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1. Benchmark Table

|  |  |  |  |
| --- | --- | --- | --- |
| **Scheduling Policies** | **Priority / Nice** | **Speed (tok/s)** | **Avg CPU Usage (%)** |
| SCHED\_OTHER | 0 | 33.4452 | 97.38 |
| SCHED\_OTHER | 2 | 31.6620 | 97.24 |
| SCHED\_OTHER | 10 | 30.8451 | 97.19 |
| SCHED\_BATCH | 0 | 34.4034 | 97.16 |
| SCHED\_BATCH | 2 | 33.2509 | 97.02 |
| SCHED\_BATCH | 10 | 31.3959 | 97.24 |
| SCHED\_IDLE | 0 (only 0) | 27.0080 | 97.00 |

1. Analysis and Reasoning

**Input**: Scheduling Policies and Nice.

**Outpt**: Token Speed and Avg CPU usage,

In this analysis, I will compare each input (Scheduling Policies and Nice values) with the corresponding outputs (Speed and Average CPU Usage).

* 1. Priority/Nice
     1. **Nice 0 executes faster than Nice 10** in both SCHED\_BATCH and SCHED\_OTHER. This shows that within the same policy, the **speed** of token production in a process **decreases** as the nice value **increases** (lowering priority) which is shown in both SCHED\_OTHER and SCHED\_BATCH.
     2. However, the correspondence between the Nice values and Avg CPU Usage in each policy is **not consistent.** In SCHED\_OTHER, average CPU usage tends to decrease slightly as the nice value increases, but in SCHED\_BATCH, the CPU usage values fluctuate without a clear trend. Therefore, the conclusion is that from these results, there does not **seem to be a clear and conclusive relationship** between nice values and Avg CPU usage.
  2. Scheduling policy
     1. SCHED\_IDLE performs the **worst** as shown by its speed 27.0080 making it the slowest policy.
     2. When comparing SCHED\_OTHER and SCHED\_BATCH, **SCHED\_BATCH slightly outperforms SCHED\_OTHER** in terms of the speed for processes with the same nice values suggesting that its more efficient.
     3. In terms of CPU usage, **there is no clear trend** as to which policy is superior. The CPU usage values across all 3 policies are quite similar, all falling within a narrow range of 97% to 97.38%. This comparison suggests that different scheduler makes nearly no impact to avg cpu usage.