

Table 1: The table shows the median of test generation timing.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
ArtistTerm	2.57	***43.90	***2.66	***3.13	0.33	***42.53	0.54	*0.89
BookTown	8.70	***78.73	***11.62	***10.87	2.01	***77.34	***5.45	***4.88
BrowserCookies	3.16	***68.65	***5.81	***16.77	0.42	***70.85	***3.05	***15.34
Cloc	1.13	***13.48	***1.19	***1.26	0.30	***12.58	0.43	0.40
DellStore	4.16	***143.52	***4.77	***4.92	0.48	***139.02	***1.14	***1.26
Flights	2.48	***106.58	***5.56	***24.29	0.45	***114.70	***3.73	***23.77
Inventory	0.68	***5.39	0.78	0.75	0.28	***5.22	0.44	0.35
iTrust	46.73	***4300.60	***55.48	***84.49	4.60	***4257.82	***13.99	***43.28
JWhoisServer	3.94	***240.70	***4.86	***5.16	0.54	***247.67	***1.54	***1.79
MozillaExtensions	6.33	***272.98	***7.30	***7.53	0.54	***269.52	***1.55	***1.63
NistXTS749	1.54	***20.36	***1.75	***1.76	0.33	***21.01	0.69	0.53
Products	3.14	***70.05	***7.28	***6.57	1.30	***56.44	***5.85	***5.00
RiskIt	11.72	***408.31	***12.52	***14.24	0.63	***421.09	***1.95	***3.52
StudentResidence	1.36	***21.50	***1.50	***1.71	0.38	***21.30	0.63	0.73
UnixUsage	10.68	***80.70	***11.50	***12.89	0.52	***81.54	***1.67	***2.66

Table 2: The table shows the median of coverage.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
ArtistTerm	100.0	***60.0	100.0	100.0	100.0	***62.8	100.0	100.0
BookTown	99.3	***92.2	99.3	99.3	99.3	***92.3	99.3	99.3
BrowserCookies	100.0	***55.6	100.0	***98.6	100.0	***56.3	100.0	***98.6
Cloc	100.0	***92.5	100.0	100.0	100.0	***92.5	100.0	100.0
DellStore	100.0	***93.2	100.0	100.0	100.0	***93.2	100.0	100.0
Flights	100.0	***56.8	100.0	***97.0	100.0	***57.3	100.0	***96.8
Inventory	100.0	***93.8	100.0	100.0	100.0	***94.4	100.0	100.0
iTrust	100.0	***91.6	100.0	100.0	100.0	***92.0	100.0	100.0
JWhoisServer	100.0	***86.8	100.0	100.0	100.0	***87.3	100.0	100.0
MozillaExtensions	100.0	***87.6	100.0	100.0	100.0	***87.8	100.0	100.0
NistXTS749	100.0	***91.9	100.0	100.0	100.0	***91.4	100.0	100.0
Products	97.9	***73.4	97.9	97.9	98.1	***79.2	98.1	98.1
RiskIt	100.0	***68.6	100.0	100.0	100.0	***70.0	100.0	100.0
StudentResidence	100.0	***60.0	100.0	100.0	100.0	***64.7	100.0	100.0
UnixUsage	100.0	***50.3	100.0	100.0	100.0	***52.4	100.0	100.0

Table 3: The table shows the median of Mutattion Score.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
ArtistTerm	100.0	*** 80.0	100.0	100.0	100.0	*** 79.0	100.0	100.0
BookTown	99.5	*** 90.0	*** 97.6	*99.5	99.0	*** 86.5	*** 85.5	99.0
BrowserCookies	97.4	*** 55.1	*** 92.3	** 96.2	96.6	*** 47.2	*** 86.5	96.6
Cloc	100.0	*** 90.0	100.0	100.0	100.0	*** 85.0	100.0	100.0
DellStore	100.0	*** 89.7	100.0	100.0	100.0	*** 88.5	100.0	100.0
Flights	100.0	*** 38.1	*** 95.2	*** 97.6	100.0	*** 40.2	*** 84.3	*** 98.0
Inventory	100.0	*** 82.3	*** 88.2	100.0	100.0	*** 81.2	*** 75.0	100.0
iTrust	99.7	*** 90.1	*** 95.8	*** 99.5	99.2	*** 87.6	*** 83.6	99.2
JWhoisServer	99.4	*** 88.5	*** 78.7	99.7	99.5	*** 88.6	*** 76.6	99.5
MozillaExtensions	100.0	*** 55.8	*** 82.1	*100.0	99.7	*** 54.3	*** 71.3	*99.7
NistXTS749	95.0	*** 90.0	95.0	95.0	94.0	*** 80.0	92.0	*** <i>96.0</i>
Products	87.2	*** 69.2	** 87.2	87.2	87.8	*** 73.5	** 87.8	87.8
RiskIt	100.0	*** 68.0	*** 99.5	100.0	99.5	*** 68.0	*** 89.3	*** <i>100.0</i>
StudentResidence	97.2	*** 86.1	*** 94.4	* 97.2	94.9	*** 71.8	*** 87.2	*97.4
UnixUsage	100.0	*** 51.8	100.0	100.0	100.0	*** 58.9	*** 98.2	100.0

Table 4: The table shows the median of Mutattion Score for mutation operators.

Operator	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
CInListElementR	100.0	* 100.0	100.0	100.0	100.0	* 100.0	100.0	100.0
CR	95.24	*** 92.86	95.24	95.24	95.24	95.24	95.24	95.24
CRelOpE	83.33	*** 80.835	*** 81.67	83.33	81.67	*83.33	** 81.67	*83.33
FKColumnPairE	100.0	*** 84.75	100.0	100.0	100.0	*** 84.62	100.0	100.0
FKColumnPairR	100.0	*** 88.46	100.0	100.0	100.0	*** 88.46	100.0	100.0
NNA	100.0	*** 97.12	100.0	100.0	100.0	*** 97.24	100.0	100.0
NNR	100.0	*** 98.18	100.0	100.0	100.0	*** 98.27	100.0	100.0
PKColumnA	98.94	*** 92.57	*** 78.56	*** 98.51	96.26	*** 81.28	*** 1.87	** <i>97.06</i>
PKColumnE	100.0	*** 94.63	*** 99.74	100.0	99.49	*** 86.45	*** 98.98	99.49
PKColumnR	100.0	*** 84.62	100.0	100.0	100.0	*** 78.95	100.0	100.0
UColumnA	100.0	*** 51.49	*** 89.88	*** 99.85	100.0	*** 52.455	*** 89.88	*** 99.85
UColumnE	100.0	*** 23.89	* <i>100.0</i>	*100.0	100.0	*** 24.775	** <i>100.0</i>	100.0
UColumnR	100.0	*** 33.33	100.0	*** 91.67	100.0	*** 33.33	100.0	*** 91.67

Table 5: The table shows the mean of test generation timing.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
ArtistTerm	2.60	***43.11	***2.68	***3.10	0.33	***41.82	0.54	*0.91
BookTown	8.78	***78.04	***11.59	***10.94	2.00	***76.82	***5.44	***4.91
BrowserCookies	3.22	***64.84	***5.85	***17.50	0.42	***66.31	***3.23	***15.70
Cloc	1.15	***12.91	***1.19	***1.28	0.30	***12.15	0.43	0.41
DellStore	4.19	***141.12	***4.84	***4.96	0.48	***138.42	***1.14	***1.28
Flights	2.48	***154.43	***5.77	***24.84	0.45	***165.01	***3.90	***24.02
Inventory	0.70	***4.40	0.80	0.75	0.28	***4.22	0.44	0.35
iTrust	46.96	***4313.25	***55.28	***85.67	4.58	***4207.22	***14.12	***47.11
JWhoisServer	4.03	***241.45	***4.87	***5.15	0.55	***247.99	***1.55	***1.79
MozillaExtensions	6.36	***271.52	***7.34	***7.62	0.55	***265.69	***1.55	***1.65
NistXTS749	1.54	***21.22	***1.77	***1.81	0.33	***21.80	0.69	0.57
Products	3.14	***72.01	***7.28	***6.61	1.31	***58.45	***5.85	***5.03
RiskIt	11.70	***406.10	***12.53	***14.72	0.63	***424.34	***1.99	***3.48
StudentResidence	1.43	***20.69	***1.54	***1.72	0.38	***20.25	0.63	0.75
UnixUsage	11.11	***80.30	***11.52	***13.31	0.52	***81.51	***1.67	***2.99

Table 6: The table shows the mean of coverage.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R ⁺	AVM-D	AVM-R		R ⁺	AVM-D	AVM-R
ArtistTerm	100.0	***59.8	100.0	100.0	100.0	***62.6	100.0	100.0
BookTown	99.3	***92.3	99.3	99.3	99.3	***92.4	99.3	99.3
BrowserCookies	100.0	***58.3	100.0	***98.8	100.0	***59.1	100.0	***98.8
Cloc	100.0	***92.3	100.0	100.0	100.0	***92.3	100.0	100.0
DellStore	100.0	***93.5	100.0	100.0	100.0	***93.5	100.0	100.0
Flights	100.0	***58.8	100.0	***97.1	100.0	***58.2	100.0	***96.9
Inventory	100.0	***95.8	100.0	100.0	100.0	***96.3	100.0	100.0
iTrust	100.0	***91.5	100.0	100.0	100.0	***92.0	100.0	100.0
JWhoisServer	100.0	***86.5	100.0	100.0	100.0	***87.0	100.0	100.0
MozillaExtensions	100.0	***87.8	100.0	100.0	100.0	***88.0	100.0	100.0
NistXTS749	100.0	***85.6	100.0	100.0	100.0	***86.3	100.0	100.0
Products	97.9	***69.9	97.9	97.9	98.1	***79.0	98.1	98.1
RiskIt	100.0	***68.5	100.0	100.0	100.0	***70.1	100.0	100.0
StudentResidence	100.0	***70.1	100.0	100.0	100.0	***73.7	100.0	100.0
UnixUsage	100.0	***50.1	100.0	100.0	100.0	***52.1	100.0	100.0

Table 7: The table shows the mean of Mutattion Score.

Schema	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R+	AVM-D	AVM-R		R+	AVM-D	AVM-R
ArtistTerm	100.0	*** 80.3	100.0	100.0	100.0	*** 79.3	100.0	100.0
BookTown	99.5	*** 89.9	*** 97.6	*99.4	99.1	*** 86.9	*** 85.5	99.0
BrowserCookies	96.3	*** 55.8	*** 92.3	** 95.6	95.9	*** 47.9	*** 86.5	96.1
Cloc	100.0	*** 89.8	100.0	100.0	100.0	*** 84.7	100.0	100.0
DellStore	100.0	*** 90.1	100.0	100.0	100.0	*** 88.9	100.0	100.0
Flights	99.8	*** 46.3	*** 95.2	*** 97.9	100.0	*** 48.6	*** 84.3	*** 98.2
Inventory	100.0	*** 88.2	*** 88.2	100.0	100.0	*** 87.5	*** 75.0	100.0
iTrust	99.7	*** 90.1	*** 95.8	*** 99.6	99.2	*** 87.4	*** 83.6	99.2
JWhoisServer	99.6	*** 88.3	*** 78.7	99.6	99.6	*** 88.7	*** 76.6	99.5
MozillaExtensions	99.8	*** 61.5	*** 82.1	*99.6	99.7	*** 60.7	*** 71.3	*99.5
NistXTS749	95.0	*** 86.7	95.0	95.0	91.7	*** 79.2	92.0	*** <i>96.0</i>
Products	87.2	*** 60.5	** 86.5	87.1	87.8	*** 74.8	** 87.1	87.7
RiskIt	100.0	*** 68.3	*** 99.5	100.0	99.5	*** 67.9	*** 89.3	*** <i>99.9</i>
StudentResidence	97.2	*** 87.7	*** 94.4	* 96.5	95.7	*** 77.7	*** 87.2	*96.6
UnixUsage	100.0	*** 51.4	100.0	100.0	100.0	*** 59.1	*** 98.2	100.0

Table 8: The table shows the mean of Mutattion Score for mutation operators.

Operator	RAGTAG	PostgreSQL			RAGTAG	SQLite		
		R+	AVM-D	AVM-R		R+	AVM-D	AVM-R
ChnListElementR	100.0	* 99.916	100.0	100.0	100.0	* 99.892	100.0	100.0
CR	95.24	*** 92.86	95.24	95.24	95.24	95.24	95.24	95.24
CRelOpE	82.832	*** 79.66667	*** 81.67	82.66533	82.33333	*82.721	** 81.67	*82.55433
FKColumnPairE	100.0	*** 84.18267	100.0	100.0	100.0	*** 86.21167	100.0	100.0
FKColumnPairR	100.0	*** 88.332	100.0	100.0	100.0	*** 88.46	100.0	100.0
NNA	100.0	*** 97.04467	100.0	100.0	100.0	*** 97.284	100.0	100.0
NNR	100.0	*** 98.44433	100.0	100.0	100.0	*** 98.28433	100.0	100.0
PKColumnA	98.938	*** 92.64633	*** 78.48667	*** 98.56333	96.354	*** 81.31033	*** 1.78	** <i>96.83667</i>
PKColumnE	99.95733	*** 94.73167	*** 99.73167	99.99133	99.41067	*** 86.48833	*** 98.98	99.52167
PKColumnR	100.0	*** 84.00133	100.0	100.0	100.0	*** 78.59667	100.0	100.0
UColumnA	99.925	*** 52.75233	*** 89.88	*** 99.735	99.905	*** 53.398	*** 89.88	*** 99.75
UColumnE	99.46967	*** 31.592	* <i>100.0</i>	*99.05667	99.41133	*** 32.18167	** <i>100.0</i>	99.204
UColumnR	100.0	*** 31.94433	100.0	*** 93.05767	100.0	*** 31.66667	100.0	*** 92.78