

# PolePosition

the open source database benchmark

<http://www.polepos.org>

## Participating teams

### db4o

the open source object database for Java and .NET

<http://www.db4o.com>

### Hibernate

relational persistence for idiomatic Java

<http://www.hibernate.org>

### MySQL

the world's most popular open source database

<http://www.mysql.com>

### Mckoi

an open source Java SQL database system

<http://mckoi.com/database/>

### JavaDB

Sun's supported distribution of Apache Derby

<http://developers.sun.com/javadb/>

### HSQldb

lightweight 100% Java SQL database engine

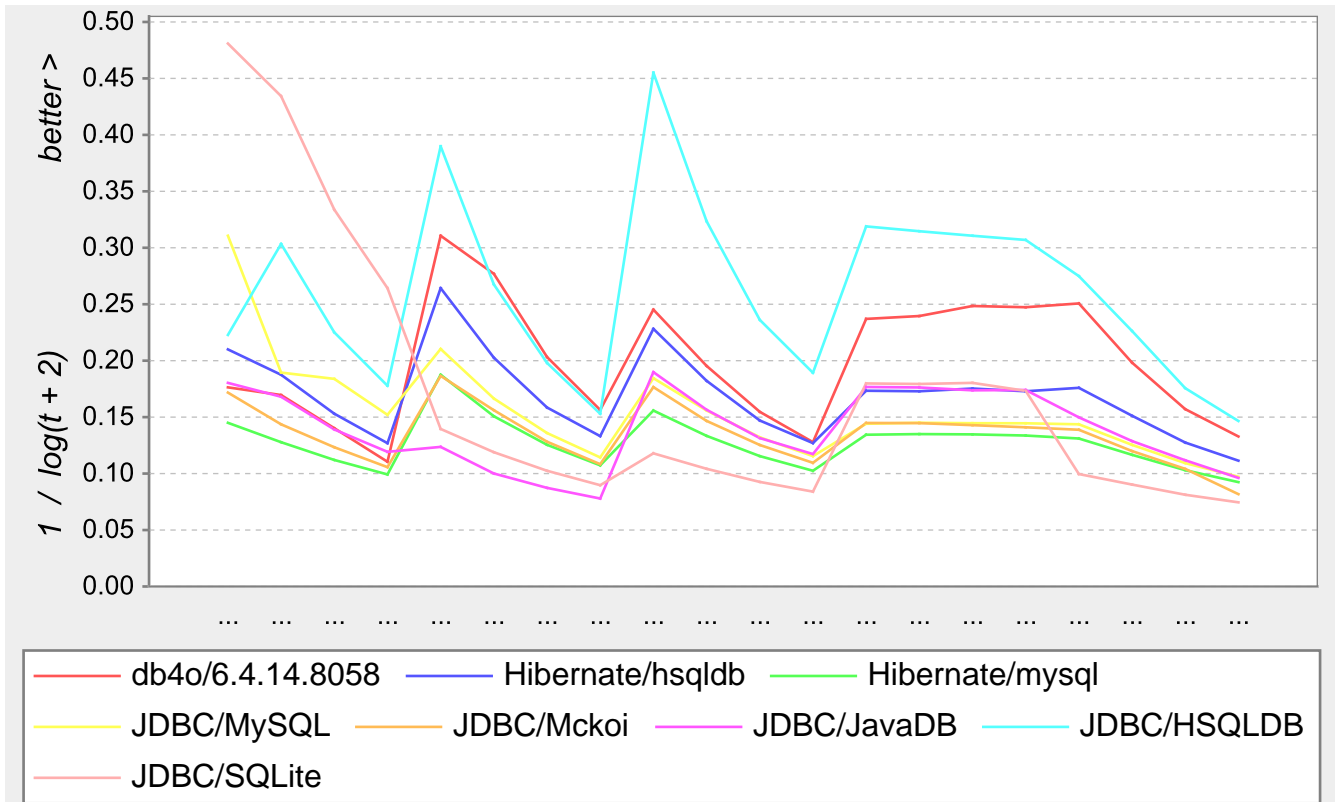
<http://hsqldb.sourceforge.net/>

### SQLite

a small C library that implements a self-contained, embeddable, zero-configuration SQL database engine.

[www.sqlite.org](http://www.sqlite.org)

# Time Overview

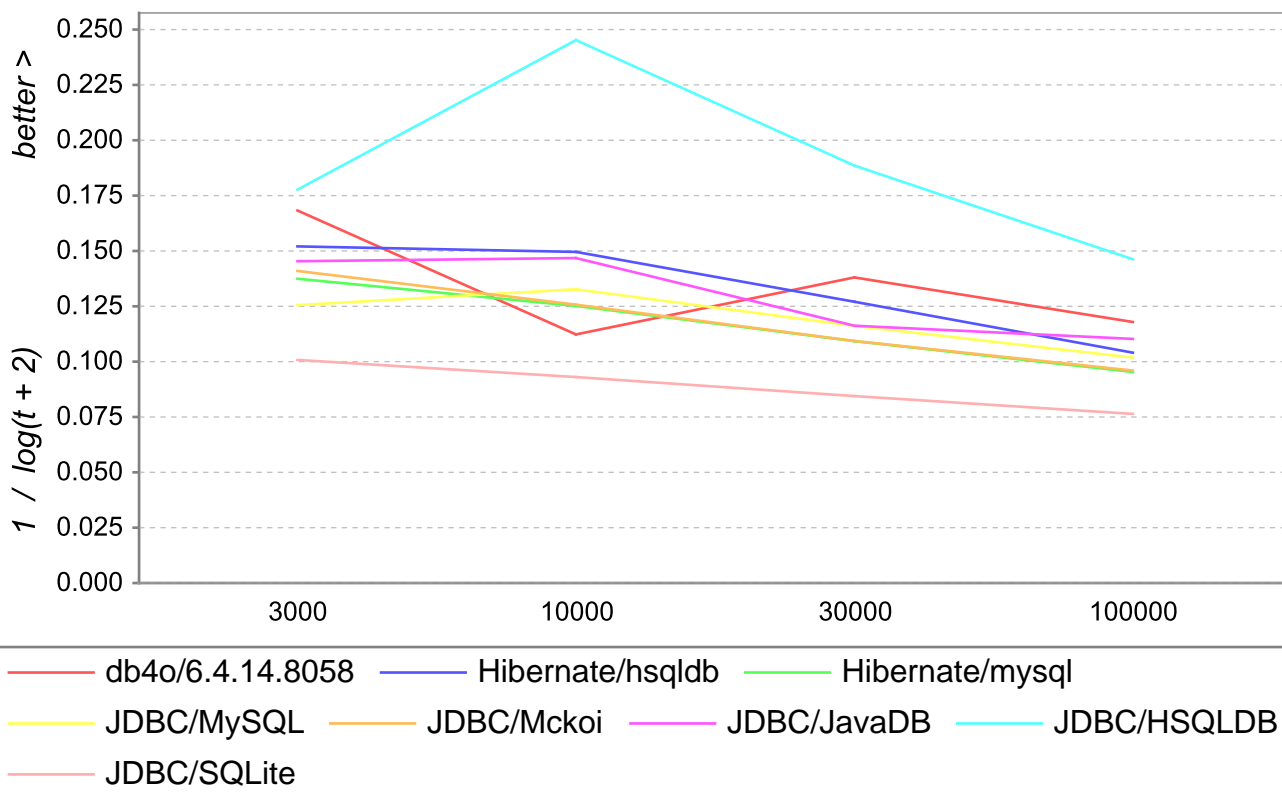


**Circuit: Melbourne**

writes, reads and deletes unstructured flat objects of one kind in bulk mode

Lap: write

t [time in ms]	objects:3000	objects:10000	objects:30000	objects:100000
<b>db4o/6.4.14.8058</b>	379	7365	1398	4820
<b>Hibernate/hsqldb</b>	716	799	2617	14916
<b>Hibernate/mysql</b>	1442	2948	9437	35853
<b>JDBC/MySQL</b>	2881	1872	5470	18422
<b>JDBC/Mckoi</b>	1202	2842	9371	33530
<b>JDBC/JavaDB</b>	970	907	5454	8676
<b>JDBC/HSQLDB</b>	276	57	199	931
<b>JDBC/SQLite</b>	20381	46545	138990	483594

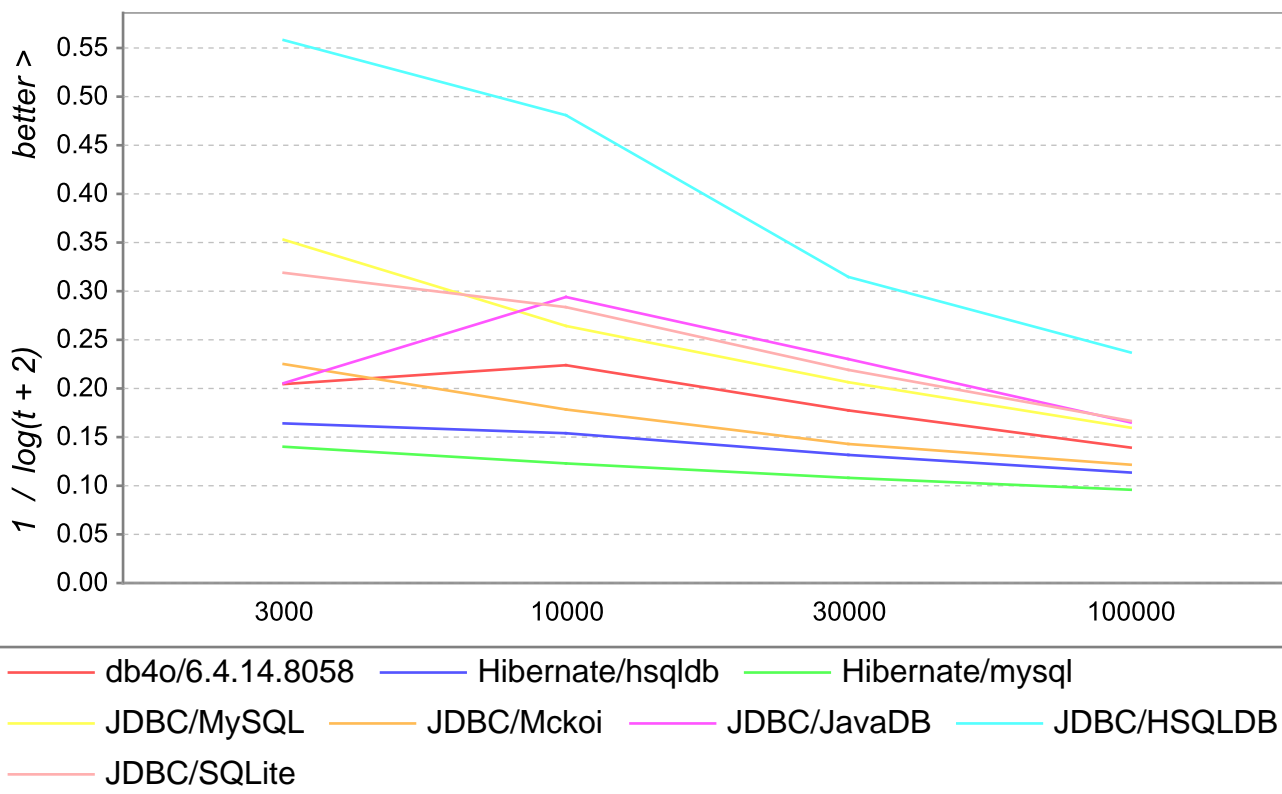


**Circuit: Melbourne**

writes, reads and deletes unstructured flat objects of one kind in bulk mode

Lap: read

t [time in ms]	objects:3000	objects:10000	objects:30000	objects:100000
<b>db4o/6.4.14.8058</b>	131	85	278	1316
<b>Hibernate/hsqldb</b>	441	659	1982	6668
<b>Hibernate/mysql</b>	1255	3403	10384	33794
<b>JDBC/MySQL</b>	15	42	125	523
<b>JDBC/Mckoi</b>	83	270	1090	3717
<b>JDBC/JavaDB</b>	128	28	75	426
<b>JDBC/HSQLDB</b>	4	6	22	66
<b>JDBC/SQLite</b>	21	32	94	401

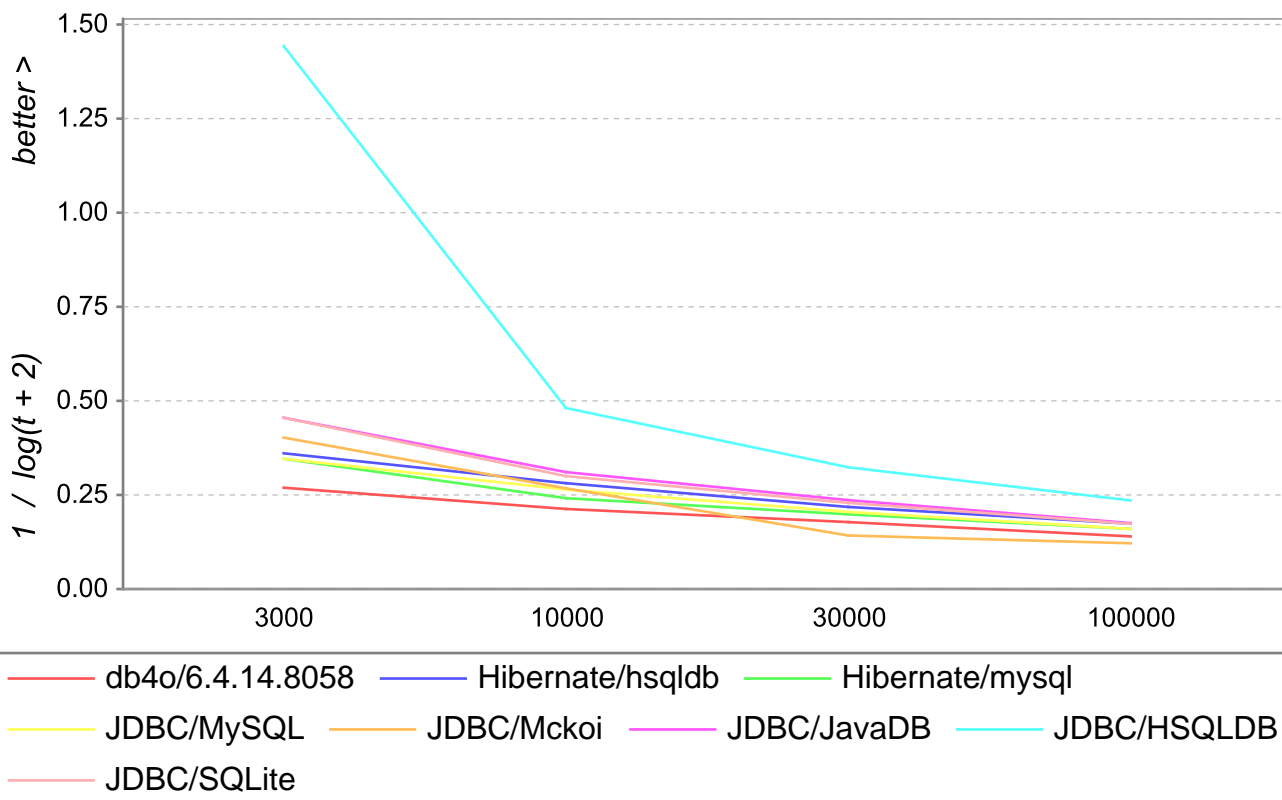


**Circuit: Melbourne**

writes, reads and deletes unstructured flat objects of one kind in bulk mode

Lap: read\_hot

t [time in ms]	objects:3000	objects:10000	objects:30000	objects:100000
<b>db4o/6.4.14.8058</b>	39	108	274	1273
<b>Hibernate/hsqldb</b>	14	33	96	314
<b>Hibernate/mysql</b>	16	61	152	519
<b>JDBC/MySQL</b>	16	42	130	520
<b>JDBC/Mckoi</b>	10	40	1128	3722
<b>JDBC/JavaDB</b>	7	23	67	299
<b>JDBC/HSQLDB</b>	0	6	20	68
<b>JDBC/SQLite</b>	7	26	77	320

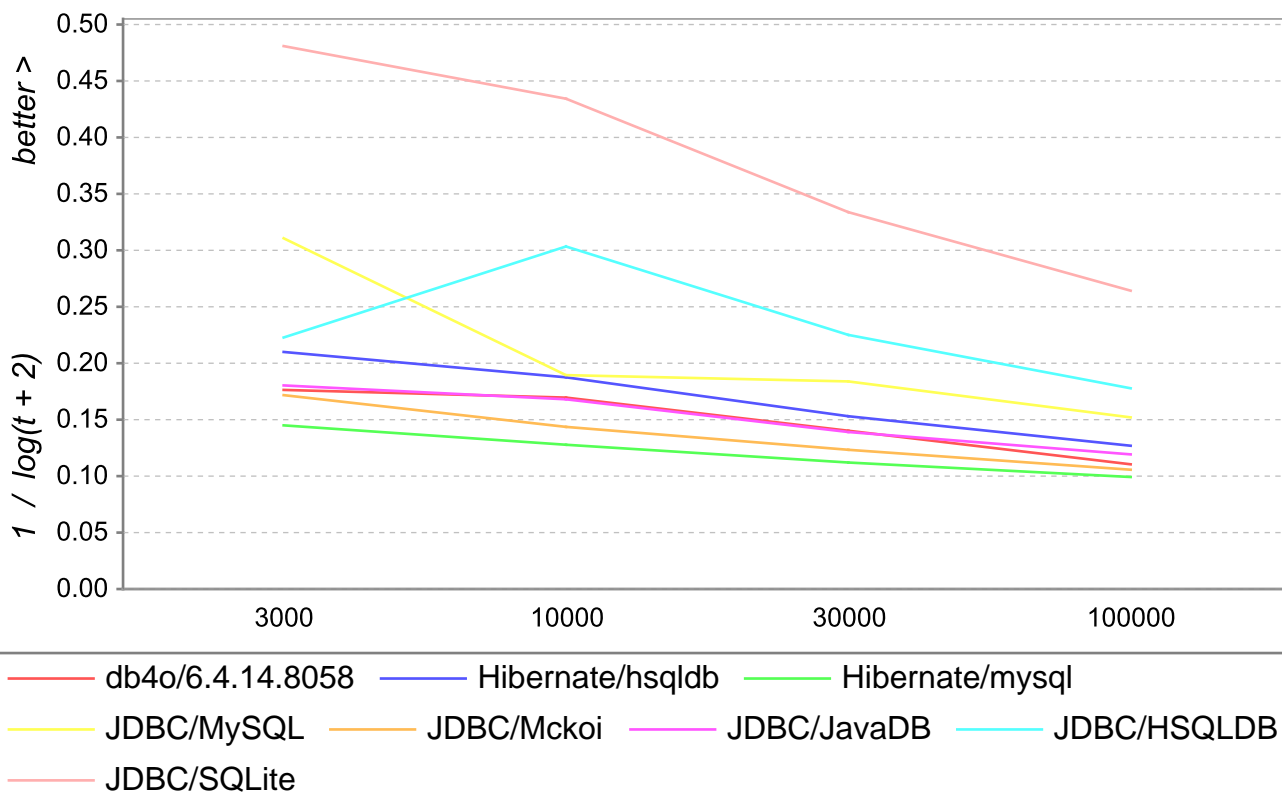


**Circuit: Melbourne**

writes, reads and deletes unstructured flat objects of one kind in bulk mode

**Lap: delete**

t [time in ms]	objects:3000	objects:10000	objects:30000	objects:100000
<b>db4o/6.4.14.8058</b>	288	362	1251	8530
<b>Hibernate/hsqldb</b>	115	205	686	2640
<b>Hibernate/mysql</b>	988	2500	7506	23779
<b>JDBC/MySQL</b>	23	194	228	717
<b>JDBC/Mckoi</b>	336	1054	3319	12861
<b>JDBC/JavaDB</b>	254	382	1323	4376
<b>JDBC/HSQLDB</b>	87	25	83	275
<b>JDBC/SQLite</b>	6	8	18	42

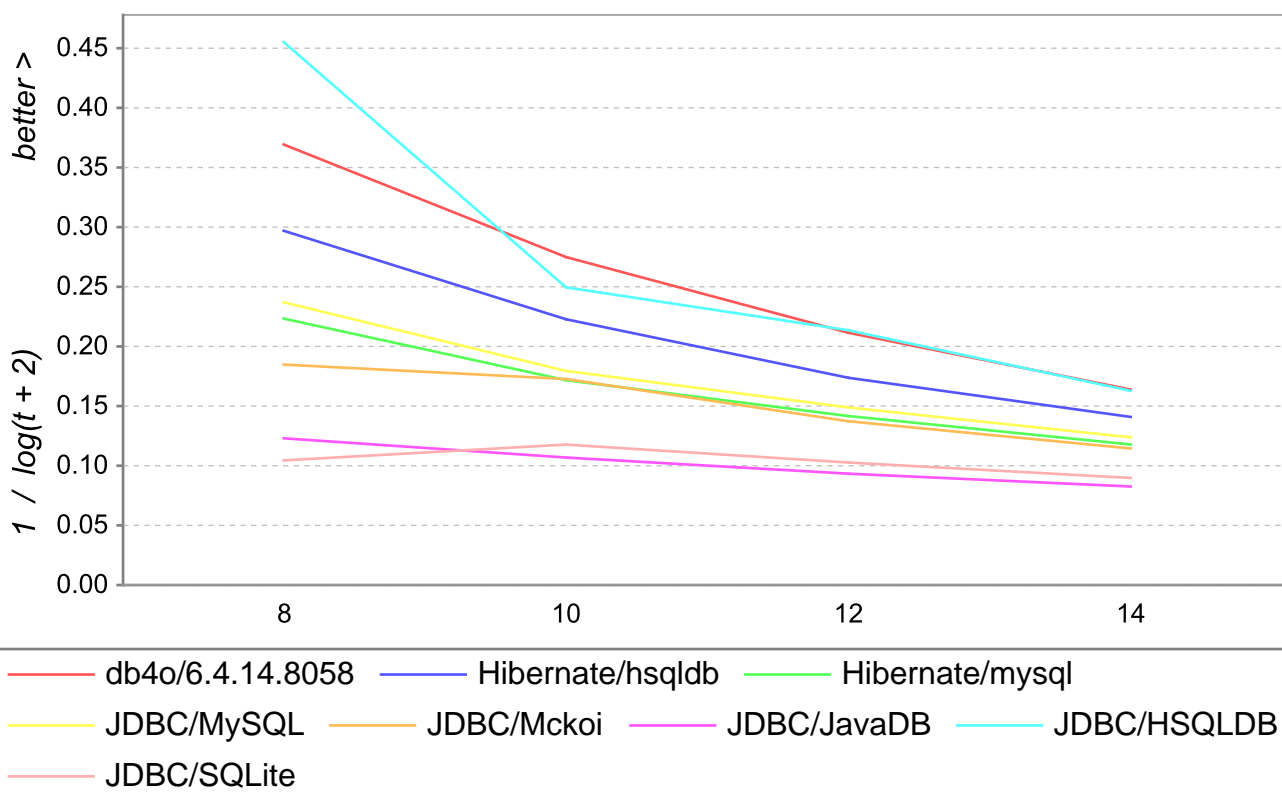


### Circuit: Sepang

writes, reads and then deletes an object tree

Lap: write

t [time in ms]	depth:8	depth:10	depth:12	depth:14
db4o/6.4.14.8058	13	36	111	445
Hibernate/hsqldb	27	87	314	1206
Hibernate/mysql	86	336	1162	4865
JDBC/MySQL	66	261	825	3215
JDBC/Mckoi	222	325	1455	6220
JDBC/JavaDB	3393	11571	44918	181123
JDBC/HSQLDB	7	53	106	464
JDBC/SQLite	14325	4887	16935	68872

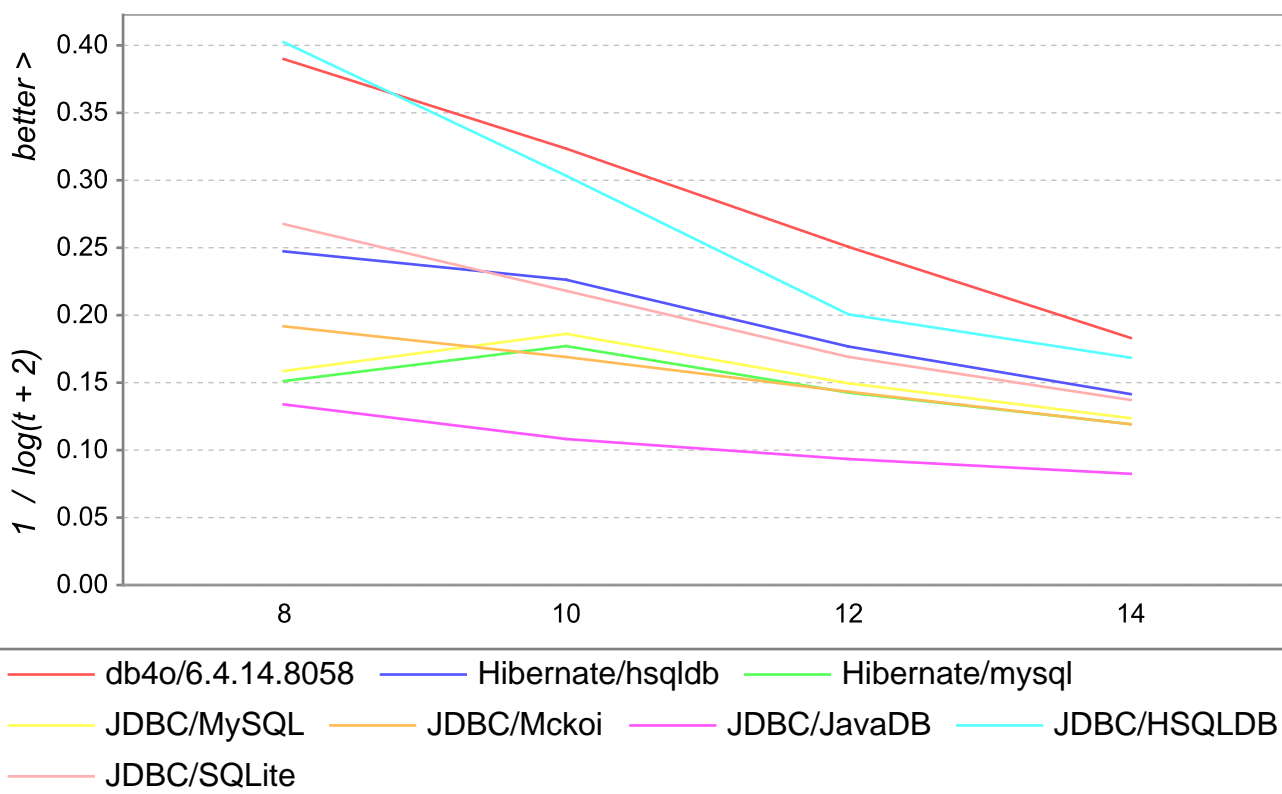


### Circuit: Sepang

writes, reads and then deletes an object tree

Lap: read

t [time in ms]	depth:8	depth:10	depth:12	depth:14
db4o/6.4.14.8058	11	20	52	233
Hibernate/hsqldb	55	81	284	1169
Hibernate/mysql	744	281	1107	4385
JDBC/MySQL	545	213	799	3246
JDBC/Mckoi	182	369	1072	4414
JDBC/JavaDB	1751	10283	44685	185326
JDBC/HSQLDB	10	25	144	376
JDBC/SQLite	40	96	368	1465

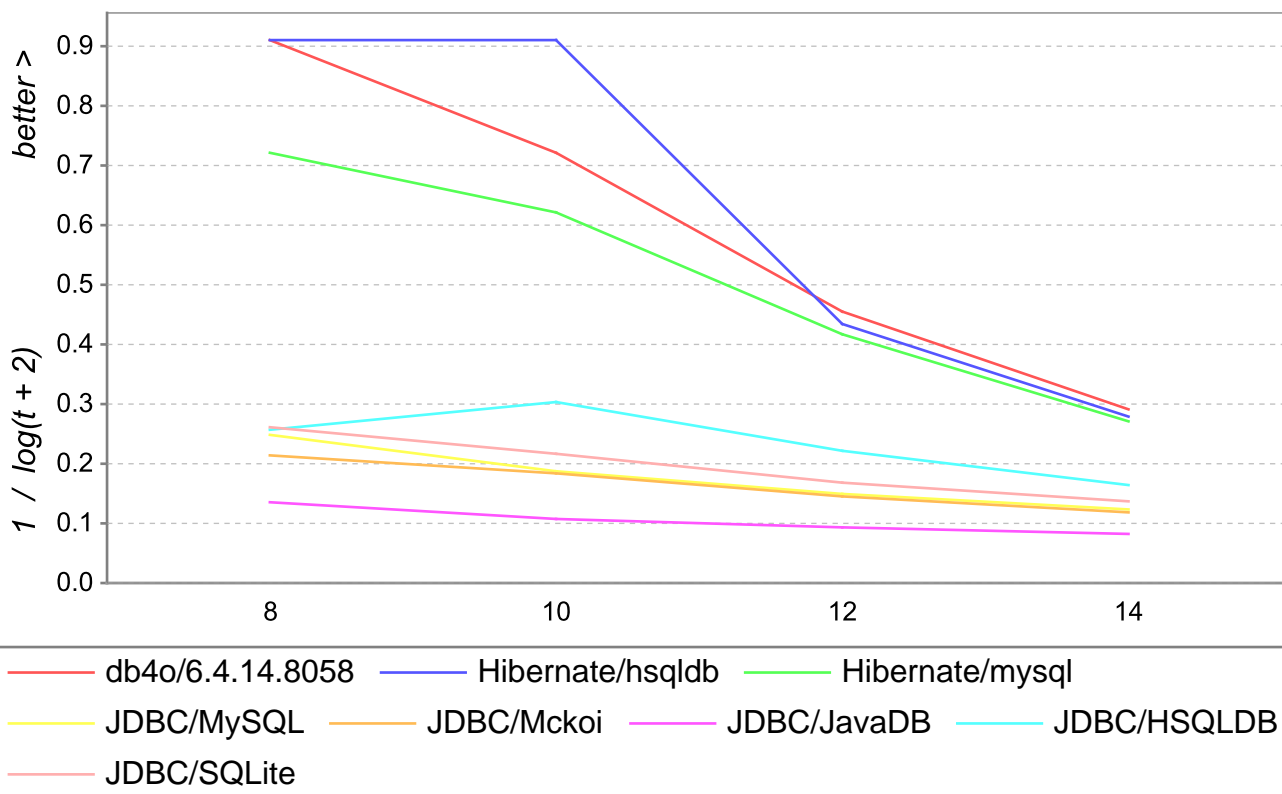


**Circuit: Sepang**

writes, reads and then deletes an object tree

Lap: read\_hot

t [time in ms]	depth:8	depth:10	depth:12	depth:14
<b>db4o/6.4.14.8058</b>	1	2	7	29
<b>Hibernate/hsqldb</b>	1	1	8	34
<b>Hibernate/mysql</b>	2	3	9	38
<b>JDBC/MySQL</b>	54	206	807	3309
<b>JDBC/Mckoi</b>	105	228	976	4630
<b>JDBC/JavaDB</b>	1606	11036	44958	188842
<b>JDBC/HSQLDB</b>	47	25	89	439
<b>JDBC/SQLite</b>	44	99	379	1479

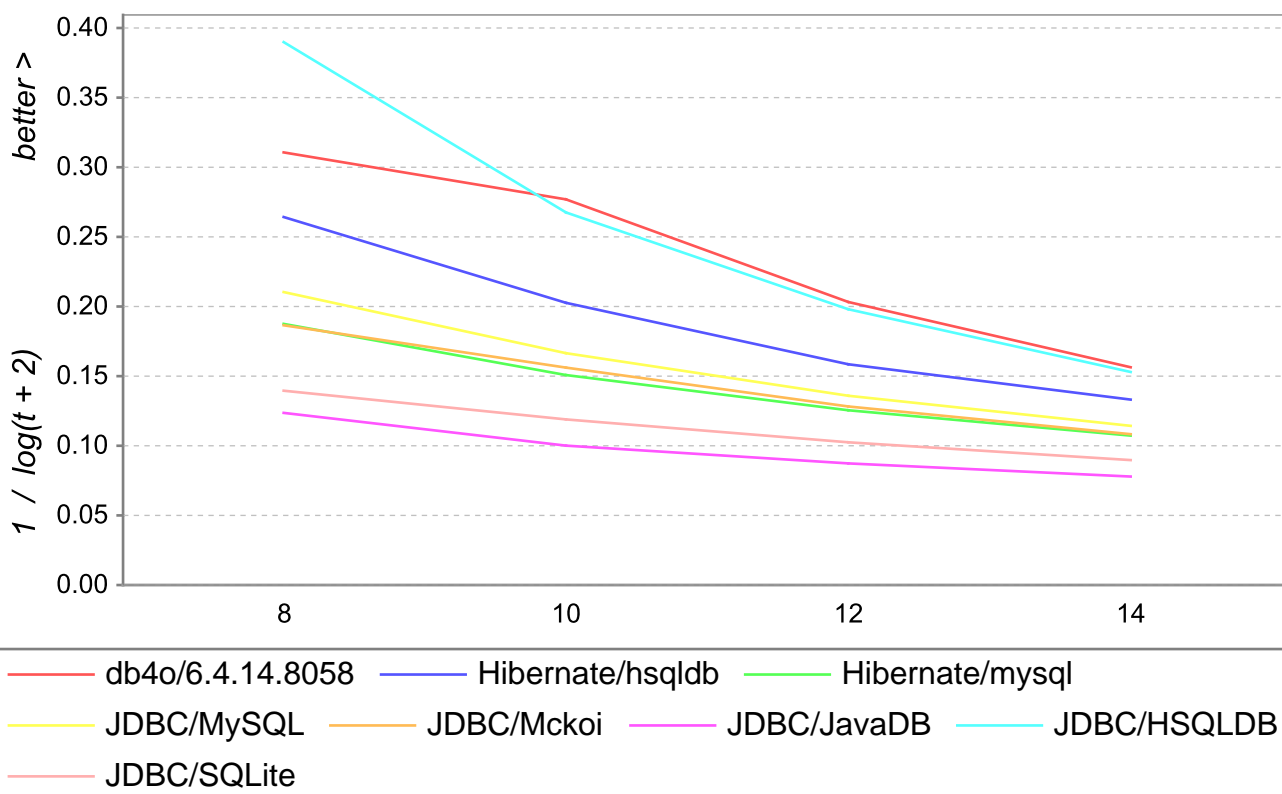


**Circuit: Sepang**

writes, reads and then deletes an object tree

**Lap: delete**

t [time in ms]	depth:8	depth:10	depth:12	depth:14
<b>db4o/6.4.14.8058</b>	23	35	135	597
<b>Hibernate/hsqldb</b>	42	137	547	1824
<b>Hibernate/mysql</b>	205	757	2886	11158
<b>JDBC/MySQL</b>	114	404	1566	6300
<b>JDBC/Mckoi</b>	211	603	2437	10220
<b>JDBC/JavaDB</b>	3256	21827	93875	375786
<b>JDBC/HSQLDB</b>	11	40	154	688
<b>JDBC/SQLite</b>	1293	4481	17261	69301

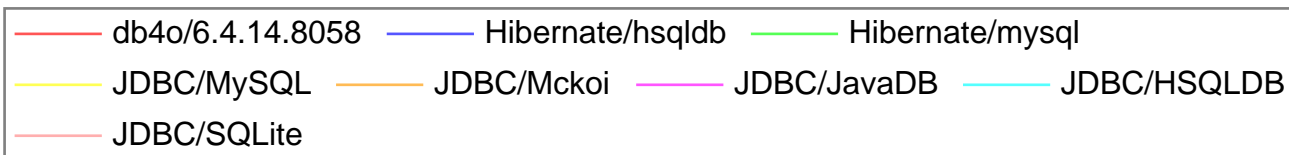
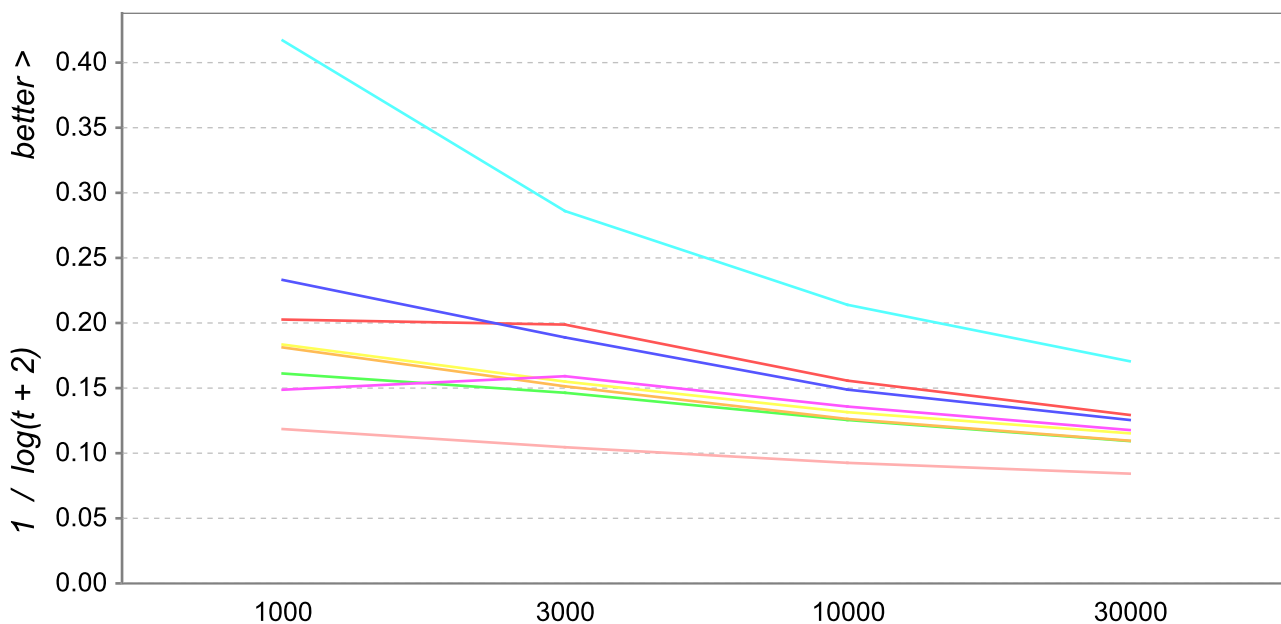


**Circuit: Bahrain**

write, query, update and delete simple flat objects individually

Lap: write

t [time in ms]	selects:900 objects:1000 updates:100	selects:900 objects:3000 updates:100	selects:900 objects:10000 updates:100	selects:900 objects:30000 updates:100
db4o/6.4.14.8058	137	151	613	2271
Hibernate/hsqldb	71	197	825	2882
Hibernate/mysql	492	923	2884	9396
JDBC/MySQL	231	632	2004	5853
JDBC/Mckoi	247	738	2744	9195
JDBC/JavaDB	829	534	1573	4862
JDBC/HSQldb	9	31	105	349
JDBC/SQLite	4603	14188	49016	141886

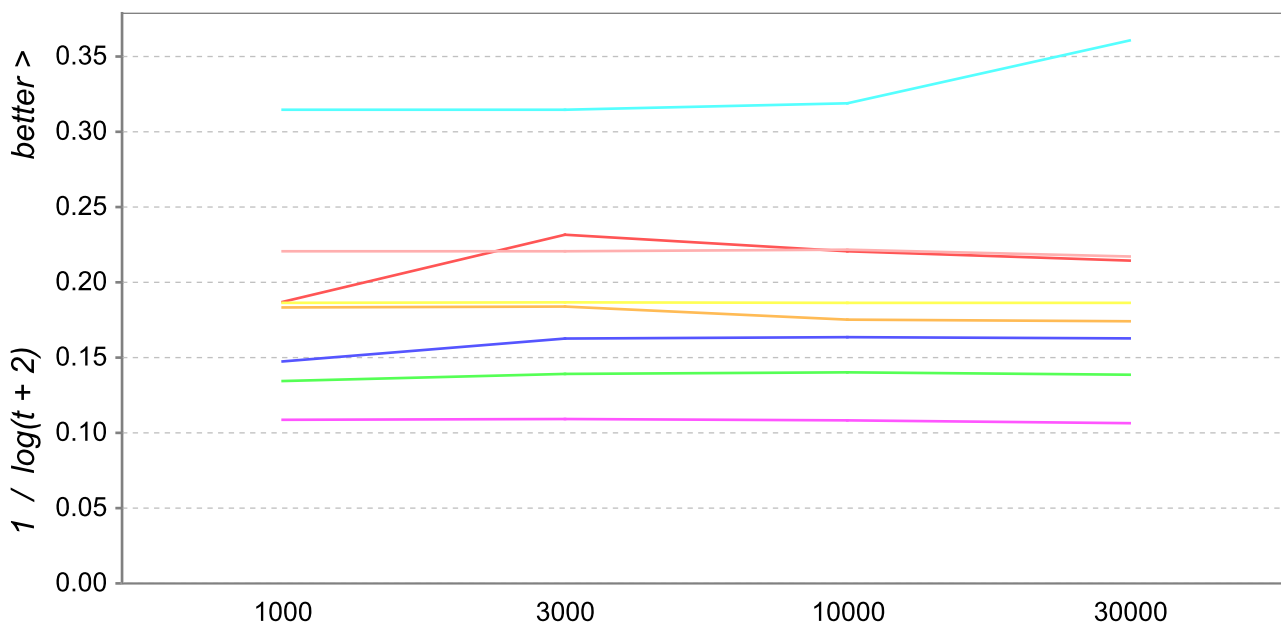


**Circuit: Bahrain**

write, query, update and delete simple flat objects individually

**Lap: query\_indexed\_string**

t [time in ms]	selects:900 objects:1000 updates:100	selects:900 objects:3000 updates:100	selects:900 objects:10000 updates:100	selects:900 objects:30000 updates:100
db4o/6.4.14.8058	208	73	91	104
Hibernate/hsqldb	880	466	450	464
Hibernate/mysql	1700	1319	1250	1356
JDBC/MySQL	212	210	212	212
JDBC/Mckoi	232	228	299	310
JDBC/JavaDB	9906	9498	10229	12043
JDBC/HSQldb	22	22	21	14
JDBC/SQLite	91	91	89	98



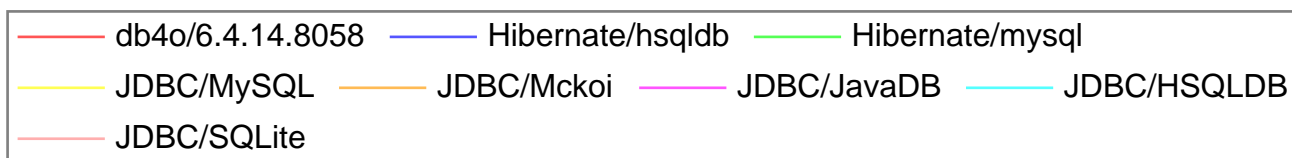
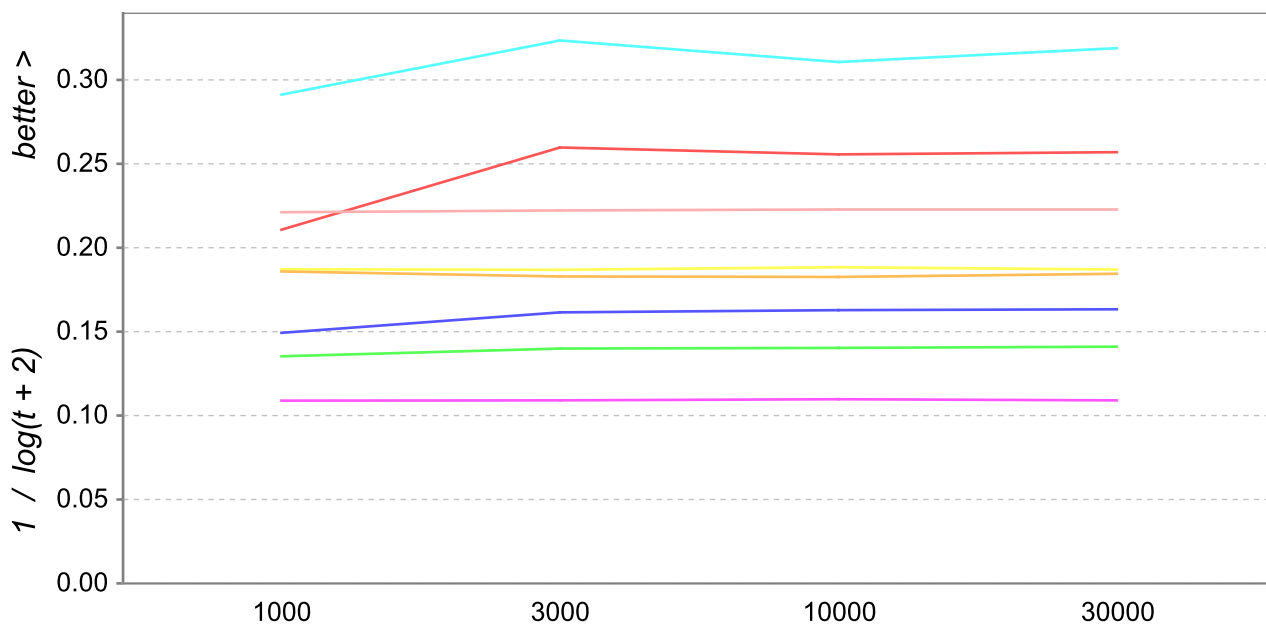
db4o/6.4.14.8058	Hibernate/hsqldb	Hibernate/mysql
JDBC/MySQL	JDBC/Mckoi	JDBC/JavaDB
JDBC/SQLite	JDBC/HSQldb	

**Circuit: Bahrain**

write, query, update and delete simple flat objects individually

**Lap: query\_indexed\_int**

t [time in ms]	<b>selects:900 objects:1000 updates:100</b>	<b>selects:900 objects:3000 updates:100</b>	<b>selects:900 objects:10000 updates:100</b>	<b>selects:900 objects:30000 updates:100</b>
<b>db4o/6.4.14.8058</b>	113	45	48	47
<b>Hibernate/hsqldb</b>	809	487	463	454
<b>Hibernate/mysql</b>	1619	1267	1243	1198
<b>JDBC/MySQL</b>	207	209	200	208
<b>JDBC/Mckoi</b>	215	235	237	224
<b>JDBC/JavaDB</b>	9732	9590	9072	9608
<b>JDBC/HSQldb</b>	29	20	23	21
<b>JDBC/SQLite</b>	90	88	87	87

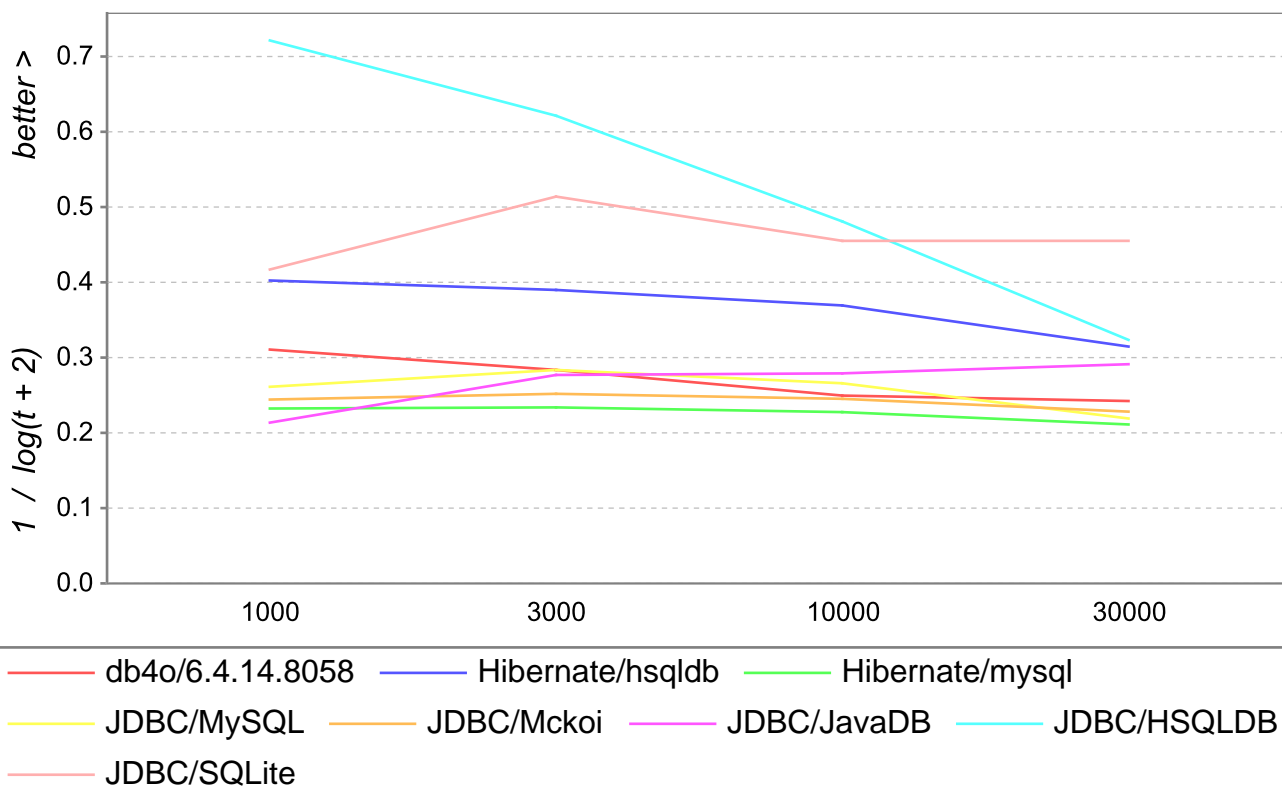


**Circuit: Bahrain**

write, query, update and delete simple flat objects individually

**Lap: update**

t [time in ms]	selects:900 objects:1000 updates:100	selects:900 objects:3000 updates:100	selects:900 objects:10000 updates:100	selects:900 objects:30000 updates:100
db4o/6.4.14.8058	23	32	53	60
Hibernate/hsqldb	10	11	13	22
Hibernate/mysql	72	70	79	112
JDBC/MySQL	44	32	41	94
JDBC/Mckoi	58	51	57	78
JDBC/JavaDB	106	35	34	29
JDBC/HSQldb	2	3	6	20
JDBC/SQLite	9	5	7	7

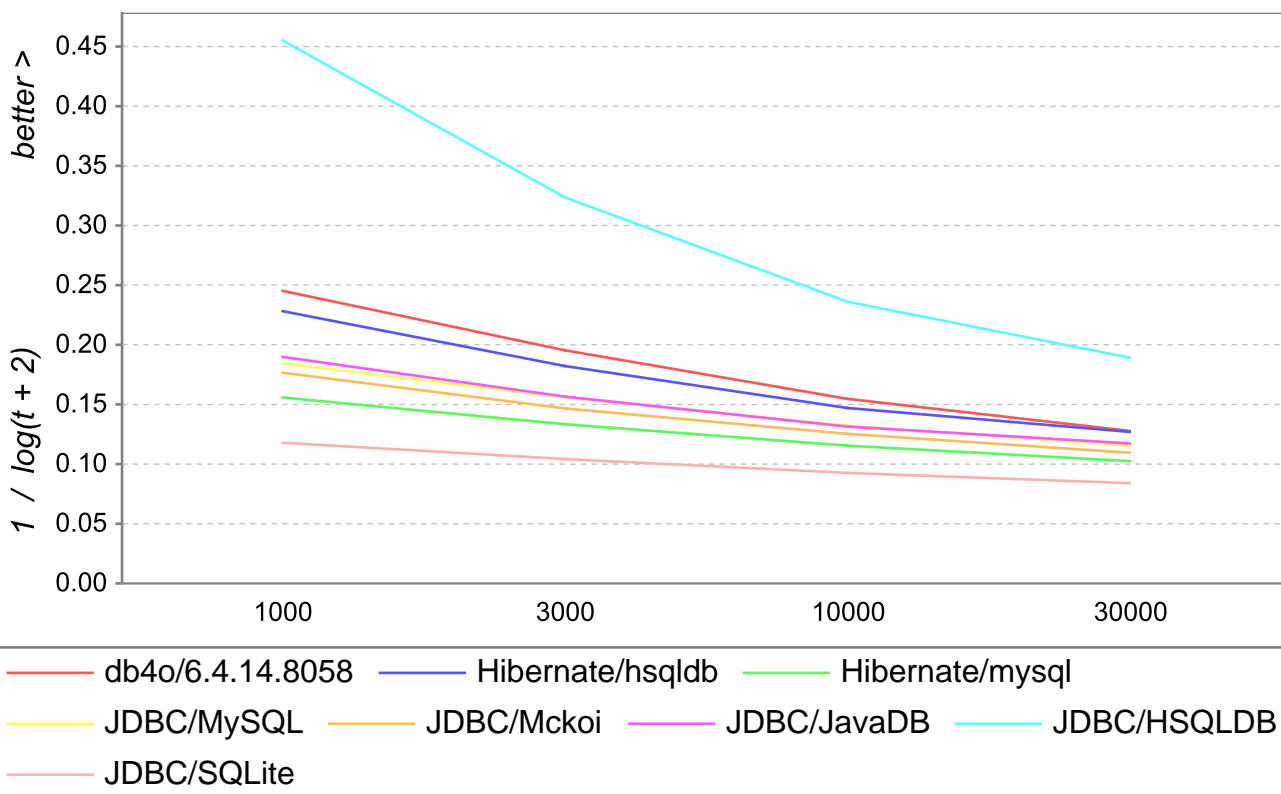


**Circuit: Bahrain**

write, query, update and delete simple flat objects individually

**Lap: delete**

t [time in ms]	selects:900 objects:1000 updates:100	selects:900 objects:3000 updates:100	selects:900 objects:10000 updates:100	selects:900 objects:30000 updates:100
db4o/6.4.14.8058	57	165	639	2494
Hibernate/hsqldb	78	240	897	2627
Hibernate/mysql	610	1798	5762	17262
JDBC/MySQL	224	609	1931	5778
JDBC/Mckoi	286	912	2917	9234
JDBC/JavaDB	192	593	2010	5042
JDBC/HSQLDB	7	20	67	195
JDBC/SQLite	4821	14665	48925	147762

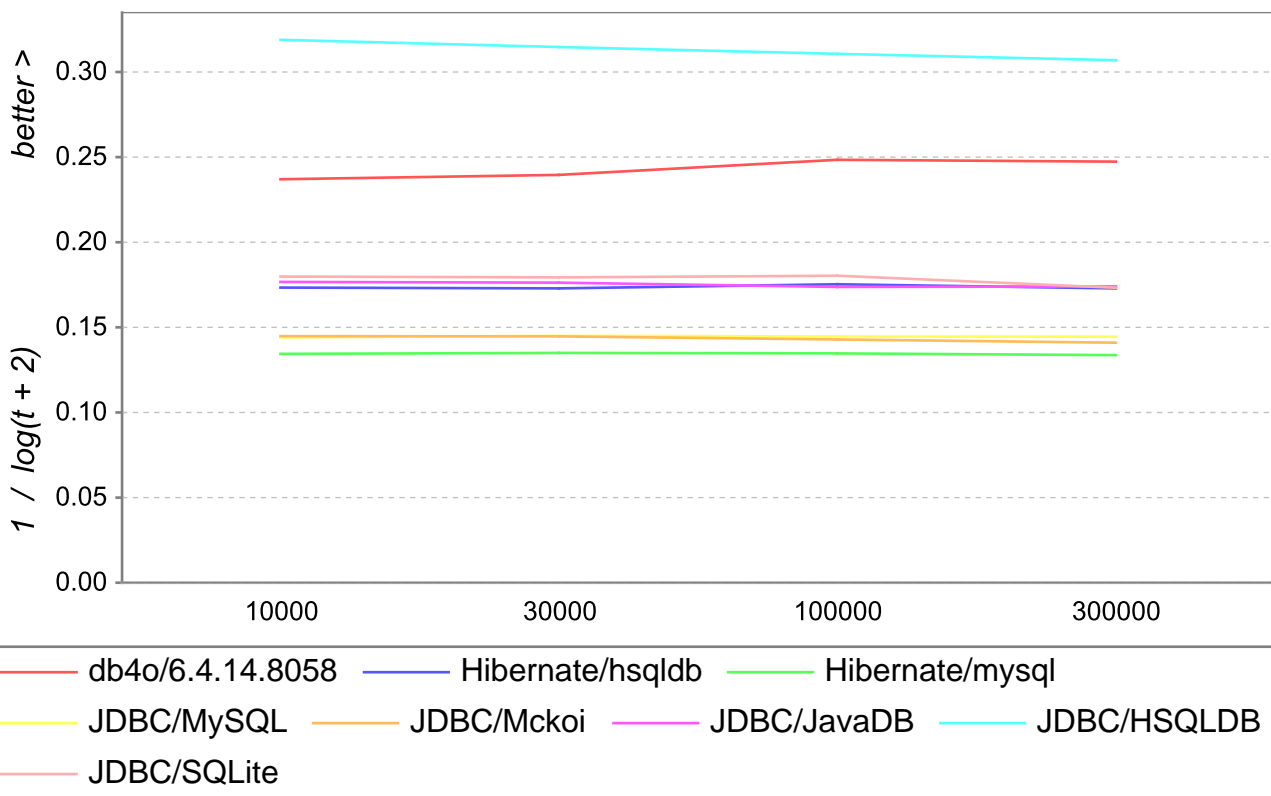


### Circuit: Imola

retrieves objects by native id

Lap: retrieve

t [time in ms]	selects:5000 objects:10000	selects:5000 objects:30000	selects:5000 objects:100000	selects:5000 objects:300000
<b>db4o/6.4.14.8058</b>	66	63	54	55
<b>Hibernate/hsqldb</b>	318	323	298	323
<b>Hibernate/mysql</b>	1700	1648	1673	1770
<b>JDBC/MySQL</b>	1029	986	1005	1009
<b>JDBC/Mckoi</b>	995	1001	1093	1201
<b>JDBC/JavaDB</b>	285	289	314	311
<b>JDBC/HSQldb</b>	21	22	23	24
<b>JDBC/SQLite</b>	258	262	254	319

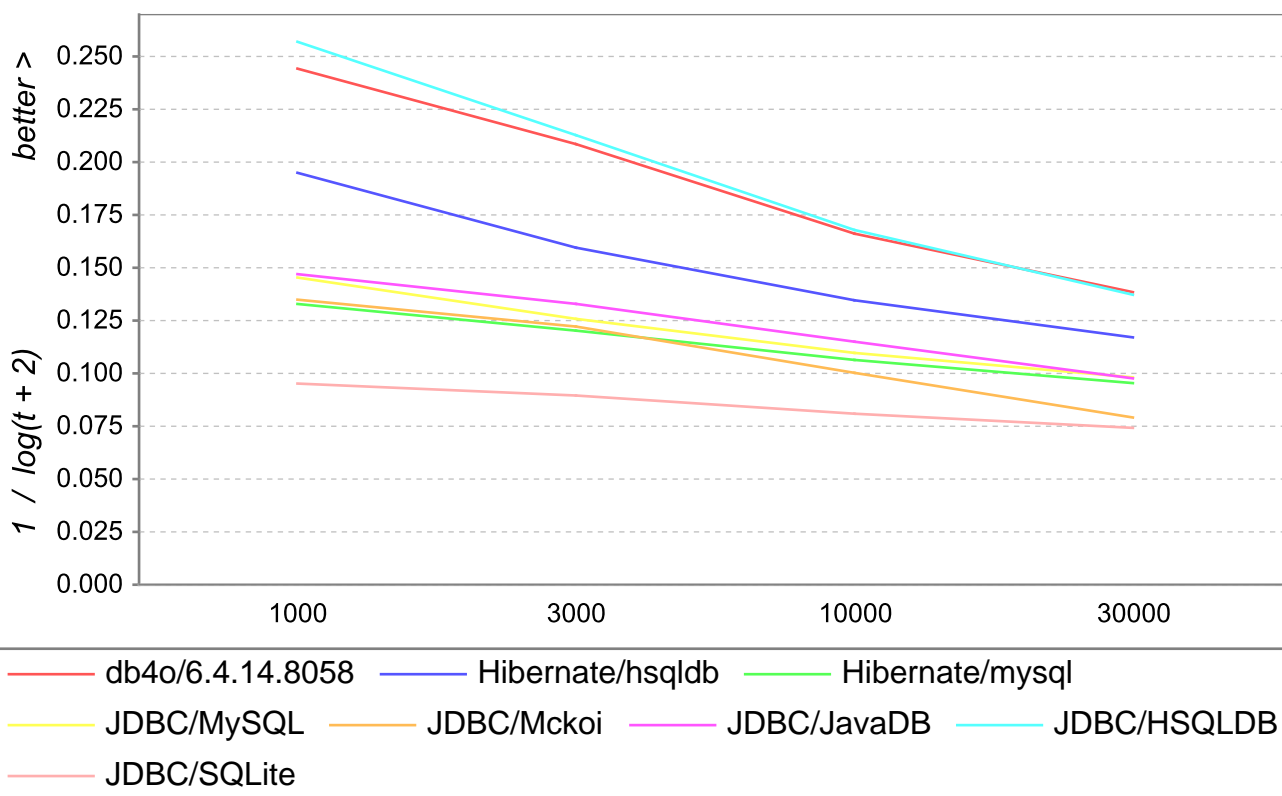


**Circuit: Barcelona**

writes, reads, queries and deletes objects with a 5 level inheritance structure

Lap: write

t [time in ms]	selects:100 objects:1000	selects:100 objects:3000	selects:100 objects:10000	selects:100 objects:30000
db4o/6.4.14.8058	58	119	409	1368
Hibernate/hsqldb	167	526	1681	5125
Hibernate/mysql	1854	4088	12096	35646
JDBC/MySQL	970	2829	9097	26675
JDBC/Mckoi	1655	3584	21435	307723
JDBC/JavaDB	899	1850	5968	28003
JDBC/HSQldb	47	108	384	1459
JDBC/SQLite	36509	70887	232511	710126

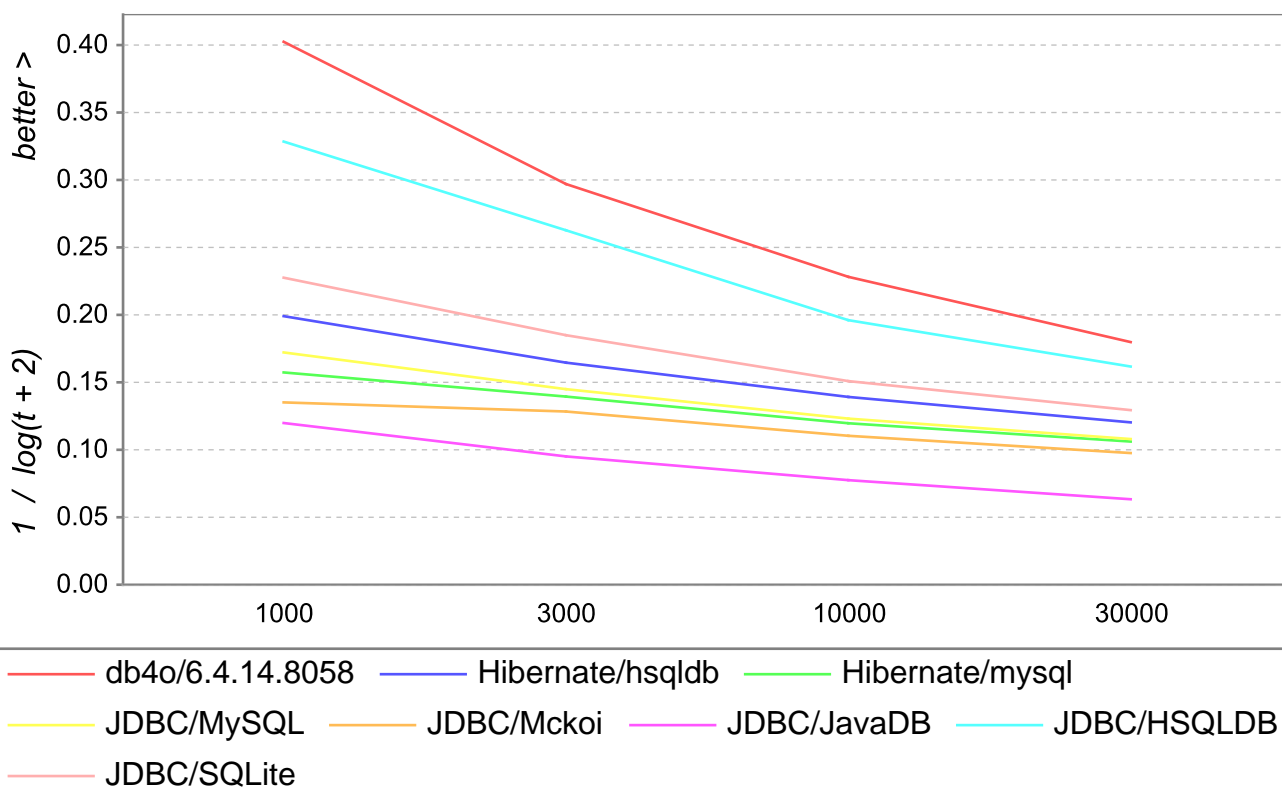


**Circuit: Barcelona**

writes, reads, queries and deletes objects with a 5 level inheritance structure

Lap: read

t [time in ms]	selects:100 objects:1000	selects:100 objects:3000	selects:100 objects:10000	selects:100 objects:30000
db4o/6.4.14.8058	10	27	78	258
Hibernate/hsqldb	150	433	1317	4068
Hibernate/mysql	574	1300	4255	12377
JDBC/MySQL	331	990	3368	10530
JDBC/Mckoi	1634	2413	8599	28181
JDBC/JavaDB	4200	36869	401224	7183675
JDBC/HSQldb	19	43	162	483
JDBC/SQLite	79	221	753	2269

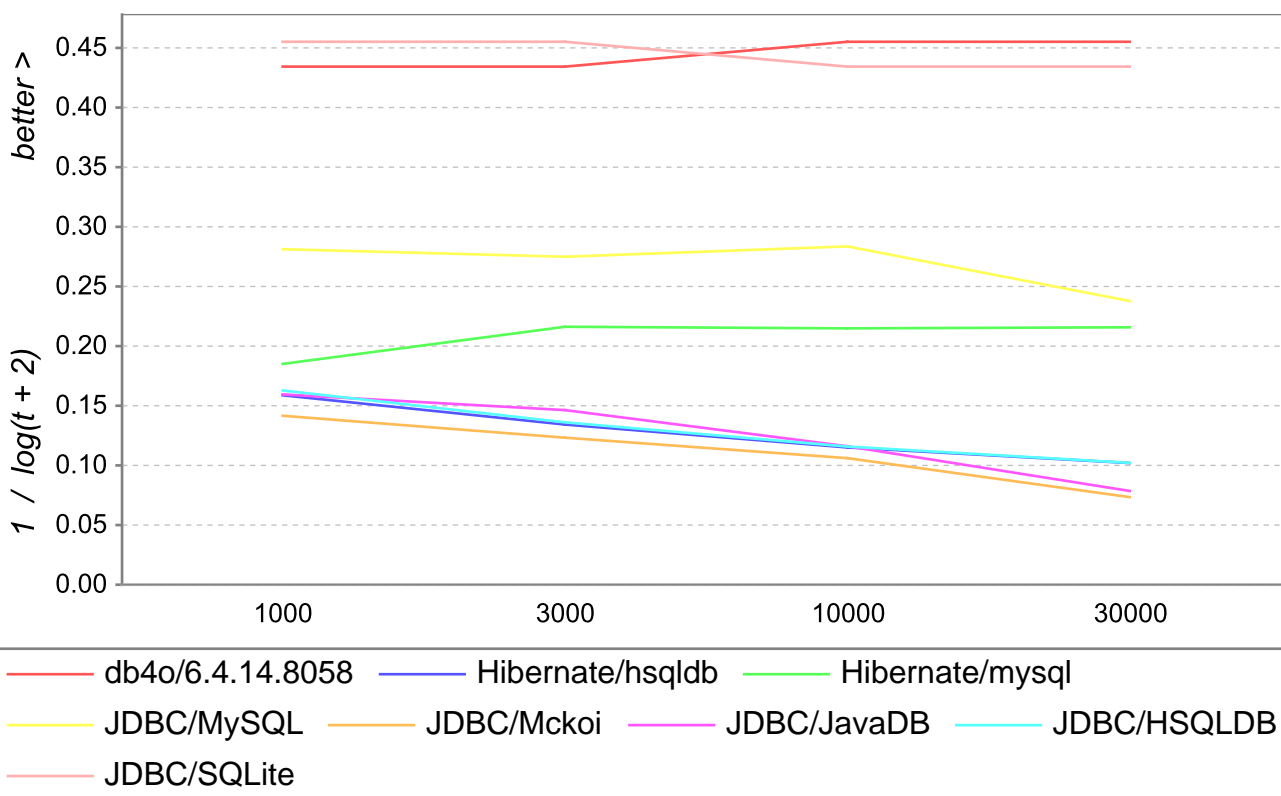


**Circuit: Barcelona**

writes, reads, queries and deletes objects with a 5 level inheritance structure

Lap: query

t [time in ms]	selects:100 objects:1000	selects:100 objects:3000	selects:100 objects:10000	selects:100 objects:30000
db4o/6.4.14.8058	8	8	7	7
Hibernate/hsqldb	541	1716	5945	18082
Hibernate/mysql	220	100	103	101
JDBC/MySQL	33	36	32	65
JDBC/Mckoi	1164	3338	12391	820029
JDBC/JavaDB	526	925	5511	335952
JDBC/HSQldb	463	1550	5618	17881
JDBC/SQLite	7	7	8	8



**Circuit: Barcelona**

writes, reads, queries and deletes objects with a 5 level inheritance structure

Lap: delete

t [time in ms]	selects:100 objects:1000	selects:100 objects:3000	selects:100 objects:10000	selects:100 objects:30000
db4o/6.4.14.8058	52	153	580	1856
Hibernate/hsqldb	292	742	2548	7897
Hibernate/mysql	2059	5295	16431	49934
JDBC/MySQL	1053	2900	9431	29278
JDBC/Mckoi	1343	4181	14806	204564
JDBC/JavaDB	791	2355	7685	32850
JDBC/HSQLDB	36	81	295	917
JDBC/SQLite	22940	64773	221720	672093

