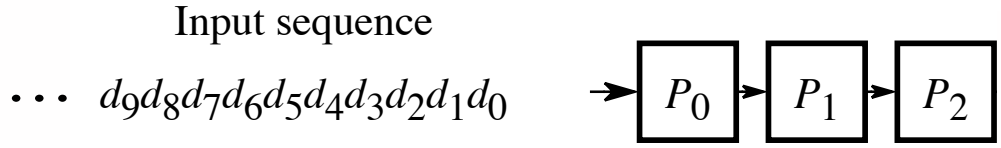
Worksheet #23: Ideal Parallelism in Actor Pipeline

Name: _____ Netid: _____

Consider a three-stage pipeline of actors set up so that P0.nextStage = P1, P1.nextStage = P2, and P2.nextStage = null. The process() method for each actor is shown below. Assume that 100 non-null messages are sent to actor P0 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.




```
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.         }
```