

Solutions Problemset Analysis of Simulation Results

25.1.) Result Analysis:

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|--|---------------------------|
| a) throughput of a system increases as its load increases | ok, when underloaded |
| b) throughput of a system decreases as its load increases | common when overloaded |
| c) response time increases as the load increases | expected |
| d) response time of a system decreases as its load increases | uncommon, validation! |
| e) loss rate of a system decreases as the load increases | rare, serious validation! |

25.2.) Transient Removal

Find duration of transient interval for the following sample: 11,4,2,6,5,7,10,9,10,9,10...

Truncation Method:

- ignore first observation (11) -> range of remaining sequence: Min/Max (2,10)
- since 4 is whether Min nor Max -> Transient Interval = 1

However this is not true as the transient interval is 6, so the Truncation Method doesn't work

Initial Data Deletion Method:

- overall average not needed, as we only have samples from one experiment
- overall mean \bar{x} of all samples: $83/11=7.5$
- calculate means \bar{x}_l with transient interval $l=1,2,\dots$ and compute relative change in

$$\text{overall mean: } \frac{\bar{x}_l - \bar{x}}{\bar{x}}$$

Mean:	Relative Change:
83/11=7.5	
l=1: 72/10=7.2	-0.04
l=2: 68/9=7.5	0
l=3: 66/8=8.2	0.1
l=4: 60/7=8.5	0.13
l=5: 55/6=9.2	0.23
l=6: 48/5=9.6	0.28
l=7: 38/4=9.5	0.24
...	...

- use truncation method (search knee) on relative changes which leads to a transient interval of 6.