

## Annex

Crossword Puzzles			
	Variable Count	Constraint Count	Unique Solution Count
Puzzle 1	10	38	45
Puzzle 2	24	104	47
Puzzle 3	64	256	83
Puzzle 4	60	264	88

Puzzle Attempts				
	Puzzle 1	Puzzle 2	Puzzle 3	Puzzle 4
AC3-FC-DVO-CBJ	15	15	15	15
AC3-FC-DVO-chronBT	15	15	15	15
AC3-FC-noDVO-CBJ	15	15	15	15
AC3-FC-noDVO-chronBT	15	15	15	15
AC3-noFC-DVO-CBJ	15	15	15	15
noAC-FC-DVO-CBJ	15	15	15	15
noAC-FC-DVO-chronBT	15	15	15	15
noAC-FC-noDVO-CBJ	15	15	15	15
noAC-FC-noDVO-chronBT	15	15	15	15
noAC-noFC-DVO-CBJ	15	15	15	15
noAC-noFC-noDVO-chronBT	15	0	0	0

Puzzle Success Rate				
	Puzzle 1	Puzzle 2	Puzzle 3	Puzzle 4
AC3-FC-DVO-CBJ	1	1	1	1
AC3-FC-DVO-chronBT	1	1	1	1
AC3-FC-noDVO-CBJ	1	1	1	1
AC3-FC-noDVO-chronBT	1	1	1	1
AC3-noFC-DVO-CBJ	1	1	1	1
noAC-FC-DVO-CBJ	1	1	1	1
noAC-FC-DVO-chronBT	1	1	1	1
noAC-FC-noDVO-CBJ	1	1	1	1
noAC-FC-noDVO-chronBT	1	1	1	1
noAC-noFC-DVO-CBJ	1	1	1	1
noAC-noFC-noDVO-chronBT	1			

Puzzle 1 CPU Times (seconds) (solver vs. random seed)

Seed Value	AC3-FC-DVO-CBJ	AC3-FC-DVO-chronBT	AC3-FC-noDVO-CBJ	AC3-FC-noDVO-chronBT	AC3-noFC-DVO-CBJ	noAC-FC-DVO-CBJ	noAC-FC-DVO-chronBT	noAC-FC-noDVO-CBJ	noAC-FC-noDVO-chronBT	noAC-noFC-DVO-CBJ	noAC-noFC-noDVO-chronBT
58449585	0.008357	0.008595	0.050522	0.049267	0.008758	0.000432	0.000355	0.041813	0.040634	0.000425	41.67
61323979	0.009038	0.009204	0.031809	0.030587	0.008985	0.000468	0.000421	0.024862	0.022663	0.000563	112.7
183670412	0.008126	0.008581	0.02461	0.023902	0.008223	0.000376	0.00034	0.017523	0.016641	0.000337	4.98
624533345	0.010509	0.010234	0.025836	0.024764	0.010598	0.000315	0.000285	0.016483	0.016238	0.000347	2.76
801428361	0.008948	0.009617	0.090657	0.09272	0.009899	0.000201	0.000177	0.08605	0.091958	0.000161	7.17
870460456	0.008493	0.008953	0.01005	0.010176	0.008127	0.000187	0.000161	0.002003	0.001893	0.000156	6.52
967052500	0.008419	0.008089	0.009436	0.010558	0.008633	0.000199	0.000176	0.002308	0.001958	0.000179	2.62
1031262293	0.008865	0.008448	0.02239	0.020998	0.008725	0.000586	0.000506	0.013498	0.013121	0.000676	11.03
1162010596	0.008326	0.008326	0.043898	0.040016	0.008545	0.001088	0.000957	0.03718	0.033344	0.001425	2.35
1182369492	0.009073	0.009178	0.010539	0.011108	0.008858	0.000325	0.000296	0.002323	0.002372	0.000336	52.73
1447361679	0.008011	0.008302	0.025952	0.025099	0.00829	0.000155	0.000138	0.016715	0.016082	0.000143	5.12
1701750188	0.007648	0.008408	0.060215	0.061051	0.008411	0.000213	0.000194	0.057279	0.05391	0.00026	23.33
1761111575	0.007783	0.008039	0.059274	0.062157	0.008442	0.000172	0.000149	0.054914	0.052943	0.000192	4.27
2105204534	0.008051	0.009021	0.016683	0.016447	0.008846	0.000361	0.000327	0.008482	0.008134	0.00047	4.91
2142361577	0.008949	0.008675	0.018957	0.018197	0.00896	0.00322	0.002698	0.011132	0.010808	0.004072	11.01
Standard Deviation Normalized by Expectation	0.082404 754	0.068321 744	0.693869 478	0.715825 885	0.073762 498	1.400313 444	1.353455 208	0.937455 764	0.985219 811	1.540508 848	1.52778 233

Puzzle 2 CPU Times (seconds) (solver vs. random seed)

Seed Value	AC3-FC-DVO-CBJ	AC3-FC-DVO-chronBT	AC3-FC-noDVO-CBJ	AC3-FC-noDVO-chronBT	AC3-noFC-DVO-CBJ	noAC-FC-DVO-CBJ	noAC-FC-DVO-chronBT	noAC-FC-noDVO-CBJ	noAC-FC-noDVO-chronBT	noAC-noFC-DVO-CBJ
58449585	0.008357	0.008595	0.050522	0.049267	0.008758	0.000432	0.000355	0.041813	0.040634	0.000425
61323979	0.009038	0.009204	0.031809	0.030587	0.008985	0.000468	0.000421	0.024862	0.022663	0.000563
183670412	0.008126	0.008581	0.02461	0.023902	0.008223	0.000376	0.00034	0.017523	0.016641	0.000337
624533345	0.010509	0.010234	0.025836	0.024764	0.010598	0.000315	0.000285	0.016483	0.016238	0.000347
801428361	0.008948	0.009617	0.090657	0.09272	0.009899	0.000201	0.000177	0.08605	0.091958	0.000161
870460456	0.008493	0.008953	0.01005	0.010176	0.008127	0.000187	0.000161	0.002003	0.001893	0.000156
967052500	0.008419	0.008089	0.009436	0.010558	0.008633	0.000199	0.000176	0.002308	0.001958	0.000179
1031262293	0.008865	0.008448	0.02239	0.020998	0.008725	0.000586	0.000506	0.013498	0.013121	0.000676
1162010596	0.008326	0.008326	0.043898	0.040016	0.008545	0.001088	0.000957	0.03718	0.033344	0.001425
1182369492	0.009073	0.009178	0.010539	0.011108	0.008858	0.000325	0.000296	0.002323	0.002372	0.000336
1447361679	0.008011	0.008302	0.025952	0.025099	0.00829	0.000155	0.000138	0.016715	0.016082	0.000143
1701750188	0.007648	0.008408	0.060215	0.061051	0.008411	0.000213	0.000194	0.057279	0.05391	0.00026
1761111575	0.007783	0.008039	0.059274	0.062157	0.008442	0.000172	0.000149	0.054914	0.052943	0.000192
2105204534	0.008051	0.009021	0.016683	0.016447	0.008846	0.000361	0.000327	0.008482	0.008134	0.00047
2142361577	0.008949	0.008675	0.018957	0.018197	0.00896	0.00322	0.002698	0.011132	0.010808	0.004072
Standard Deviation Normalized by Expectation	0.082404 754	0.068321 744	0.693869 478	0.715825 885	0.073762 498	1.400313 444	1.353455 208	0.937455 764	0.985219 811	1.540508 848

Puzzle 3 CPU Times (seconds) (solver vs. random seed)										
Seed Value	AC3-FC-DVO-CBJ	AC3-FC-DVO-chronBT	AC3-FC-noDVO-CBJ	AC3-FC-noDVO-chronBT	AC3-noFC-DVO-CBJ	noAC-FC-DVO-CBJ	noAC-FC-DVO-chronBT	noAC-FC-noDVO-CBJ	noAC-FC-noDVO-chronBT	noAC-noFC-DVO-CBJ
58449585	0.075191	0.073343	20.1	17.38	0.069204	0.869251	2.4	20.25	17.09	0.061741
61323979	1.88	1.92	0.677568	0.497539	0.078221	0.026733	0.021476	0.620234	0.429841	0.016945
183670412	1.81	1.79	24.55	20.72	0.07848	0.839147	0.889056	24.43	20.37	0.037653
624533345	0.421194	0.319535	12.72	10.58	0.071215	0.867127	0.86814	14.45	11.79	0.024038
801428361	1.96	0.976673	8.82	7.32	0.08662	1.12	0.992442	9.23	7.61	0.022947
870460456	0.076499	0.075179	1.26	1.05	0.068453	1.04	0.833098	1.23	0.976499	0.020315
967052500	0.939642	3.94	7.17	6.09	0.092913	0.011765	0.009551	7.1	5.92	0.010058
1031262293	0.100648	0.092606	34.15	28.52	0.076885	0.086961	0.07208	33.97	28.28	0.07066
1162010596	7.73	1.83	0.47986	0.399966	0.119749	1.77	0.922396	0.41459	0.336709	0.01521
1182369492	0.924053	1.11	7.57	6.39	0.078006	0.026016	0.022805	7.58	6.24	0.012299
1447361679	1.87	6.23	10.17	8.59	0.116611	1.01	0.806758	10.25	8.59	0.017186
1701750188	0.078904	0.077315	8.6	7.45	0.070496	0.010245	0.007956	8.71	7.44	0.007788
1761111575	0.073338	0.074072	3.04	2.31	0.067638	3.78	1.76	2.93	2.17	0.014668
2105204534	0.097679	0.091013	6.3	5.4	0.07321	0.016048	0.012396	6.19	5.25	0.011958
2142361577	2.05	1.91	0.251311	0.216999	0.083908	2.76	0.909965	0.190838	0.154048	0.014957
Standard Deviation Normalized by Expectation	1.455153 735	1.274392 884	1.002948 797	1.003348 389	0.198397 709	1.165068 185	1.009428 4	0.995103 871	1.000835 922	0.781656 599

Puzzle 4 CPU Times (seconds) (solver vs. random seed)										
Seed Value	AC3-FC-DVO-CBJ	AC3-FC-DVO-chronBT	AC3-FC-noDVO-CBJ	AC3-FC-noDVO-chronBT	AC3-noFC-DVO-CBJ	noAC-FC-DVO-CBJ	noAC-FC-DVO-chronBT	noAC-FC-noDVO-CBJ	noAC-FC-noDVO-chronBT	noAC-noFC-DVO-CBJ
58449585	14.03	1.89	2.56	1.87	0.121109	5.72	1.51	2.63	1.89	12.59
61323979	0.068633	0.067208	26.07	20.82	0.060641	0.815641	2.77	28.03	22.94	0.045523
183670412	0.120281	0.114028	0.912775	0.745231	0.068787	19.48	6.99	0.87411	0.685357	0.292262
624533345	0.061383	0.061182	5.49	4.28	0.059247	0.009282	0.00716	6.05	4.93	0.008227
801428361	1.16	7.3	11.26	9.28	0.093629	0.542663	0.4012	11.73	9.96	0.017457
870460456	13.4	4.93	5.98	4.74	0.129633	3.13	3.87	22.85	18.59	0.035888
967052500	3.04	46.76	105.91	88.73	60.4	1.02	0.910131	106.63	89.7	0.035694
1031262293	1.04	0.851245	57.77	50.79	0.358632	5.07	2.76	61.48	52.11	0.065244
1162010596	0.068154	0.06708	0.268011	0.228321	0.072316	0.034144	0.02717	0.239136	0.184798	0.01553
1182369492	1.17	1.03	5.54	4.47	0.104327	6.86	0.651688	5.96	4.89	0.014
1447361679	0.06072	0.061234	8.23	7.02	0.059709	2.17	5.94	9.09	7.36	0.026027
1701750188	6.79	0.872897	48.37	43.29	0.065301	0.893199	0.788767	51.08	43.54	4.96
1761111575	20.42	3.85	4.95	3.98	0.07006	36.97	2.35	5.01	3.98	0.01804
2105204534	8.29	8.36	32.84	26.59	0.122218	0.012771	0.010937	34.79	28.73	0.012283
2142361577	3.26	26.04	3.48	2.88	0.063959	0.020558	0.016971	3.84	3.13	0.012822
Standard Deviation Normalized by Expectation	1.319335 63	1.894856 638	1.384002 393	1.397644 156	3.775772 316	1.820836 881	1.141200 294	1.27634311 1	1.29081938 2	2.804920258

Puzzle 1 Medians			
	Restrict Domain Counter	Label Counter	Unlabel Counter
AC3-FC-DVO-CBJ	9554	23	7
AC3-FC-DVO-chronBT	9667	23	7
AC3-FC-noDVO-CBJ	16427	17	4
AC3-FC-noDVO-chronBT	16140	17	4
AC3-noFC-DVO-CBJ	9707	56	27
noAC-FC-DVO-CBJ	61	20	6
noAC-FC-DVO-chronBT	61	20	6
noAC-FC-noDVO-CBJ	6839	19	5
noAC-FC-noDVO-chronBT	6839	19	5
noAC-noFC-DVO-CBJ	265	47	23
noAC-noFC-noDVO-chronBT	6983619	2872296	1437932

Puzzle 2 Medians			
	Restrict Domain Counter	Label Counter	Unlabel Counter
AC3-FC-DVO-CBJ	25216	119	60
AC3-FC-DVO-chronBT	25052	119	60
AC3-FC-noDVO-CBJ	239308	426	291
AC3-FC-noDVO-chronBT	239419	426	291
AC3-noFC-DVO-CBJ	28277	493	266
noAC-FC-DVO-CBJ	774	257	144
noAC-FC-DVO-chronBT	774	257	144
noAC-FC-noDVO-CBJ	218293	430	294
noAC-FC-noDVO-chronBT	218293	430	294
noAC-noFC-DVO-CBJ	5834	575	324

Puzzle 3 Medians			
	Restrict Domain Counter	Label Counter	Unlabel Counter
AC3-FC-DVO-CBJ	168928	12003	7555
AC3-FC-DVO-chronBT	184592	15840	9052
AC3-FC-noDVO-CBJ	493987	5766	3363
AC3-FC-noDVO-chronBT	493987	5766	3363
AC3-noFC-DVO-CBJ	77719	1281	679
noAC-FC-DVO-CBJ	36792	10313	6041
noAC-FC-DVO-chronBT	41338	15325	9043
noAC-FC-noDVO-CBJ	370064	5766	3363
noAC-FC-noDVO-chronBT	370064	5766	3363
noAC-noFC-DVO-CBJ	10858	1192	646

Puzzle 4 Medians			
	Restrict Domain Counter	Label Counter	Unlabel Counter
AC3-FC-DVO-CBJ	189742	20279	12044
AC3-FC-DVO-chronBT	264896	30423	18551
AC3-FC-noDVO-CBJ	553972	7219	3730
AC3-FC-noDVO-chronBT	553972	7219	3730
AC3-noFC-DVO-CBJ	84522	1013	577
noAC-FC-DVO-CBJ	64012	23853	14020
noAC-FC-DVO-chronBT	58670	20424	13048
noAC-FC-noDVO-CBJ	500076	8444	4634
noAC-FC-noDVO-chronBT	500076	8444	4634
noAC-noFC-DVO-CBJ	23195	1247	717

Puzzle 1 Averages							
	Restrict Domain Counter	Jump Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)	Restart Counter
AC3-FC-DVO-CBJ	9509	0	37	16	0.008573067	0.008573067	0
AC3-FC-DVO-chronBT	9651	0	37	16	0.008778	0.008778	0
AC3-FC-noDVO-CBJ	20332	0	33	15	0.033388533	0.033388533	0
AC3-FC-noDVO-chronBT	20361	0	33	15	0.033136467	0.033136467	0
AC3-noFC-DVO-CBJ	9976	0	109	58	0.00882	0.00882	0
noAC-FC-DVO-CBJ	103	0	37	16	0.0005532	0.0005532	0
noAC-FC-DVO-chronBT	103	0	37	16	0.000478667	0.000478667	0
noAC-FC-noDVO-CBJ	11207	0	34	15	0.026171	0.026171	0
noAC-FC-noDVO-chronBT	11207	0	34	15	0.025513267	0.025513267	0
noAC-noFC-DVO-CBJ	557	0	94	49	0.000649467	0.000649467	0
noAC-noFC-noDVO-chronBT	19893821	0	8084841	4049466	19.54466667	22.208482	0

Puzzle 2 Averages							
	Restrict Domain Counter	Jump Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)	Restart Counter
AC3-FC-DVO-CBJ	30563	0	1472	864	0.073712867	0.073712867	0
AC3-FC-DVO-chronBT	30519	0	1472	864	0.068268067	0.068268067	0
AC3-FC-noDVO-CBJ	688184	0	2151	1450	2.562119067	2.5611164	0
AC3-FC-noDVO-chronBT	688302	0	2151	1450	2.362936467	2.3641498	0
AC3-noFC-DVO-CBJ	49317	52	2802	1545	0.053350333	0.053350333	0
noAC-FC-DVO-CBJ	2736	0	732	436	0.018633	0.018633	0
noAC-FC-DVO-chronBT	2736	0	732	436	0.016563867	0.016563867	0
noAC-FC-noDVO-CBJ	661716	0	2226	1505	2.602150733	2.6014634	0
noAC-FC-noDVO-chronBT	661716	0	2226	1505	2.3863442	2.386613533	0
noAC-noFC-DVO-CBJ	13224	17	1398	837	0.016148133	0.016148133	0

Puzzle 3 Averages							
	Restrict Domain Counter	Jump Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)	Restart Counter
AC3-FC-DVO-CBJ	257017	0	33245	19908	1.3391432	1.339263867	1
AC3-FC-DVO-chronBT	292784	0	43513	26203	1.367315733	1.367581733	1
AC3-FC-noDVO-CBJ	886611	0	10300	5968	9.723915933	9.724797267	1
AC3-FC-noDVO-chronBT	935957	0	11633	6666	8.194300267	8.197816933	1
AC3-noFC-DVO-CBJ	81667	25	1571	867	0.082107267	0.082107267	0
noAC-FC-DVO-CBJ	68813	0	23022	13682	0.9488862	0.949227533	0
noAC-FC-DVO-chronBT	65280	0	22375	13175	0.7018746	0.7021326	0
noAC-FC-noDVO-CBJ	721379	0	10789	6240	9.836377467	9.8353848	1
noAC-FC-noDVO-chronBT	762926	0	11789	6759	8.176473133	8.173759133	1
noAC-noFC-DVO-CBJ	15933	15	1641	913	0.023894867	0.023894867	0

Puzzle 4 Averages							
	Restrict Domain Counter	Jump Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)	Restart Counter
AC3-FC-DVO-CBJ	588363	0	97904	58819	4.865278067	4.864374733	3
AC3-FC-DVO-chronBT	761375	0	157814	95498	6.8169916	6.814752933	3
AC3-FC-noDVO-CBJ	2450369	0	17428	9657	21.30871907	23.97483173	2
AC3-FC-noDVO-chronBT	2499169	0	18428	10272	17.98090347	20.64734013	2
AC3-noFC-DVO-CBJ	4166151	5960	248355	148472	4.123304533	6.790437867	0
noAC-FC-DVO-CBJ	344250	0	107677	64766	5.516550533	5.515720533	3
noAC-FC-DVO-chronBT	147439	0	45907	27741	1.9336016	1.929944933	1
noAC-FC-noDVO-CBJ	2450629	0	19102	10656	23.3522164	28.69135307	2
noAC-FC-noDVO-chronBT	2480524	0	19769	11070	19.50801033	22.171811	2
noAC-noFC-DVO-CBJ	1085641	3310	49539	27820	1.209933133	1.210087133	0

Puzzle 2 Averages Normalized By Average On Easiest Puzzle					
	Restrict Domain Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)
AC3-FC-DVO-CBJ	3	39	54	8.598191235	8.598191235
AC3-FC-DVO-chronBT	3	39	54	7.777177793	7.777177793
AC3-FC-noDVO-CBJ	33	65	96	76.73649636	76.70646609
AC3-FC-noDVO-chronBT	33	65	96	71.30924641	71.34586266
AC3-noFC-DVO-CBJ	4	25	26	6.048790627	6.048790627
noAC-FC-DVO-CBJ	26	19	27	33.68221258	33.68221258
noAC-FC-DVO-chronBT	26	19	27	34.60417827	34.60417827
noAC-FC-noDVO-CBJ	59	65	100	99.42878504	99.40252188
noAC-FC-noDVO-chronBT	59	65	100	93.53346364	93.54402024
noAC-noFC-DVO-CBJ	23	14	17	24.86368302	24.86368302

Puzzle 3 Averages Normalized By Average On Easiest Puzzle					
	Restrict Domain Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)
AC3-FC-DVO-CBJ	27	898	1244	156.2035211	156.2175962
AC3-FC-DVO-chronBT	30	1176	1637	155.7662034	155.7965064
AC3-FC-noDVO-CBJ	43	312	397	291.2351925	291.2615888
AC3-FC-noDVO-chronBT	45	352	444	247.2894998	247.3956266
AC3-noFC-DVO-CBJ	8	14	14	9.309213908	9.309213908
noAC-FC-DVO-CBJ	668	622	855	1715.267896	1715.884912
noAC-FC-DVO-chronBT	633	604	823	1466.311838	1466.850836
noAC-FC-noDVO-CBJ	64	317	416	375.8502719	375.8123419
noAC-FC-noDVO-chronBT	68	346	450	320.4792722	320.3728962
noAC-noFC-DVO-CBJ	28	17	18	36.79152125	36.79152125

Puzzle 4 Averages Normalized By Average On Easiest Puzzle					
	Restrict Domain Counter	Label Counter	Unlabel Counter	CPU Time (seconds)	Real Time (seconds)
AC3-FC-DVO-CBJ	61	2646	3676	567.5073175	567.4019487
AC3-FC-DVO-chronBT	78	4265	5968	776.5996355	776.3446039
AC3-FC-noDVO-CBJ	120	528	643	638.204705	718.0558515
AC3-FC-noDVO-chronBT	122	558	684	542.6318879	623.100234
AC3-noFC-DVO-CBJ	417	2278	2559	467.494845	769.8909146
noAC-FC-DVO-CBJ	3342	2910	4047	9972.072548	9970.572186
noAC-FC-DVO-chronBT	1431	1240	1733	4039.55766	4031.918384
noAC-FC-noDVO-CBJ	218	561	710	892.2936227	1096.303277
noAC-FC-noDVO-chronBT	221	581	738	764.6222096	869.0306612
noAC-noFC-DVO-CBJ	1949	527	567	1862.964176	1863.201293