

Worksheet #23: Analyzing Parallelism in an Actor Pipeline

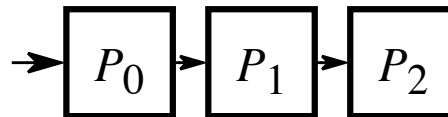
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Consider a three-stage pipeline of actors (as in slide 5), set up so that $P_0.nextStage = P_1$, $P_1.nextStage = P_2$, and $P_2.nextStage = null$. The process() method for each actor is shown below. Assume that 100 non-null messages are sent to actor P_0 after all three actors are started, followed by a null message. What will the total WORK and CPL be for this execution? Recall that each actor has a sequential thread.

Input sequence

... $d_9d_8d_7d_6d_5d_4d_3d_2d_1d_0$



```
1.     protected void process(final Object msg) {
2.         if (msg == null) {
3.             exit();
4.         } else {
5.             doWork(1); // unit work
6.         }
7.         if (nextStage != null) {
8.             nextStage.send(msg);
9.         }
10.    }
```

