

## Analysis of Message Queues (PEX4a)

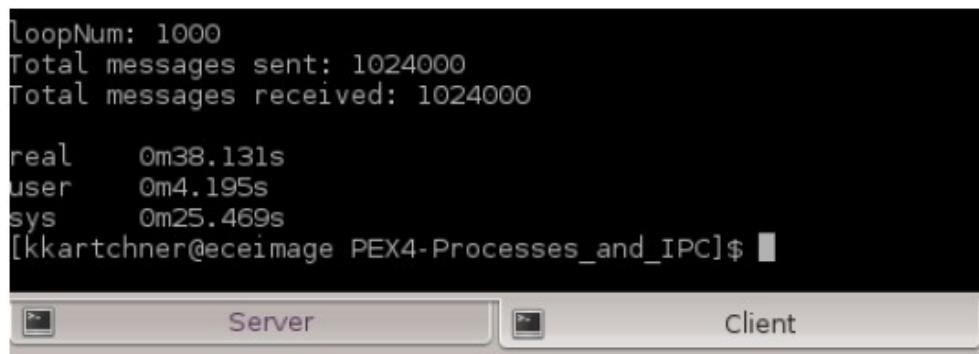
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As seen in the tables below, the system time for Phase 2 is faster than Phase 1 for every value of loopNum. This is because in Phase 1, the client process has to wait for an answer back from the server process before sending another problem. But in Phase 2, it does not. It is able to send problems to the server as fast as possible without any waiting. This is due to Phase 2 utilizing the fork() method to create a child process that is in charge of receiving from the answer queue. This allows its parent process to have the sole focus of sending problems to the server, thus avoiding the bottleneck performance experienced in Phase 1.

### Phase 1 – Client:

```
loopNum: 1000
Total messages sent: 1024000
Total messages received: 1024000

real    0m38.131s
user    0m4.195s
sys     0m25.469s
[kkartchner@eceimage PEX4-Processes_and_IPC]$ ■
```

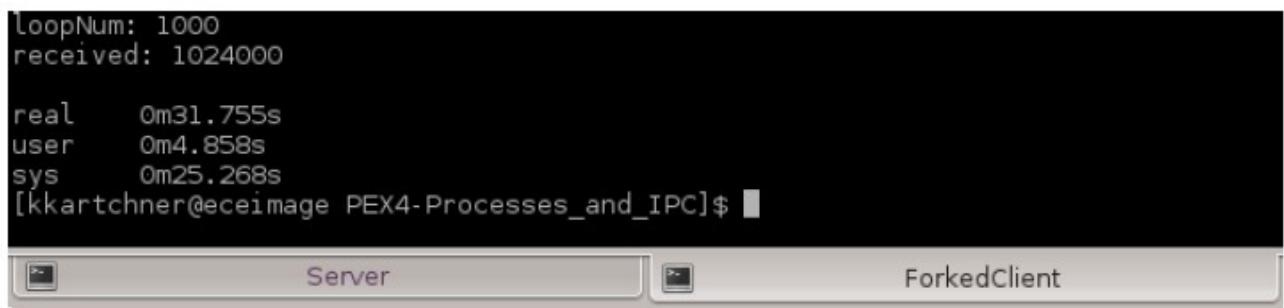


LoopNum	System Time
1	0m0.033s
10	0m0.290s
100	0m2.673s
1000	0m25.469s

### Phase 2 – Forked Client:

```
loopNum: 1000
received: 1024000

real    0m31.755s
user    0m4.858s
sys     0m25.268s
[kkartchner@eceimage PEX4-Processes_and_IPC]$ ■
```



LoopNum	System Time
1	0m0.033s
10	0m0.251s
100	0m2.554s
1000	0m25.268s