = 113.2$

Now if we implement the same illustration by round robin algorithm then in this manner time quantum is 25 in above case and hence context switch comes out to be 11 and average waiting time also becomes 97.4 and average turnaround time comes out to be 148.2.