

OraBench - Release Notes

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Version 1.1.0

Release Date: 11.10.2021

New Features

- Oracle Database 21c
- Programming language **Julia** and database driver **JDBC.jl**
- Programming language **Julia** and database driver **Oracle.jl**

Applied Software

Software	Type	Version	Remark
C++ (gcc)	Language	10.3.0	upgrade
Elixir	Language	1.12.3-otp-24	upgrade
Erlang	Language	24.1.2	upgrade
Go	Language	1.17.2	upgrade
godror	Driver	v0.27.1	upgrade
Java	Language	openjdk-17	upgrade
JDBC.jl	Driver	v0.5.0	new
Julia	Language	v1.6.3	new
Kotlin	Language	1.5.31	upgrade
Oracle cx_Oracle	Driver	8.2.1	
Oracle Instant Client	Driver	21.3.0.0.0	upgrade
Oracle JDBC	Driver	21.3.0.0	upgrade
Oracle ODPI-C	Driver	4.2.1	
Oracle.jl	Driver	v0.3.1	new
oranif	Driver	0.2.3	
Python 3	Language	3.10.0	upgrade

Open issues

- C & ODPI-C: (see [here](#))

- Elixir & oranif: (see [here](#))
- Erlang & oranif: (see [here](#))
- Julia & JDBC,jl: (see [here](#))
- Julia & Oracle,jl: (see [here](#))

Windows 10 Performance Snapshot

The finishing touch to the work on a new release is a test run with all databases under identical conditions on three different systems - Ubuntu 20.04 via VMware and WSL2, Windows 10. The measured time includes the total time required for the DDL effort (database, schema, user, 5 database tables) and the DML effort (insertion of 7011 rows). The hardware used includes an AMD Ryzen 9 5950X CPU with 128GB RAM. The tests run exclusively on the computer in each case. The detailed results can be found in the DBSeeder repository in the [resources/statistics](#) directory.

The following table shows the results of the Windows 10 run. If the database can run with both activated and deactivated constraints (foreign, primary and unique key), the table shows the better value and in the column **Improvement** the relative value to the worse run. For example, the MonetDB database is faster with inactive constraints by 21.2% compared to the run with activated constraints.

Database	Language	Driver	Duration (ns)
db_21_3_ee	Go gol.17	godror v0.25.3	9133612500
db_19_3_ee	Go gol.17	godror v0.25.3	9307445800
db_18_4_xe	OTP 24, erts-12.0	oranif (Version 0.2.3)	10542000000
db_19_3_ee	OTP 24, erts-12.0	oranif (Version 0.2.3)	10769000000
db_18_4_xe	Go gol.17	godror v0.25.3	12262813800
db_21_3_ee	OTP 24, erts-12.0	oranif (Version 0.2.3)	12393000000
db_21_3_ee	Kotlin 1.5.0	Oracle JDBC (Version 21.3.0.0.0)	18047533700
db_18_4_xe	Kotlin 1.5.0	Oracle JDBC (Version 21.3.0.0.0)	18219792100
db_19_3_ee	Kotlin 1.5.0	Oracle JDBC (Version 21.3.0.0.0)	19543579300
db_21_3_ee	Java 16.0.2	Oracle JDBC (Version 21.3.0.0.0)	20238521000
db_19_3_ee	Java 16.0.2	Oracle JDBC (Version 21.3.0.0.0)	20836544700
db_18_4_xe	Java 16.0.2	Oracle JDBC (Version 21.3.0.0.0)	20859623400
db_18_4_xe	Python 3 3.9.7 (tags/v	Oracle cx Oracle (Version v8.2.1)	21241982000
db_21_3_ee	Python 3 3.9.7 (tags/v	Oracle cx Oracle (Version v8.2.1)	21319565000
db_19_3_ee	Python 3 3.9.7 (tags/v	Oracle cx Oracle (Version v8.2.1)	21817186000
db_21_3_ee	Elixir 1.12.2	oranif (Version 0.2.3)	27548000000
db_18_4_xe	Elixir 1.12.2	oranif (Version 0.2.3)	27805000000
db_19_3_ee	Elixir 1.12.2	oranif (Version 0.2.3)	30766000000

- **DBMS** - official DBMS name
- **Type** - client version, embedded version or via trino
- **ms** - total time of DDL and DML operations in milliseconds
- **Constraints** - DML operations with active or inactive constraints (foreign, primary and unique key)
- **Improvement** - improvement of total time if constraints are inactive

Detailed Open Issues

C & ODPI-C

Issue: Ubuntu 20.04: compile errors

```

rm -rf ./*.obj
rm -rf ./OraBench
gcc -o OraBench -Ilang/c -I"lang/c/odpi/include" -O2 -ggdb -Wall -fPIC -
std=gnu11 -DEMBED lang/c/odpis.c lang/c/config.c lang/c/OraBench.c -lpthread -ldl
In file included from lang/c/odpi/include/./embed/dpi.c:27,
    from lang/c/odpis.c:7:
lang/c/odpi/include/./embed/./src/dpiError.c: In function
'dpiError__setFromOS':
lang/c/odpi/include/./embed/./src/dpiError.c:264:13: warning: assignment to
'char *' from 'int' makes pointer from integer without a cast [-Wint-conversion]
    264 |         message = strerror_r(err, buffer, sizeof(buffer));
        |             ^
In file included from lang/c/odpi/include/./embed/dpi.c:38,
    from lang/c/odpis.c:7:
lang/c/odpi/include/./embed/./src/dpiOci.c: In function
'dpiOci__loadLibInModuleDir':
lang/c/odpi/include/./embed/./src/dpiOci.c:1856:5: error: unknown type name
'Dl_info'
    1856 |         Dl_info info;
        |         ^~~~~~
lang/c/odpi/include/./embed/./src/dpiOci.c:1858:9: warning: implicit
declaration of function 'dladdr' [-Wimplicit-function-declaration]
    1858 |         if (dladdr(dpiContext_createWithParams, &info) != 0) {
        |             ^~~~~~
lang/c/odpi/include/./embed/./src/dpiOci.c:1860:56: error: request for
member 'dli_fname' in something not a structure or union
    1860 |             dpiDebug__print("module name is %s\n", info.dli_fname);
        |                                                     ^
lang/c/odpi/include/./embed/./src/dpiOci.c:1861:31: error: request for
member 'dli_fname' in something not a structure or union
    1861 |             dirName = strrchr(info.dli_fname, '/');
        |                               ^
lang/c/odpi/include/./embed/./src/dpiOci.c:1863:59: error: request for
member 'dli_fname' in something not a structure or union
    1863 |             return dpiOci__loadLibWithDir(loadParams, info.dli_fname,
        |                                                     ^
lang/c/odpi/include/./embed/./src/dpiOci.c:1864:45: error: request for
member 'dli_fname' in something not a structure or union
    1864 |             (size_t) (dirName - info.dli_fname), 0, error);
        |                               ^
make: *** [lang/c/Makefile:30: OraBench] Error 1

```

Issue: Windows 10: no reaction

```

Start OraBench.c
argv[1]=priv\properties\ora_bench_c.properties

```

Issue: Parameter `benchmark.core.multiplier` not properly supported:**`benchmark.core.multiplier=0`**

```
16:44:55.685 module=OraBench line=954 [info] Start =====> trial no. 1
16:44:55.809 module=OraBench line=670 [info] Start insert partition_key=1
16:44:55.937 module=OraBench line=735 [info] End insert partition_key=1
16:44:55.937 module=OraBench line=670 [info] Start insert partition_key=2
16:44:56.051 module=OraBench line=735 [info] End insert partition_key=2
16:44:56.051 module=OraBench line=670 [info] Start insert partition_key=3
16:44:56.182 module=OraBench line=735 [info] End insert partition_key=3
16:44:56.182 module=OraBench line=670 [info] Start insert partition_key=4
16:44:56.311 module=OraBench line=735 [info] End insert partition_key=4
16:44:56.311 module=OraBench line=670 [info] Start insert partition_key=5
16:44:56.445 module=OraBench line=735 [info] End insert partition_key=5
16:44:56.445 module=OraBench line=670 [info] Start insert partition_key=6
16:44:56.576 module=OraBench line=735 [info] End insert partition_key=6
16:44:56.576 module=OraBench line=670 [info] Start insert partition_key=7
16:44:56.712 module=OraBench line=735 [info] End insert partition_key=7
16:44:56.712 module=OraBench line=670 [info] Start insert partition_key=8
16:44:56.853 module=OraBench line=735 [info] End insert partition_key=8
16:44:56.853 module=OraBench line=670 [info] Start insert partition_key=9
16:44:56.990 module=OraBench line=735 [info] End insert partition_key=9
16:44:56.990 module=OraBench line=670 [info] Start insert partition_key=10
16:44:57.124 module=OraBench line=735 [info] End insert partition_key=10
```

`benchmark.core.multiplier=1`

```
16:47:57.949 module=OraBench line=954 [info] Start =====> trial no. 1
16:47:58.474 module=OraBench line=670 [info] Start insert partition_key=1
16:47:58.580 module=OraBench line=735 [info] End insert partition_key=1
16:47:58.580 module=OraBench line=670 [info] Start insert partition_key=2
16:47:58.686 module=OraBench line=735 [info] End insert partition_key=2
16:47:58.686 module=OraBench line=670 [info] Start insert partition_key=3
16:47:58.817 module=OraBench line=735 [info] End insert partition_key=3
16:47:58.818 module=OraBench line=670 [info] Start insert partition_key=4
16:47:58.946 module=OraBench line=735 [info] End insert partition_key=4
16:47:58.946 module=OraBench line=670 [info] Start insert partition_key=5
16:47:59.067 module=OraBench line=735 [info] End insert partition_key=5
16:47:59.067 module=OraBench line=670 [info] Start insert partition_key=6
16:47:59.192 module=OraBench line=735 [info] End insert partition_key=6
16:47:59.192 module=OraBench line=670 [info] Start insert partition_key=7
16:47:59.316 module=OraBench line=735 [info] End insert partition_key=7
16:47:59.316 module=OraBench line=670 [info] Start insert partition_key=8
16:47:59.446 module=OraBench line=735 [info] End insert partition_key=8
16:47:59.446 module=OraBench line=670 [info] Start insert partition_key=9
16:47:59.574 module=OraBench line=735 [info] End insert partition_key=9
```

```
16:47:59.574 module=OraBench line=670 [info] Start insert partition_key=10
16:47:59.705 module=OraBench line=735 [info] End insert partition_key=10
```

Erlang & oranif

Issue: Parameter `benchmark.core.multiplier` not properly supported:

`benchmark.core.multiplier=0`

```
[orabench:run_trials:294] Start trial no 1
Start insert partition_key=2
Start insert partition_key=5
Start insert partition_key=4
Start insert partition_key=6
Start insert partition_key=8
Start insert partition_key=9
Start insert partition_key=11
Start insert partition_key=10
Start insert partition_key=12
Start insert partition_key=14
Start insert partition_key=16
Start insert partition_key=15
Start insert partition_key=17
Start insert partition_key=18
Start insert partition_key=20
Start insert partition_key=22
Start insert partition_key=23
Start insert partition_key=21
Start insert partition_key=25
Start insert partition_key=24
```

`benchmark.core.multiplier=1`

```
[orabench:run_trials:294] Start trial no 1
Start insert partition_key=2
Start insert partition_key=3
Start insert partition_key=5
Start insert partition_key=6
Start insert partition_key=7
Start insert partition_key=9
Start insert partition_key=10
Start insert partition_key=11
Start insert partition_key=15
Start insert partition_key=14
Start insert partition_key=16
Start insert partition_key=12
```

```

Start insert partition_key=17
Start insert partition_key=19
Start insert partition_key=22
Start insert partition_key=20
Start insert partition_key=18
Start insert partition_key=24
Start insert partition_key=25
Start insert partition_key=23

```

Julia & JDBC.jl

Issue: Batch operations not supported: `addBatch` & `executeBatch`

Issue: Windows 10 not supported:

```

2021-10-11 17:14:43,808 [OraBench.java] INFO Start OraBench.java
2021-10-11 17:14:43,809 [OraBench.java] INFO main() - number arguments=1
2021-10-11 17:14:43,810 [OraBench.java] INFO main() - 1st argument=setup_toml
2021-10-11 17:14:43,884 [Config.java] INFO benchmarkBatchSize      =0
2021-10-11 17:14:43,885 [Config.java] INFO benchmarkCoreMultiplier =0
2021-10-11 17:14:43,885 [Config.java] INFO benchmarkTransactionSize=0
2021-10-11 17:14:43,886 [OraBench.java] INFO Start Setup TOML OraBench Run
2021-10-11 17:14:43,888 [OraBench.java] INFO End   Setup TOML OraBench Run
2021-10-11 17:14:43,888 [OraBench.java] INFO End   OraBench.java
Updating registry at `C:\Users\walte\.julia\registries\General`
Updating git-repo `https://github.com/JuliaRegistries/General.git`
-----
The current time is: 17:14:52.55
Enter the new time:
-----
End lang\julia\scripts\run_bench_jdbc

```

Julia & Oracle.jl

Issue: Oracle.close: signal (11): Segmentation fault - [see here](#)

```

signal (11): Segmentation fault
in expression starting at
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:605
dpiConn__close at
/home/walter/.julia/packages/Oracle/HDiQ4/deps/usr/lib/libdpi.so.4.1.0 (unknown
line)
dpiConn__close at
/home/walter/.julia/packages/Oracle/HDiQ4/deps/usr/lib/libdpi.so.4.1.0 (unknown
line)
#dpiConn__close#5 at /home/walter/.julia/packages/Oracle/HDiQ4/src/odpi.jl:134

```

```

[inlined]
dpiConn_close##kw at /home/walter/.julia/packages/Oracle/HDiQ4/src/odpi.jl:133
[inlined]
#close#11 at /home/walter/.julia/packages/Oracle/HDiQ4/src/connection.jl:191
close at /home/walter/.julia/packages/Oracle/HDiQ4/src/connection.jl:191
_jl_invoke at /buildworker/worker/package_linux64/build/src/gf.c:2237 [inlined]
jl_apply_generic at /buildworker/worker/package_linux64/build/src/gf.c:2419
run_benchmark at /home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:501
main at /home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:456
unknown function (ip: 0x7f1a555fba7c)
_jl_invoke at /buildworker/worker/package_linux64/build/src/gf.c:2237 [inlined]
jl_apply_generic at /buildworker/worker/package_linux64/build/src/gf.c:2419
jl_apply at /buildworker/worker/package_linux64/build/src/julia.h:1703 [inlined]
do_call at /buildworker/worker/package_linux64/build/src/interpreter.c:115
eval_value at /buildworker/worker/package_linux64/build/src/interpreter.c:204
eval_stmt_value at /buildworker/worker/package_linux64/build/src/interpreter.c:155
[inlined]
eval_body at /buildworker/worker/package_linux64/build/src/interpreter.c:562
jl_interpret_toplevel_thunk at
/buildworker/worker/package_linux64/build/src/interpreter.c:670
jl_toplevel_eval_flex at
/buildworker/worker/package_linux64/build/src/toplevel.c:877
jl_eval_module_expr at
/buildworker/worker/package_linux64/build/src/toplevel.c:195 [inlined]
jl_toplevel_eval_flex at
/buildworker/worker/package_linux64/build/src/toplevel.c:668
jl_toplevel_eval_flex at
/buildworker/worker/package_linux64/build/src/toplevel.c:825
jl_toplevel_eval_in at
/buildworker/worker/package_linux64/build/src/toplevel.c:929
eval at ./boot.jl:360 [inlined]
include_string at ./loading.jl:1116
_jl_invoke at /buildworker/worker/package_linux64/build/src/gf.c:2237 [inlined]
jl_apply_generic at /buildworker/worker/package_linux64/build/src/gf.c:2419
_include at ./loading.jl:1170
include at ./Base.jl:386
_jl_invoke at /buildworker/worker/package_linux64/build/src/gf.c:2237 [inlined]
jl_apply_generic at /buildworker/worker/package_linux64/build/src/gf.c:2419
exec_options at ./client.jl:285
_start at ./client.jl:485
jfp__start_34281 at /home/walter/.asdf/installs/julia/1.6.2/lib/julia/sys.so
(unknown line)
_jl_invoke at /buildworker/worker/package_linux64/build/src/gf.c:2237 [inlined]
jl_apply_generic at /buildworker/worker/package_linux64/build/src/gf.c:2419
jl_apply at /buildworker/worker/package_linux64/build/src/julia.h:1703 [inlined]
true_main at /buildworker/worker/package_linux64/build/src/jlapi.c:560
repl_entrypoint at /buildworker/worker/package_linux64/build/src/jlapi.c:702
main at /buildworker/worker/package_linux64/build/cli/loader_exe.c:51
__libc_start_main at /lib/x86_64-linux-gnu/libc.so.6 (unknown line)
_start at /home/walter/.asdf/installs/julia/1.6.2/bin/julia (unknown line)
Allocations: 70437479 (Pool: 70399537; Big: 37942); GC: 68

```

```
./lang/julia/scripts/run_bench_oracle_jl.sh: line 59: 16299 Segmentation fault
(core dumped) julia lang/julia/OraBenchOracle.jl
priv/properties/ora_bench_toml.properties
```

Issue: @sync & @spawn or @threads: signal (11): Segmentation fault

```
└ Info: Start trial no. 1
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:848
└ Info: Start insert partition_key=8
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=1
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=2
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=4
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=6
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=5
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=7
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: Start insert partition_key=3
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:602
└ Info: End insert partition_key=8
└ @ Main.OraBenchOracle
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:686

signal (11): Segmentation fault
in expression starting at
/home/walter/Projects/ora_bench/lang/julia/OraBenchOracle.jl:942
./lang/julia/scripts/run_bench_oracle.sh: line 59: 20219 Segmentation fault
(core dumped) julia --threads 8 lang/julia/OraBenchOracle.jl
priv/properties/ora_bench_toml.properties
```

Issue: Windows 10 not supported:


```
2021-10-11 17:19:15,188 [OraBench.java] INFO Start OraBench.java
2021-10-11 17:19:15,189 [OraBench.java] INFO main() - number arguments=1
2021-10-11 17:19:15,189 [OraBench.java] INFO main() - 1st argument=setup_toml
2021-10-11 17:19:15,257 [Config.java] INFO benchmarkBatchSize      =0
2021-10-11 17:19:15,258 [Config.java] INFO benchmarkCoreMultiplier =0
2021-10-11 17:19:15,258 [Config.java] INFO benchmarkTransactionSize=0
2021-10-11 17:19:15,258 [OraBench.java] INFO Start Setup TOML OraBench Run
2021-10-11 17:19:15,260 [OraBench.java] INFO End   Setup TOML OraBench Run
2021-10-11 17:19:15,260 [OraBench.java] INFO End   OraBench.java
Updating registry at `C:\Users\walte\.julia\registries\General`
Updating git-repo `https://github.com/JuliaRegistries/General.git`
-----
The current time is: 17:19:22.57
Enter the new time:
-----
End lang\julia\scripts\run_bench_oracle
```