*Response time = first\_run – arrival Turnaround = completion – arrival*

**Question 1**: Compute the response time and turnaround time when running three jobs of length 200 with the SJF and FIFO schedulers.

Answer:

|  |  |
| --- | --- |
| SJF | FIFO |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Response Time | Turnaround | Response Time | Turnaround |
| Job 0 | 0 | 200 | 0 | 200 |
| Job 1 | 200 | 400 | 200 | 400 |
| Job 2 | 400 | 600 | 400 | 600 |

**Question 2**: Now do the same but with jobs of different lengths: 100, 200, and 300.

Answer:

|  |  |
| --- | --- |
| SJF | FIFO |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Response Time | Turnaround | Response Time | Turnaround |
| Job 0 | 0 | 100 | 0 | 100 |
| Job 1 | 100 | 300 | 100 | 300 |
| Job 2 | 300 | 600 | 300 | 600 |

**Question 3**: Now do the same, but also with the RR scheduler and a time-slice of 1.

Answer:

|  |  |  |
| --- | --- | --- |
|  | Response Time | Turnaround |
| Job 0 | 0 | 198 |
| Job 1 | 1 | 299 |
| Job 2 | 2 | 300 |

**Question 4**: For what types of workloads does SJF deliver the same turn-around times as FIFO?

Answer: When the jobs arrive at the same time, and when jobs are longer compared to the previous job.

**Question 5**: For what types of workloads and quantum lengths does SJF deliver the same response times as RR?

Answer: When all jobs have the same length, including the quantum length.

**Question 6**: What happens to response time with SJF as job lengths increase? Can you use the simulator to demonstrate the trend?

Answer: As the job length increases, the response time increases as well.

|  |  |
| --- | --- |
| Job Length | Avg. Response Time |
| 100, 200 | 50 |
| 100, 200, 300 | 133.33 |
| 100, 200, 300, 400 | 250 |
| 100, 200, 300, 400, 500 | 400 |

**Question 7**: What happens to response time with RR as quantum lengths increase? Can you write an equation that gives the worst-case response time, given N jobs?

Answer: As the quantum lengths increase, response time increases as well, since the time slice a job gets to run goes up.

N = number of jobs Ln = length of job *n*

Worst-Case: RT = ∑ Ln / N

= Sum of all the lengths, divided by the number of lengths