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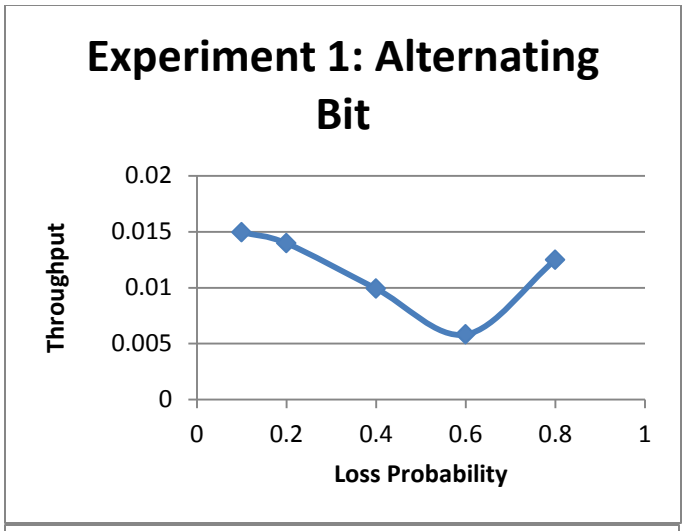
Programming Assignment #2

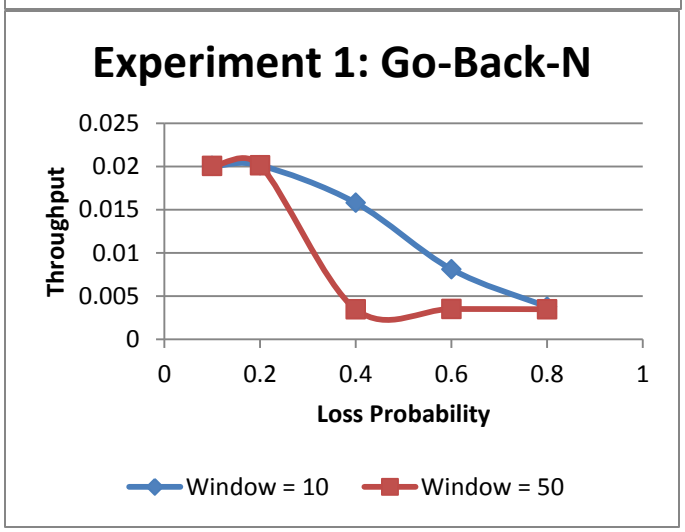
CSE 489, Spring 2014

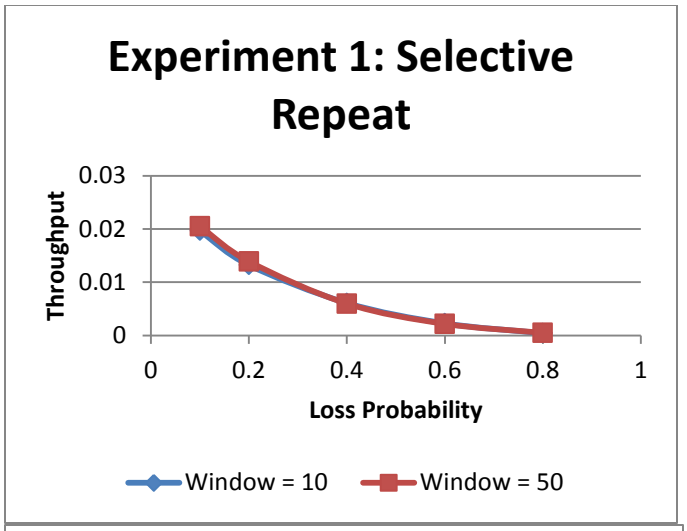
Analysis

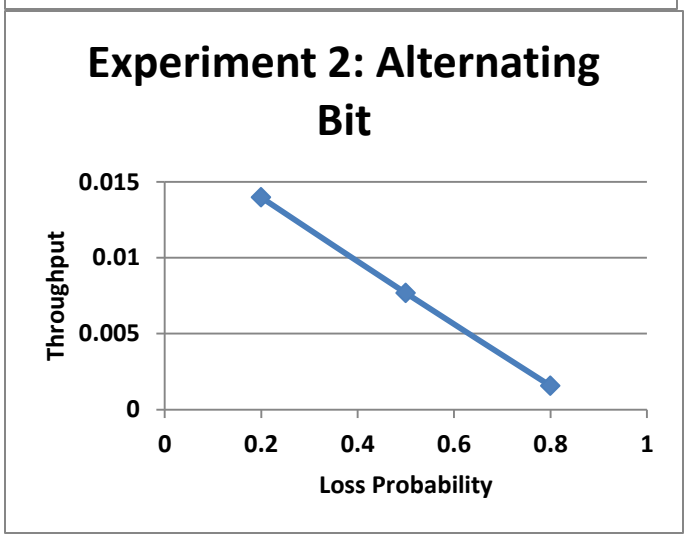
Analysis of the protocols after implementation produced mostly predictable results. A few quirks were found:

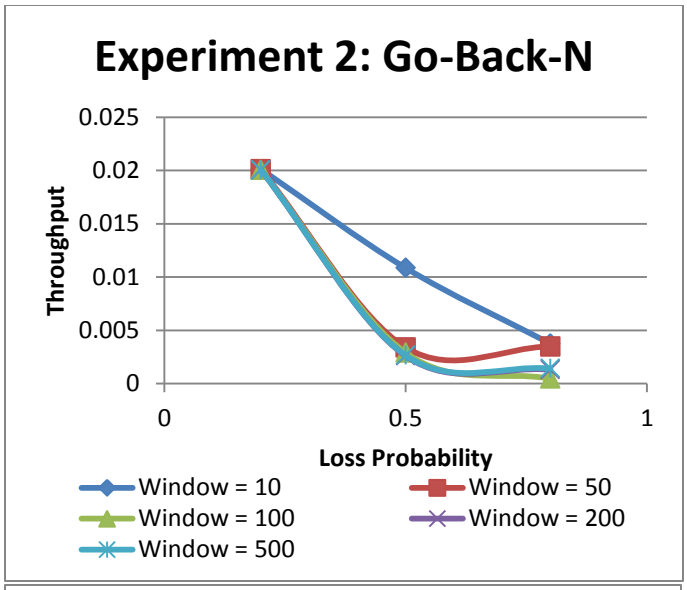
- Throughput of Alternating Bit increases between loss probability 0.6 and 0.8. This is probably due to messages being dropped when the sender is not ready (i.e. hasn't received an ACK yet)
- Go-Back-N performance seems to drop off more steeply with larger window sizes. This is expected, as a larger window size means more data has to be resent with each lost or corrupted packet.
- Selective repeat is almost totally unaffected by window size. Very slight throughput gains were made with larger window sizes at low loss probabilities.

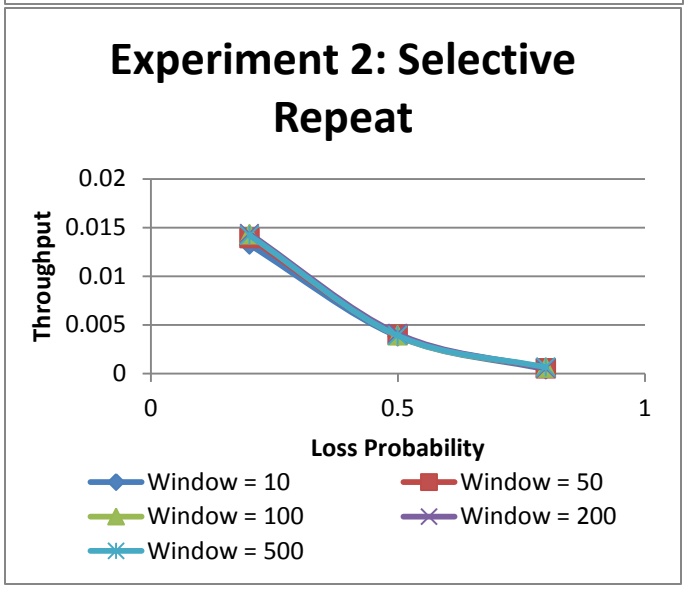

Experiment 1: Alternating Bit
Throughput
0.02
0.015
0.01
0.005
0
0
0.2
0.4
0.6
0.8
1
Loss Probability


Experiment 1: Go-Back-N
Throughput
0.025
0.02
0.015
0.01
0.005
0
0
0.2
0.4
0.6
0.8
1
Loss Probability
Window = 10
Window = 50


Experiment 1: Selective Repeat
Throughput
0.03
0.02
0.01
0
0
0.2
0.4
0.6
0.8
1
Loss Probability
Window = 10
Window = 50


Experiment 2: Alternating Bit
Throughput
0.015
0.01
0.005
0
0
0.2
0.4
0.6
0.8
1
Loss Probability


Experiment 2: Go-Back-N
Throughput
0.025
0.02
0.015
0.01
0.005
0
0
0.5
1
Loss Probability
Window = 10
Window = 50
Window = 100
Window = 200
Window = 500


Experiment 2: Selective Repeat
Throughput
0.02
0.015
0.01
0.005
0
0
0.5
1
Loss Probability
Window = 10
Window = 50
Window = 100
Window = 200
Window = 500

EXPERIMENT 1

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
abt	0.1	0.2	50		1000	1590	1437	743	49680	0.014955662
abt	0.2	0.2	50		1000	1782	1433	689	49335	0.013965873
abt	0.4	0.2	50		1000	2335	1412	494	49837	0.009912314
abt	0.6	0.2	50		1000	2712	1108	285	48985	0.005818108
abt	0.8	0.2	50		1000	3209	79	629	50359	0.01249032

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
gbn	0.1	0.2	50	10	1000	2265	2040	996	49708	0.020037016
gbn	0.2	0.2	50	10	1000	2809	2271	997	49551	0.020120684
gbn	0.4	0.2	50	10	1000	8831	5322	785	49729	0.015785558
gbn	0.6	0.2	50	10	1000	9490	3793	415	51141	0.00811482
gbn	0.8	0.2	50	10	1000	9934	2012	190	50609	0.003754273
gbn	0.1	0.2	50	50	1000	2265	2040	996	49708	0.020037016
gbn	0.2	0.2	50	50	1000	2809	2271	997	49551	0.020120684
gbn	0.4	0.2	50	50	1000	43735	8696	170	49005	0.003469034
gbn	0.6	0.2	50	50	1000	44622	8882	174	49442	0.003519275
gbn	0.8	0.2	50	50	1000	45598	8859	176	50442	0.003489156

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
sr	0.1	0.2	50	10	1000	1900	1705	988	50300	0.019642147
sr	0.2	0.2	50	10	1000	1638	1286	649	49078	0.013223848
sr	0.4	0.2	50	10	1000	1284	786	298	48950	0.006087845
sr	0.6	0.2	50	10	1000	1128	454	114	50300	0.002266402
sr	0.8	0.2	50	10	1000	1009	206	20	49100	0.000407332
sr	0.1	0.2	50	50	1000	1868	1689	997	48653	0.020492056
sr	0.2	0.2	50	50	1000	1750	1380	698	50200	0.013904382
sr	0.4	0.2	50	50	1000	1324	807	294	49150	0.005981689
sr	0.6	0.2	50	50	1000	1171	458	110	50735	0.002168129
sr	0.8	0.2	50	50	1000	1065	220	24	49700	0.000482897

EXPERIMENT 2

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
abt	0.2	0.2	50		1000	1782	1433	689	49334	0.013966027
abt	0.5	0.2	50		1000	2609	1305	387	50424	0.007674917
abt	0.8	0.2	50		1000	3209	629	79	50359	0.001568736

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
gbn	0.2	0.2	50	10	1000	2809	2271	997	49551	0.020120684
gbn	0.5	0.2	50	10	1000	9325	4672	556	51237	0.010851533
gbn	0.8	0.2	50	10	1000	9934	2012	190	50609	0.003754273
gbn	0.2	0.2	50	50	1000	2809	2271	997	49551	0.020120684
gbn	0.5	0.2	50	50	1000	44792	8798	168	49525	0.003392226
gbn	0.8	0.2	50	50	1000	45598	8859	176	50442	0.003489156
gbn	0.2	0.2	50	100	1000	3399	2711	999	49821	0.020051785
gbn	0.5	0.2	50	100	1000	87362	8842	144	49705	0.002897093
gbn	0.8	0.2	50	100	1000	92876	8695	23	49455	0.000465069
gbn	0.2	0.2	50	200	1000	3399	2711	999	49821	0.020051785
gbn	0.5	0.2	50	200	1000	166034	8951	131	50304	0.002604167
gbn	0.8	0.2	50	200	1000	174247	8903	66	50589	0.001304631
gbn	0.2	0.2	50	500	1000	3399	2711	999	49821	0.020051785
gbn	0.5	0.2	50	500	1000	326336	8797	131	49404	0.002651607
gbn	0.8	0.2	50	500	1000	353193	8869	72	50704	0.001420006

Protocol	P Loss	P Corrupt	Layer5 Delay	Win Size	A App Packs	A Trans Packs	B Trans Packs	B App Packs	Time	Throughput
sr	0.2	0.2	50	10	1000	1638	1286	649	49078	0.013223848
sr	0.5	0.2	50	10	1000	1184	588	188	49500	0.00379798
sr	0.8	0.2	50	10	1000	1009	206	20	49100	0.000407332
sr	0.2	0.2	50	50	1000	1750	1380	698	50200	0.013904382
sr	0.5	0.2	50	50	1000	1214	600	193	48800	0.003954918
sr	0.8	0.2	50	50	1000	1065	220	24	49700	0.000482897
sr	0.2	0.2	50	100	1000	1769	1396	697	48750	0.014297436
sr	0.5	0.2	50	100	1000	1285	642	193	49750	0.003879397
sr	0.8	0.2	50	100	1000	1131	236	29	50250	0.000577114
sr	0.2	0.2	50	200	1000	1874	1486	700	48770	0.014353086
sr	0.5	0.2	50	200	1000	1399	696	204	49950	0.004084084
sr	0.8	0.2	50	200	1000	1242	233	25	50950	0.000490677
sr	0.2	0.2	50	500	1000	1984	1589	699	49282	0.014183678
sr	0.5	0.2	50	500	1000	1652	820	188	48350	0.003888314
sr	0.8	0.2	50	500	1000	1531	313	31	50200	0.00061753