

Table 1: Time costs (Seconds) for querying $Q_1 - Q_4$ included in this paper

		Generated by OpenRuleBench Generator				Stanford Large Network Dataset Collection			
		G_{a1}	G_{a2}	G_{a3}	G_{a4}	S_{I1}	S_{I2}	S_{I3}	S_{I4}
Q_1	<i>DLV</i>	0.12984	0.19448	0.26517	0.41013	7.32432	7.69948	17.87713	11.92344
	<i>IRIS</i>	0.88169	2.35286	4.27499	9.01246	9.95180	3438.38439	5827.55796	4184.18595
	<i>XSB</i>	2.04782	1.02391	1.58240	1.86165	121.00725	140.80500	381.64770	399.81060
	<i>Yap</i>	11.60403	9.20487	10.32242	15.98619	58.45222	220.02794	21.30200	25.55715
	<i>ASLOG_d</i>	0.02312	0.06436	0.08600	0.07172	1.60079	1.71433	2.87502	2.60274
	<i>ASLOG_d[*]</i>	0.01317	0.01981	0.02334	0.01830	1.01537	1.02508	1.42151	1.32121
Q_1	<i>RDFox_n</i>	0.01744	0.03288	0.04570	0.07468	1.33415	1.38628	1.69490	1.80259
	<i>RDFox_c</i>	0.00473	0.00553	0.00830	0.01275	0.28660	0.30369	0.15630	0.43000
	<i>FI_c</i>	0.00001	0.00012	0.00050	0.00784	0.23739	0.24299	0.53447	0.26522
	<i>AMEM_c</i>	0.00002	0.00015	0.00044	0.00654	0.24319	0.24672	0.56235	0.27770
	<i>ASLOG_m</i>	0.02274	0.06384	0.08543	0.07123	1.57175	1.68752	2.79670	2.54502
	<i>ASLOG_m[*]</i>	0.01279	0.01929	0.02278	0.01714	1.01088	1.02010	1.40726	1.31201
	<i>ASLOG_c</i>	0.00002	0.00009	0.00017	0.00162	0.01932	0.02030	0.05711	0.04034
Q_{21}	<i>DLV</i>	0.21667	0.35725	0.47180	0.80445	15.64693	16.46927	50.22032	26.09315
	<i>IRIS</i>	1.01871	2.49934	4.67151	10.73180	3182.16654	3487.82112	6138.22010	4401.22505
	<i>XSB</i>	2.04782	1.02391	1.58240	1.86165	121.00725	140.80500	544.08375	403.60950
	<i>Yap</i>	12.29143	16.33546	13.12378	30.19559	239.01375	930.10586	29.21770	44.67015
	<i>ASLOG_d</i>	0.03187	0.12228	0.14953	0.09231	2.48819	2.56458	3.87450	3.60232
	<i>ASLOG_d[*]</i>	0.02513	0.10093	0.10207	0.03094	1.07181	1.07643	1.49052	1.39624
Q_{21}	<i>RDFox_c</i>	0.00597	0.00759	0.01029	0.02191	0.55871	0.61738	1.03897	0.73780
	<i>FI_c</i>	0.00002	0.00059	0.00060	0.00956	0.46744	0.50259	1.04877	0.48627
	<i>AMEM_c</i>	0.00001	0.00057	0.00060	0.00876	0.47195	0.50253	1.09286	0.50428
	<i>ASLOG_c</i>	0.00002	0.00023	0.00023	0.00191	0.03732	0.04049	0.11656	0.07537
Q_{22}	<i>RDFox_c</i>	0.00470	0.00492	0.00867	0.01870	0.57462	0.78155	1.70478	0.66072
	<i>FI_c</i>	0.00002	0.00034	0.00323	0.01470	1.16574	1.20741	2.50247	1.52633
	<i>AMEM_c</i>	0.00003	0.00039	0.00341	0.01606	1.15008	1.20390	2.67054	1.59411
	<i>ASLOG_c</i>	0.00067	0.00070	0.00125	0.00127	0.08287	0.08963	0.24401	0.03383
Q_{23}	<i>RDFox_c</i>	0.00385	0.00540	0.00795	0.01244	0.82856	0.89026	1.32037	1.15546
	<i>FI_c</i>	0.00006	0.00070	0.00710	0.03077	2.32470	2.43427	5.04603	2.94793
	<i>AMEM_c</i>	0.00009	0.00088	0.00753	0.03117	2.30070	2.44790	5.30436	3.08169
	<i>ASLOG_c</i>	0.00014	0.00232	0.00064	0.00121	0.11890	0.12661	0.28241	0.21225
Q_{24}	<i>RDFox_c</i>	0.00699	0.00677	0.00915	0.02432	1.15619	1.20550	2.24636	1.73744
	<i>FI_c</i>	0.00019	0.00115	0.01271	0.05209	3.48033	3.67300	7.51618	4.06213
	<i>AMEM_c</i>	0.00017	0.00103	0.01284	0.05465	3.46279	3.70579	7.85370	4.00548
	<i>ASLOG_c</i>	0.00044	0.00020	0.00018	0.00126	0.12787	0.13315	0.30374	0.21819
		G_{c1}	G_{c2}	G_{c3}	G_{c4}	S_{s1}	S_{s2}	S_{s3}	S_{s4}
Q_3	<i>BTC</i>	0.03466	0.17051	20.59905	158.12764	1.98426	9.98626	88.30648	136.86502
	<i>COMP_TC</i>	0.01899	0.08048	20.70697	30.03981	0.54494	1.79537	8.28847	10.80741
	<i>DLV</i>	0.56851	6.31600	606.85556	473.17643	37.53294	80.03073	359.94785	401.87129
	<i>IRIS</i>	1.96919	16.87184	error	error	error	error	error	error
	<i>XSB</i>	0.89303	2.52032	135.92171	82.13846	39.76907	83.00565	369.67424	430.85889
	<i>Yap</i>	0.11661	0.23228	0.63504	0.22869	7.91457	23.61215	543.31414	23.82326
	<i>RDFox_n</i>	0.04506	0.21504	43.77177	170.84027	2.85925	12.29743	127.70164	135.39372
	<i>RDFox_c</i>	0.03829	0.18253	43.68946	170.81856	2.83979	12.25151	127.67461	135.36936
	<i>ASLOG_d</i>	0.03351	0.09277	7.50731	4.36236	0.35976	1.56511	2.25546	3.05115
	<i>ASLOG_d[*]</i>	0.01116	0.08626	7.46008	4.32180	0.35012	1.52450	2.22049	3.03434
	<i>ASLOG_m</i>	0.01300	0.08111	10.20640	3.20158	0.31613	1.43020	1.56191	2.07024
	<i>ASLOG_m[*]</i>	0.00944	0.07903	10.20209	3.17017	0.29783	1.38960	1.52693	2.05343
	<i>ASLOG_c</i>	0.00528	0.05427	7.13642	3.14163	0.27201	1.32862	1.50017	2.02024
Q_4	<i>BTC</i>	0.00004	0.00032	0.03979	0.17233	3.91256	22.67666	219.46325	344.81091
	<i>COMP_TC</i>	0.00001	0.00010	0.01121	0.14951	1.13801	6.78766	64.46893	99.65049
	<i>RDFox_c</i>	0.00004	0.00012	0.04843	0.22452	2.44854	7.98440	76.17953	121.59931
	<i>ASLOG_TC</i>	0.00002	0.00013	0.01605	0.01090	0.74572	4.66900	6.64818	8.36974
	<i>ASLOG_c</i>	0.00001	0.00005	0.00084	0.00128	0.15678	1.24576	0.76468	0.05352

Table 2: Overhead of *ASLOG* included in this paper

		Generated by OpenRuleBench Generator				Stanford Large Network Dataset Collection			
		G_{a1}	G_{a2}	G_{a3}	G_{a4}	S_{l1}	S_{l2}	S_{l3}	S_{l4}
<i>Time(s)</i>	<i>ASLOG-AI</i>	0.004(26)	0.008(27)	0.012(27)	0.020(27)	1.164(53)	1.216(54)	2,026(60)	1,927(60)
	<i>ASLOG-SI</i>	0.011(74)	0.022(73)	0.033(73)	0.054(73)	1.015(47)	1.021(46)	1,345(40)	1,289(40)
	<i>Average</i>	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000003
	<i>FI</i>	0.017	0.031	0.043	0.079	2.071	2.164	3.291	2.985
<i>Size (kb)</i>	<i>ASLOG-AI</i>	268(64)	423(58)	576(56)	884(53)	15,722(53)	16,494(53)	25,076(57)	23,477(59)
	<i>ASLOG-SI</i>	154(36)	307(42)	461(44)	769(47)	13,936(47)	14,598(47)	19,007(43)	16,160(41)
	<i>Average</i>	0.042	0.036	0.034	0.033	0.032	0.032	0.035	0.037
	<i>FI</i>	671	840	1,044	1,530	27,814	29,307	48,470	54,422

Table 3: Test data not included in this paper

		Time costs (Seconds) for querying $Q_1 - Q_{21}$							
		Generated by OpenRuleBench Generator				Stanford Large Network Dataset Collection			
		G_{a1}	G_{a2}	G_{a3}	G_{a4}	S_{l1}	S_{l2}	S_{l3}	S_{l4}
Q_{21}	$RDFox_n$	0.02705	0.03374	0.05146	0.07768	1.54245	1.62663	2.48222	1.99229
	$ASLOG_m$	0.03151	0.12194	0.14918	0.09115	2.48370	2.55960	3.86025	3.59312
	$ASLOG_m^*$	0.02478	0.10059	0.10172	0.03045	1.04541	1.05282	1.41912	1.34455
		Stanford Large Network Dataset Collection							
		G_{s1}	G_{s2}	G_{s3}	G_{s4}				
Q_1	DLV	0.24120	0.36213	0.27824	0.29937				
	$IRIS$	20.63938	20.80443	77.11381	12.36146				
	XSB	3.41463	14.27357	3.09483	4.14362				
	Yap	3.85925	5.79252	4.45129	4.78462				
	$ASLOG_d$	0.04590	0.08680	0.04328	0.05221				
	$ASLOG_d^*$	0.02876	0.06360	0.03114	0.03502				
	$RDFox_n$	0.06032	0.06895	0.03463	0.04360				
	$RDFox_c$	0.03668	0.01894	0.00604	0.00551				
	$ASLOG_m$	0.04590	0.08614	0.04226	0.05096				
	$ASLOG_m^*$	0.02810	0.06259	0.02989	0.03374				
	$ASLOG_c$	0.00078	0.00217	0.00067	0.00072				
Q_{21}	DLV	0.39743	0.59617	0.43714	0.55541				
	$IRIS$	27.98543	30.78394	97.94891	20.07562				
	XSB	3.69223	15.13727	4.06125	4.87380				
	Yap	25.90356	36.26428	27.19815	65.77262				
	$ASLOG_d$	0.06011	0.13834	0.06181	0.07390				
	$ASLOG_d^*$	0.02917	0.06945	0.03032	0.03688				
	$RDFox_n$	0.06109	0.07585	0.03818	0.04818				
	$RDFox_c$	0.03449	0.02038	0.00669	0.01008				
	$ASLOG_m$	0.05970	0.13698	0.06111	0.07327				
	$ASLOG_m^*$	0.02877	0.06809	0.02962	0.03625				
	$ASLOG_c$	0.00145	0.00357	0.00130	0.00113				
Overhead of $ASLOG$ and $AMEM$									
		Generated by OpenRuleBench Generator				Stanford Large Network Dataset Collection			
		G_{c1}	G_{c2}	G_{c3}	G_{c4}	S_{s1}	S_{s2}	S_{s3}	S_{s4}
$Time(s)$	$ASLOG_{AI}$	0.005(62)	0.008(29)	0.016(15)	0.029(48)	0.012(34)	0.025(31)	0.028(52)	0.012(30)
	$ASLOG_{SI}$	0.003(38)	0.019(71)	0.095(85)	0.031(52)	0.023(66)	0.055(69)	0.026(48)	0.027(70)
	$Average$	0.000002	0.000001	0.000001	0.000002	0.000001	0.000001	0.000002	0.000001
$Size(kb)$	$ASLOG_{AI}$	62(52)	379(51)	1520(51)	479(57)	399(51)	924(51)	440(55)	544(56)
	$ASLOG_{SI}$	59(48)	369(49)	1476(49)	369(43)	378(49)	884(49)	357(45)	428(44)
	$Average$	0.030	0.030	0.030	0.034	0.030	0.030	0.033	0.034
		G_{a1}	G_{a2}	G_{a3}	G_{a4}	S_{l1}	S_{l2}	S_{l3}	S_{l4}
$AMEM$	$Time(s)$	0.01703	0.03804	0.04649	0.09743	2.02214	2.12656	3.29796	3.03510
	$Size(kb)$	631	764	935	1372	46,610	52,202	25,095	26,454