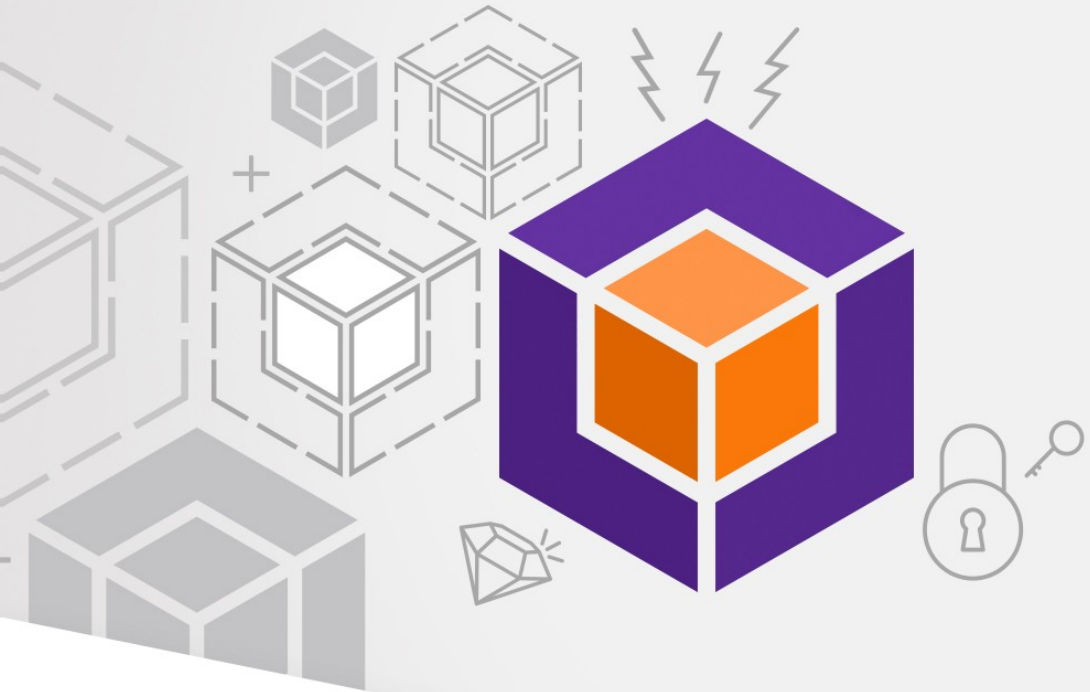
YottaDB



YottaDB Update

Continued Progress

Outline

- Business
- YottaDB
- Octo
- DevOps, CI/CD
- Ecosystem
- Roadmap

YottaDB

Business

Business Model

YottaDB

- Software is free
  - *100% Free / Open Source Software (FOSS)*
  - All work at https://gitlab.com/YottaDB
- People are not free
  - Support services with SLAs on commercial terms
  - Support options and tiers
- Support contracts fund software development

Company Status

YottaDB

- YottaDB LLC founded in 2017
- Customers in North America, Europe, Asia
- Using multiple languages including Go, Lua, M and Node.js, as well as Octo
- Revenue plowed back into software development

YottaDB

YottaDB

YottaDB® – https://yottadb.com

- A mature, high performance, hierarchical key-value, *language-agnostic*, NoSQL database whose code base scales up to mission-critical applications like large real-time core-banking and electronic health records, and also *scales down* to run on platforms like the Raspberry Pi Zero, as well as *everything in-between*.
- *Rock Solid. Lightning Fast. Secure. Pick any three.*

YottaDB is a registered trademark of YottaDB LLC

r1.34 – February 2022

YottaDB

- Faster stringpool garbage collection
- HOME and END keys work in direct mode for READ
- Multiple improvements to `ydbinstall` / `ydbinstall.sh`
- Improved `ydb_env_set`
  - Performance
  - Compatibility with existing environments
- Enhancements and fixes from GT.M V6.3-011

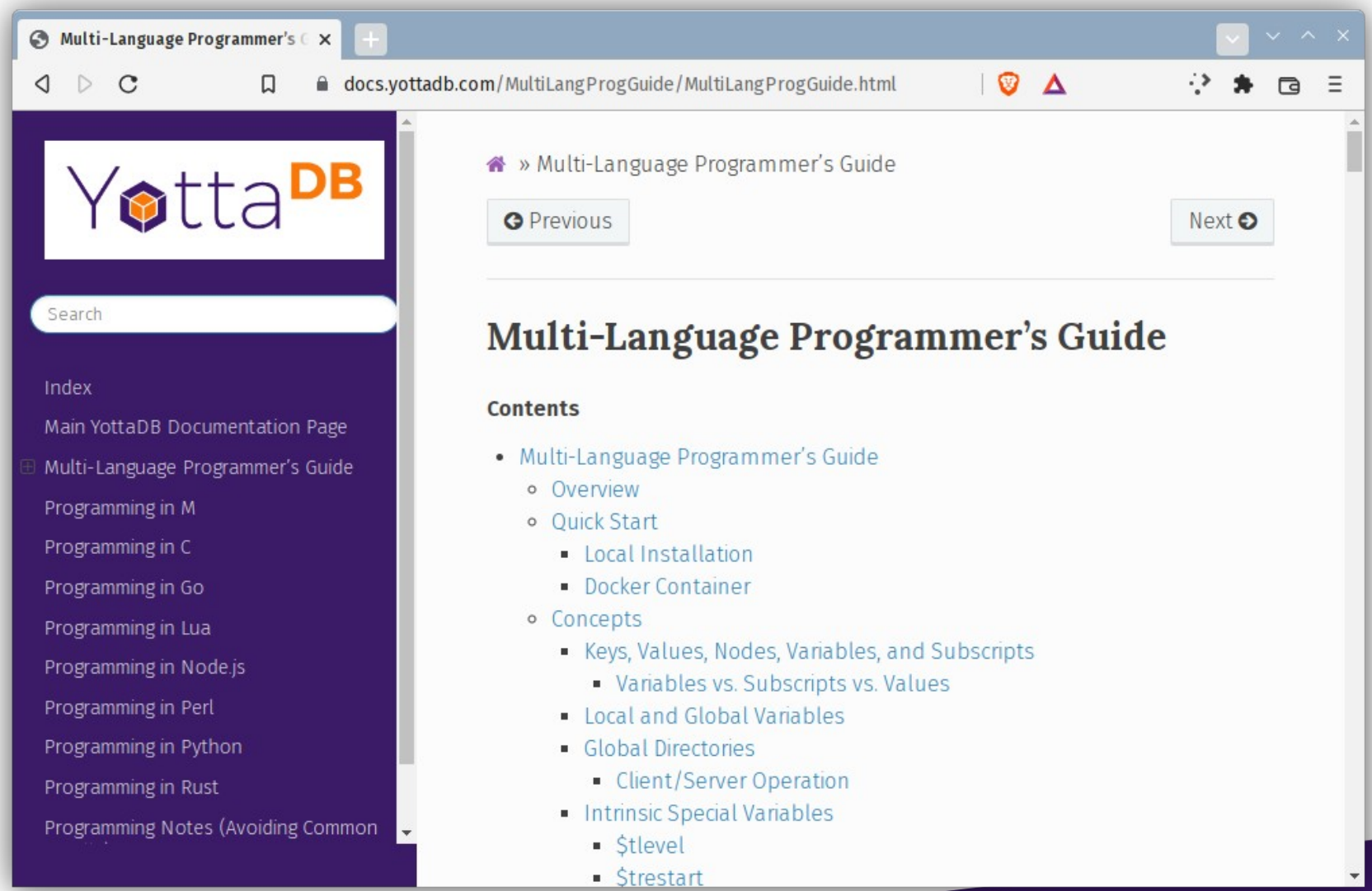
Lua Wrapper

```
local ydb = require('yottadb')

ydb.set('^hello', {'Lua'}, 'Hallo Wereld')
```

- Thank you, University of Antwerp Library

Hello world – Python

```
import yottadb

if __name__ == "__main__":
    yottadb.set("^hello", ("Python",), value="नमस्ते दुनिया")
```


Multi-Language Programmer's G
docs.yottadb.com/MultiLangProgGuide/MultiLangProgGuide.html
YottaDB
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Main YottaDB Documentation Page
Multi-Language Programmer's Guide
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Programming in Python
Programming in Rust
Programming Notes (Avoiding Common
» Multi-Language Programmer's Guide
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Keys, Values, Nodes, Variables, and Subscripts
Variables vs. Subscripts vs. Values
Local and Global Variables
Global Directories
Client/Server Operation
Intrinsic Special Variables
$tlevel
$trestart

Fuzz Testing YottaDB - YottaDB

yottadb.com/fuzz-testing-yottadb/

YottaDB

Contact Us Download

PRODUCT USE CASES RESOURCES ABOUT US BLOG

Fuzz Testing YottaDB

K.S. Bhaskar

Summary

Every day, we find fault with our software, so that you don't!

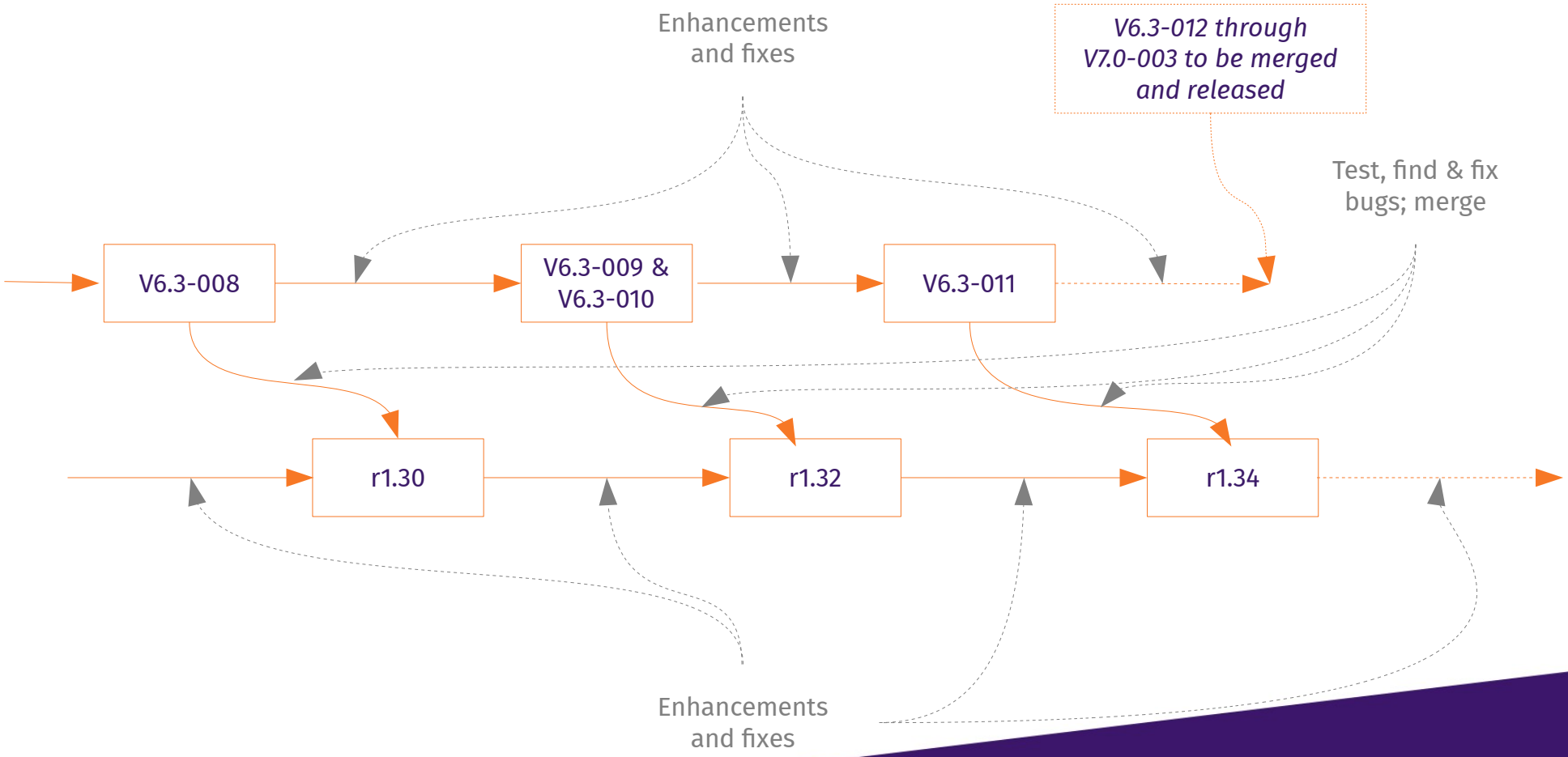
Robustness in software is a mark of quality that's often easy to lose in development.

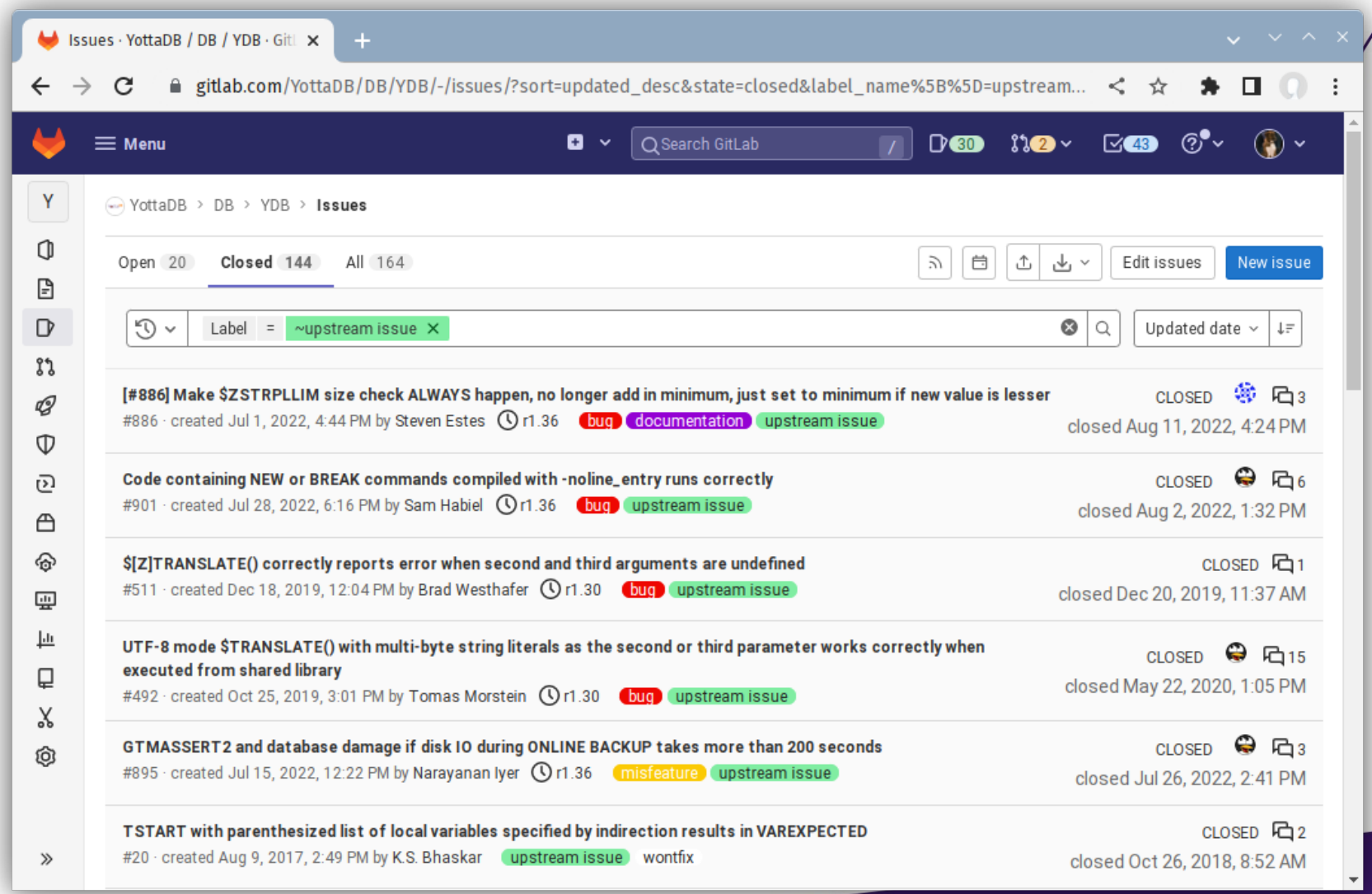
Thanks to Zachary Minneker of Security Innovation, Inc., we are implementing fuzz testing to make our software even more robust. Fuzz testing provides us with one more way to generate test cases to test that the software does not do what it is not supposed to do. As expected from a new form of testing, we have discovered bugs that we did not know existed, and which no user has reported to us.

Fuzzing

The word "fuzz" is hundreds of years old.

Compatibility with Upstream




Issues · YottaDB / DB / YDB · Git
gitlab.com/YottaDB/DB/YDB/-/issues/?sort=updated_desc&state=closed&label_name%5B%5D=upstream...
Menu
Search GitLab
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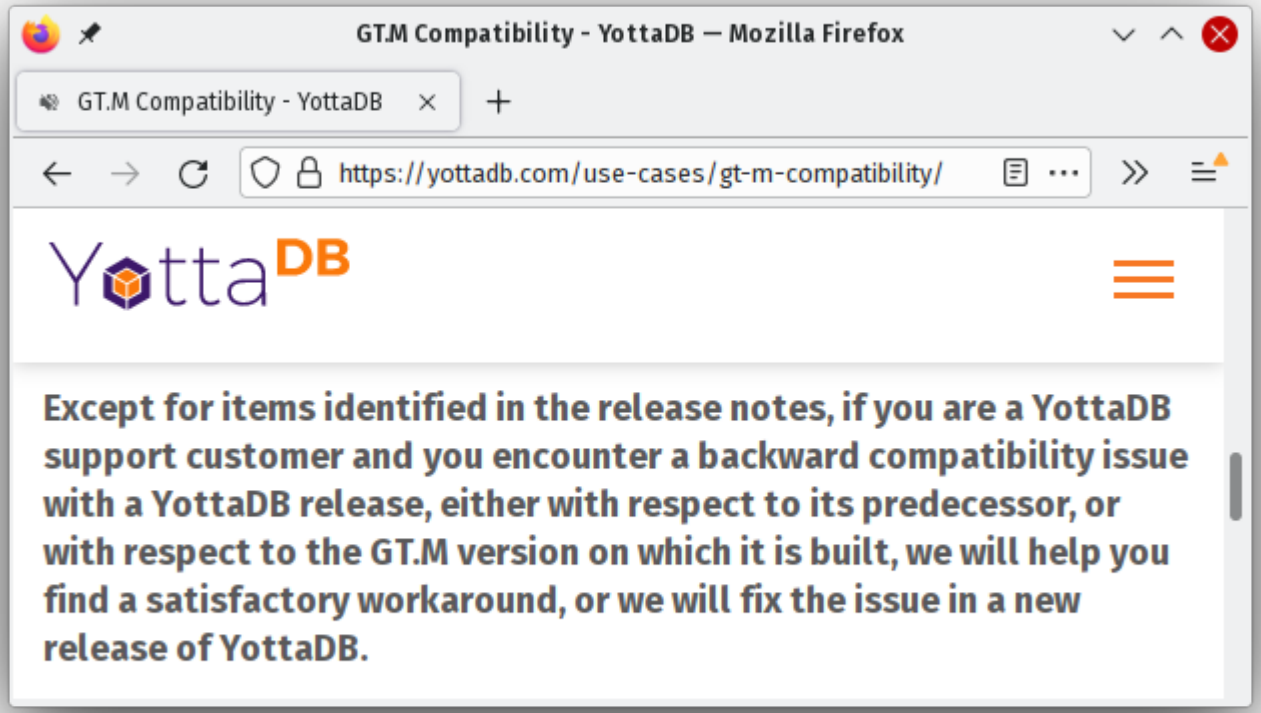
43
YottaDB › DB › YDB › Issues
Open 20
Closed 144
All 164
Edit issues
New issue
Label = ~upstream issue
Updated date
[#886] Make $ZSTRPLLIM size check ALWAYS happen, no longer add in minimum, just set to minimum if new value is lesser
#886 · created Jul 1, 2022, 4:44 PM by Steven Estes r1.36 bug documentation upstream issue
CLOSED 3
closed Aug 11, 2022, 4:24 PM
Code containing NEW or BREAK commands compiled with -noline_entry runs correctly
#901 · created Jul 28, 2022, 6:16 PM by Sam Habiel r1.36 bug upstream issue
CLOSED 6
closed Aug 2, 2022, 1:32 PM
$[Z]TRANSLATE() correctly reports error when second and third arguments are undefined
#511 · created Dec 18, 2019, 12:04 PM by Brad Westhafer r1.30 bug upstream issue
CLOSED 1
closed Dec 20, 2019, 11:37 AM
UTF-8 mode $TRANSLATE() with multi-byte string literals as the second or third parameter works correctly when executed from shared library
#492 · created Oct 25, 2019, 3:01 PM by Tomas Morstein r1.30 bug upstream issue
CLOSED 15
closed May 22, 2020, 1:05 PM
GTMASSERT2 and database damage if disk IO during ONLINE BACKUP takes more than 200 seconds
#895 · created Jul 15, 2022, 12:22 PM by Narayanan Iyer r1.36 misfeature upstream issue
CLOSED 3
closed Jul 26, 2022, 2:41 PM
TSTART with parenthesized list of local variables specified by indirection results in VAREXPECTED
#20 · created Aug 9, 2017, 2:49 PM by K.S. Bhaskar upstream issue wontfix
CLOSED 2
closed Oct 26, 2018, 8:52 AM

Upward Compatibility Guarantee



YottaDB

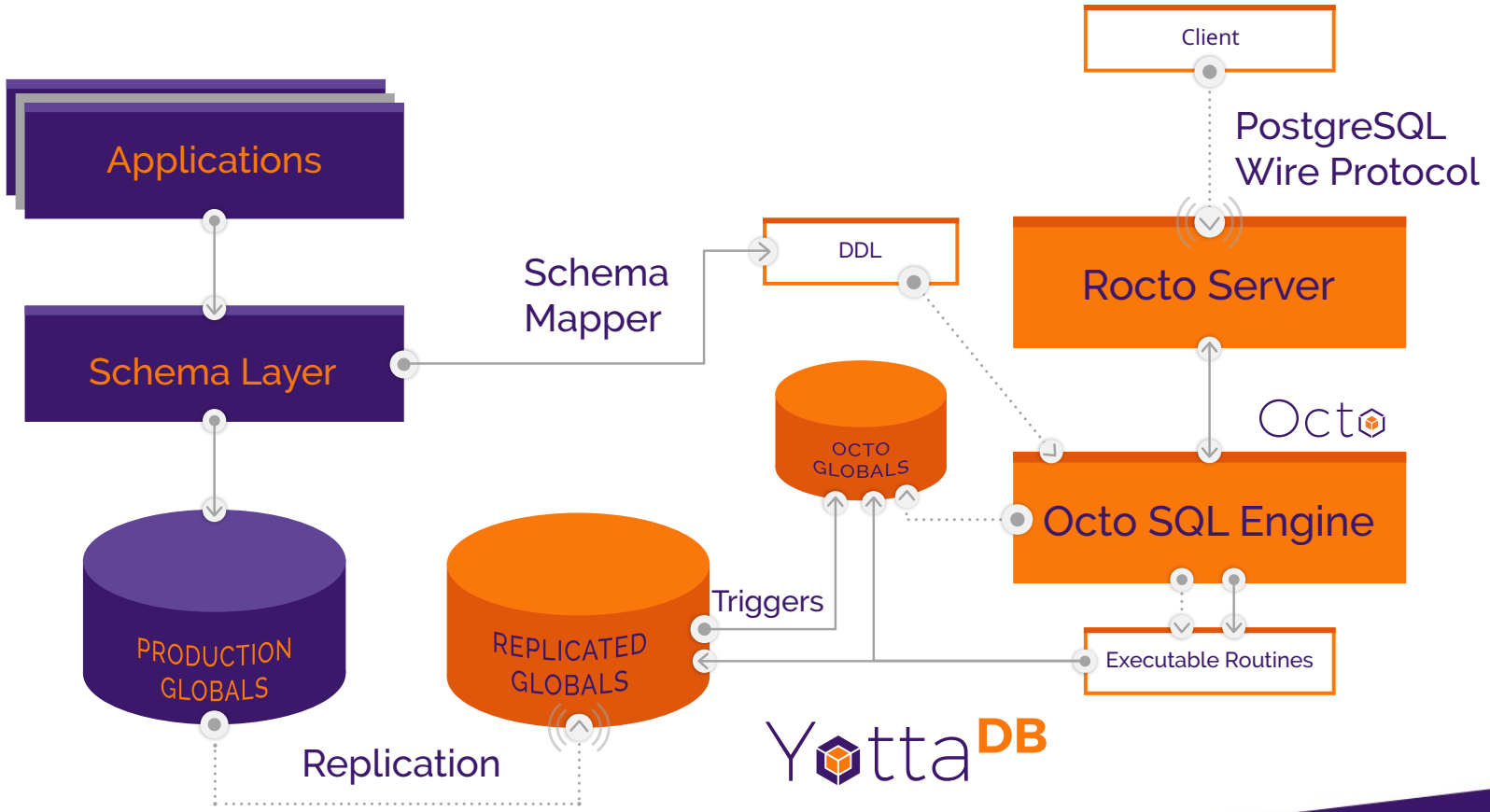
Octo

Sam Habiel's Octo presentation at 12pm, Sat, Oct 1

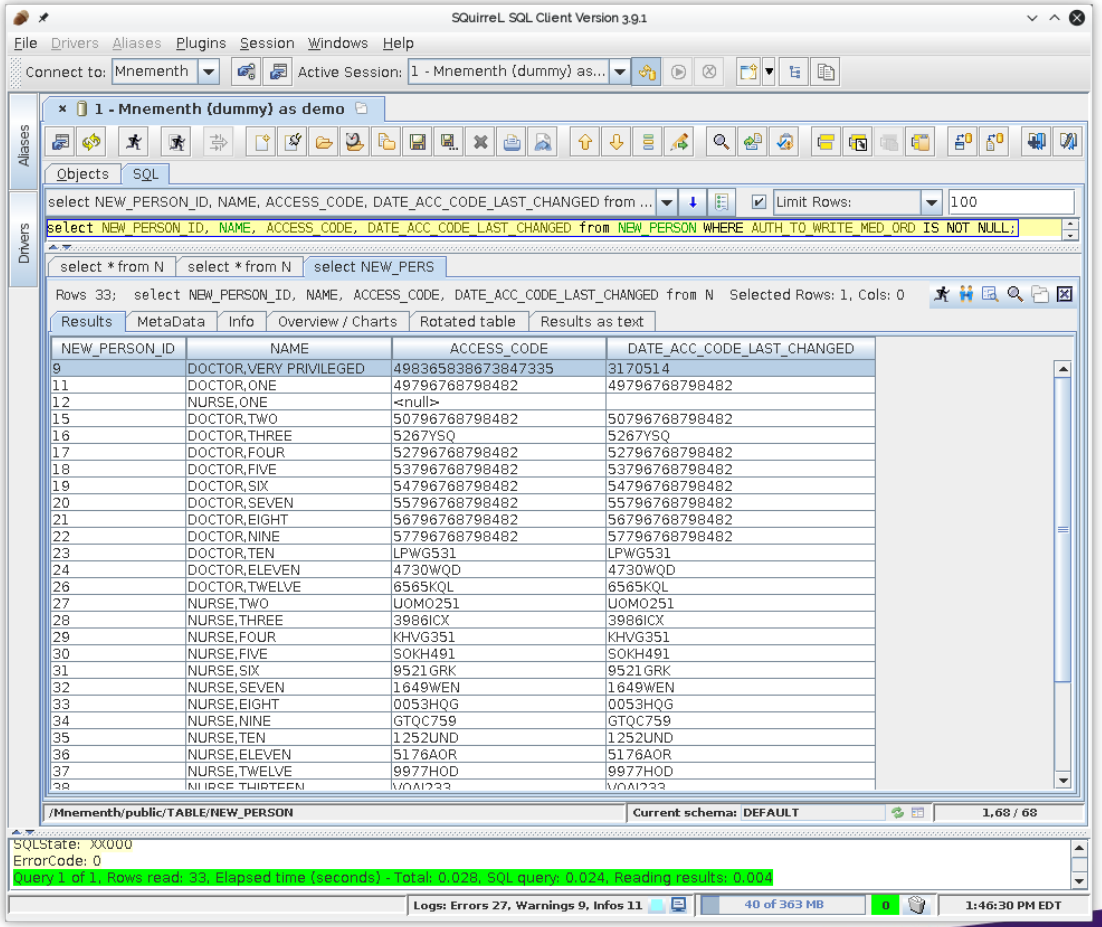
- Octo is a SQL database engine whose tables are mapped to global variables
- Octo is a YottaDB application, not a GT.M application
  - Requires functionality in YottaDB and not available in GT.M
  - Runs on SI replication instance from GT.M or YottaDB

Octo is a registered trademark of YottaDB LLC

Octo Production Configuration



SQL Query of VeHU VistA



Status & Road Map

YottaDB

- Initial release – SQL-92; read-only
  - VistA Fileman to DDL mapping tool
  - Limited ODBC/JDBC client support
- Current status – INSERT, UPDATE, DELETE usable
  - Constraints under development
- Coming: More SQL functionality (Views, Schemas, …); more client support (e.g., PowerBI, R)

YottaDB

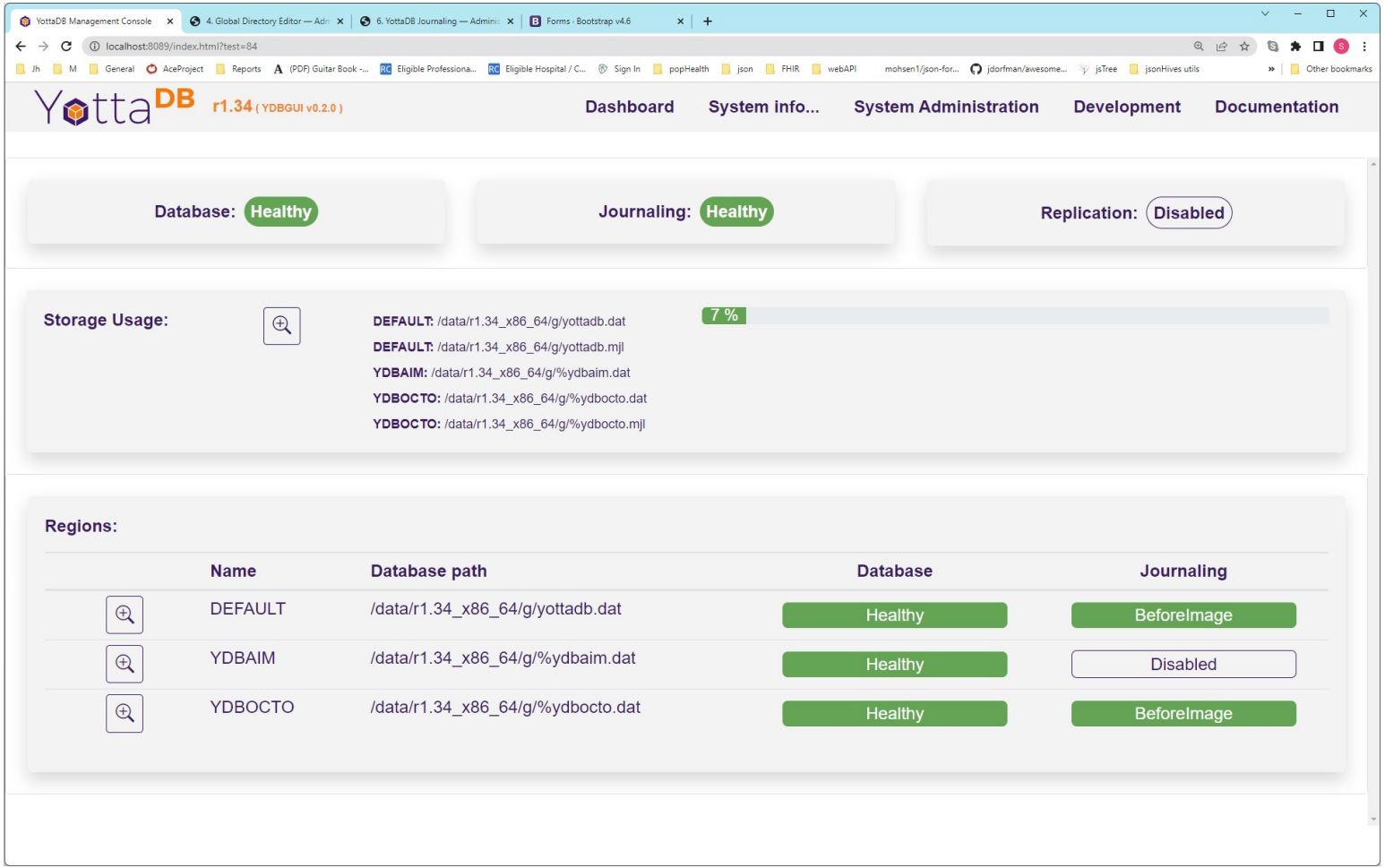
GUI

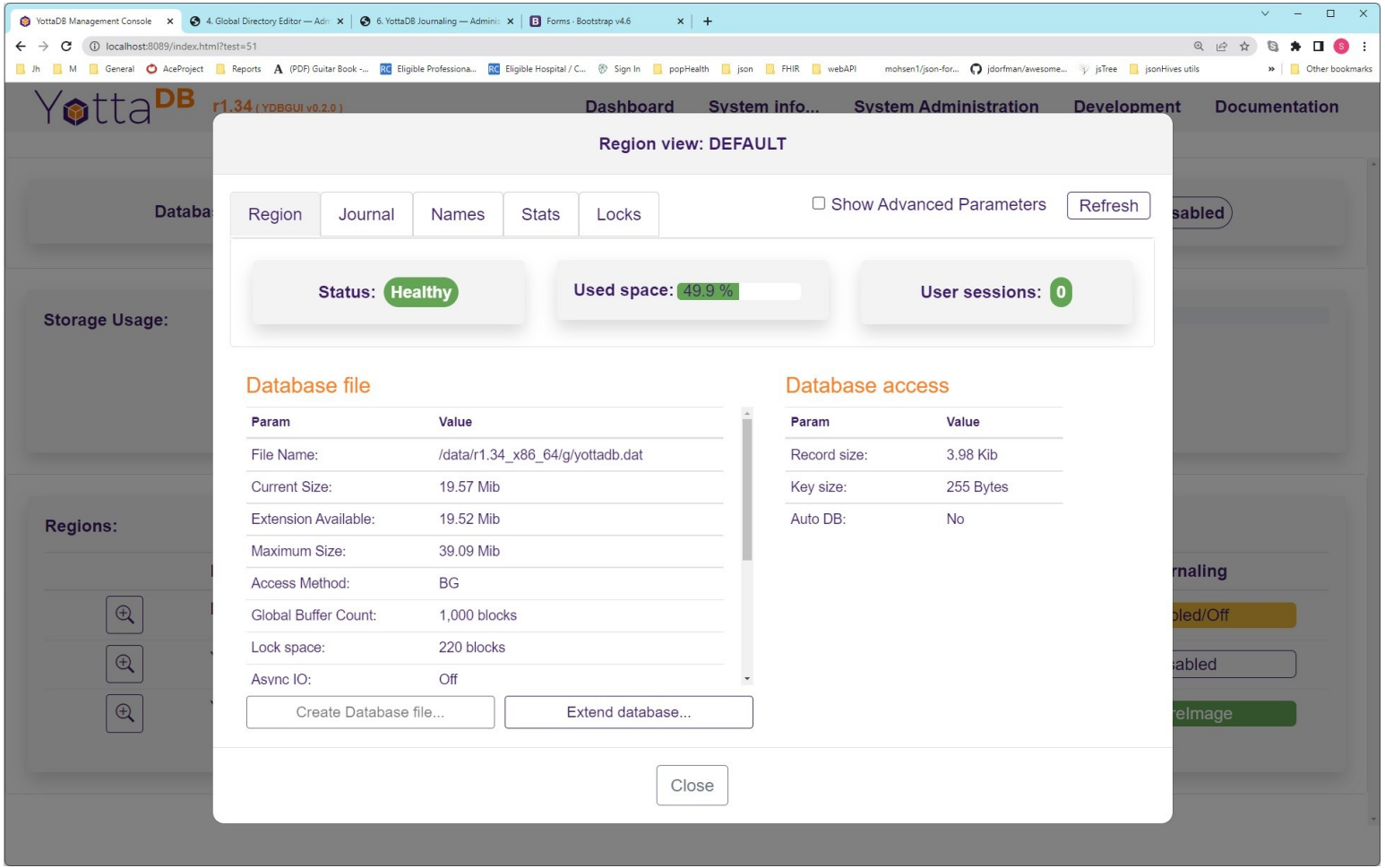
Sam Habiel's GUI presentation at 12:30pm, Fri, Sep 29

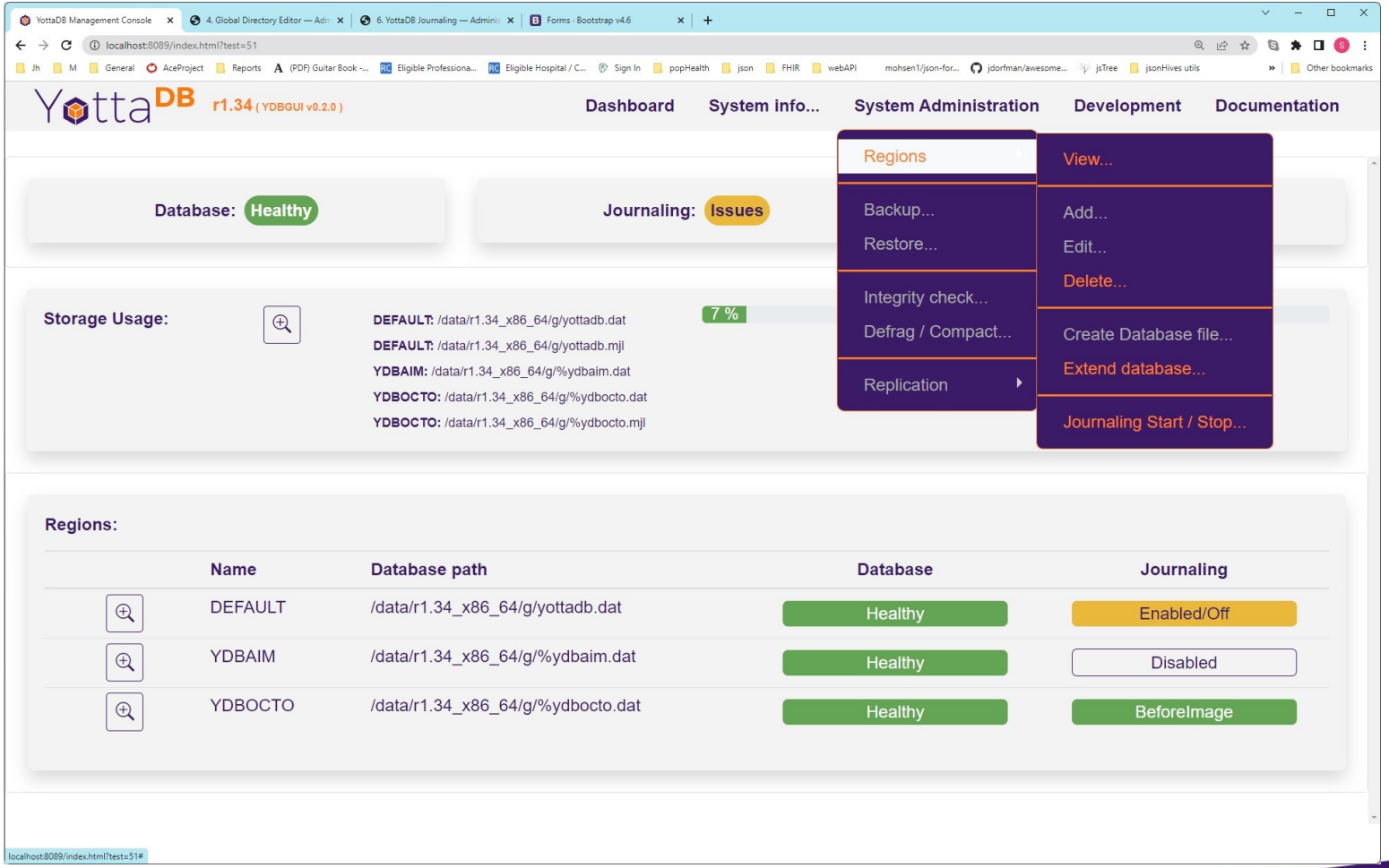
Administration & Operations GUI

YottaDB

- Functionality
  - Database configuration
  - Administration and Operations
  - View routines
- Status
  - Under active development
  - Currently in field-test


YottaDB Management Console
4. Global Directory Editor — Adm
6. YottaDB Journaling — Admini
Forms · Bootstrap v4.6
localhost:8089/index.html?test=84
YottaDB r1.34 (YDBGUI v0.2.0)
Dashboard
System info...
System Administration
Development
Documentation
Database: Healthy
Journaling: Healthy
Replication: Disabled
Storage Usage:
DEFAULT: /data/r1.34_x86_64/g/yottadb.dat
DEFAULT: /data/r1.34_x86_64/g/yottadb.mjl
YDBAIM: /data/r1.34_x86_64/g/%ydbaim.dat
YDBOCTO: /data/r1.34_x86_64/g/%ydbocto.dat
YDBOCTO: /data/r1.34_x86_64/g/%ydbocto.mjl
7 %
Regions:
Name
Database path
Database
Journaling
DEFAULT
/data/r1.34_x86_64/g/yottadb.dat
Healthy
BeforeImage
YDBAIM
/data/r1.34_x86_64/g/%ydbaim.dat
Healthy
Disabled
YDBOCTO
/data/r1.34_x86_64/g/%ydbocto.dat
Healthy
BeforeImage


YottaDB Management Console
4. Global Directory Editor — Adm
6. YottaDB Journaling — Admini
Forms · Bootstrap v4.6
localhost:8089/index.html?test=51
YottaDB r1.34 (YDBGUI v0.2.0)
Dashboard
System info...
System Administration
Development
Documentation
Region view: DEFAULT
Region
Journal
Names
Stats
Locks
Show Advanced Parameters
Refresh
Status: Healthy
Used space: 49.9 %
User sessions: 0
Database file
Param
Value
File Name:
/data/r1.34_x86_64/g/yottadb.dat
Current Size:
19.57 Mib
Extension Available:
19.52 Mib
Maximum Size:
39.09 Mib
Access Method:
BG
Global Buffer Count:
1,000 blocks
Lock space:
220 blocks
Async IO:
Off
Database access
Param
Value
Record size:
3.98 Kib
Key size:
255 Bytes
Auto DB:
No
Create Database file...
Extend database...
Close
Storage Usage:
Regions:


YottaDB Management Console
4. Global Directory Editor — Adm
6. YottaDB Journaling — Adminis
Forms · Bootstrap v4.6
localhost:8089/index.html?test=51
YottaDB r1.34 (YDBGUI v0.2.0)
Dashboard
System info...
System Administration
Development
Documentation
Database: Healthy
Journaling: Issues
Regions
Backup...
Restore...
Integrity check...
Defrag / Compact...
Replication
View...
Add...
Edit...
Delete...
Create Database file...
Extend database...
Journaling Start / Stop...
Storage Usage:
DEFAULT: /data/r1.34_x86_64/g/yottadb.dat
DEFAULT: /data/r1.34_x86_64/g/yottadb.mjl
YDBAIM: /data/r1.34_x86_64/g/%ydbaim.dat
YDBOCTO: /data/r1.34_x86_64/g/%ydbocto.dat
YDBOCTO: /data/r1.34_x86_64/g/%ydbocto.mjl
7 %
Regions:
Name
Database path
Database
Journaling
DEFAULT
/data/r1.34_x86_64/g/yottadb.dat
Healthy
Enabled/Off
YDBAIM
/data/r1.34_x86_64/g/%ydbaim.dat
Healthy
Disabled
YDBOCTO
/data/r1.34_x86_64/g/%ydbocto.dat
Healthy
BeforeImage
localhost:8089/index.html?test=51#

YottaDB

DevOps, CI/CD

Sam Habiel's VeHU Docker image presentation at 3pm, Sat, Oct 1

DevOps, CI/CD

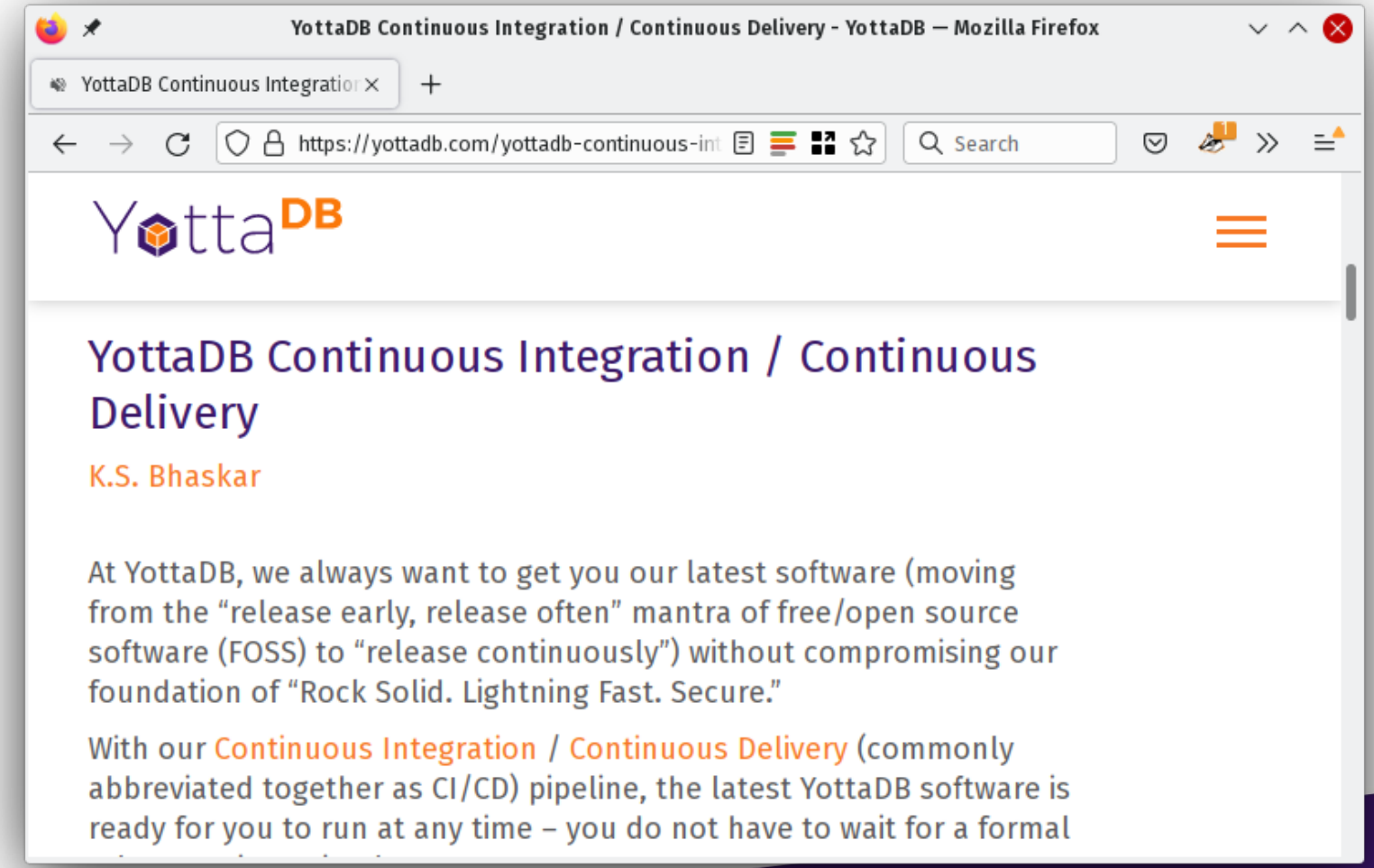
YottaDB

- Containers & Kubernetes: Yes, e.g.,

```
docker run -it --rm -v $(pwd)/ydb-data:/data yottadb/yottadb-debian:latest-master
```

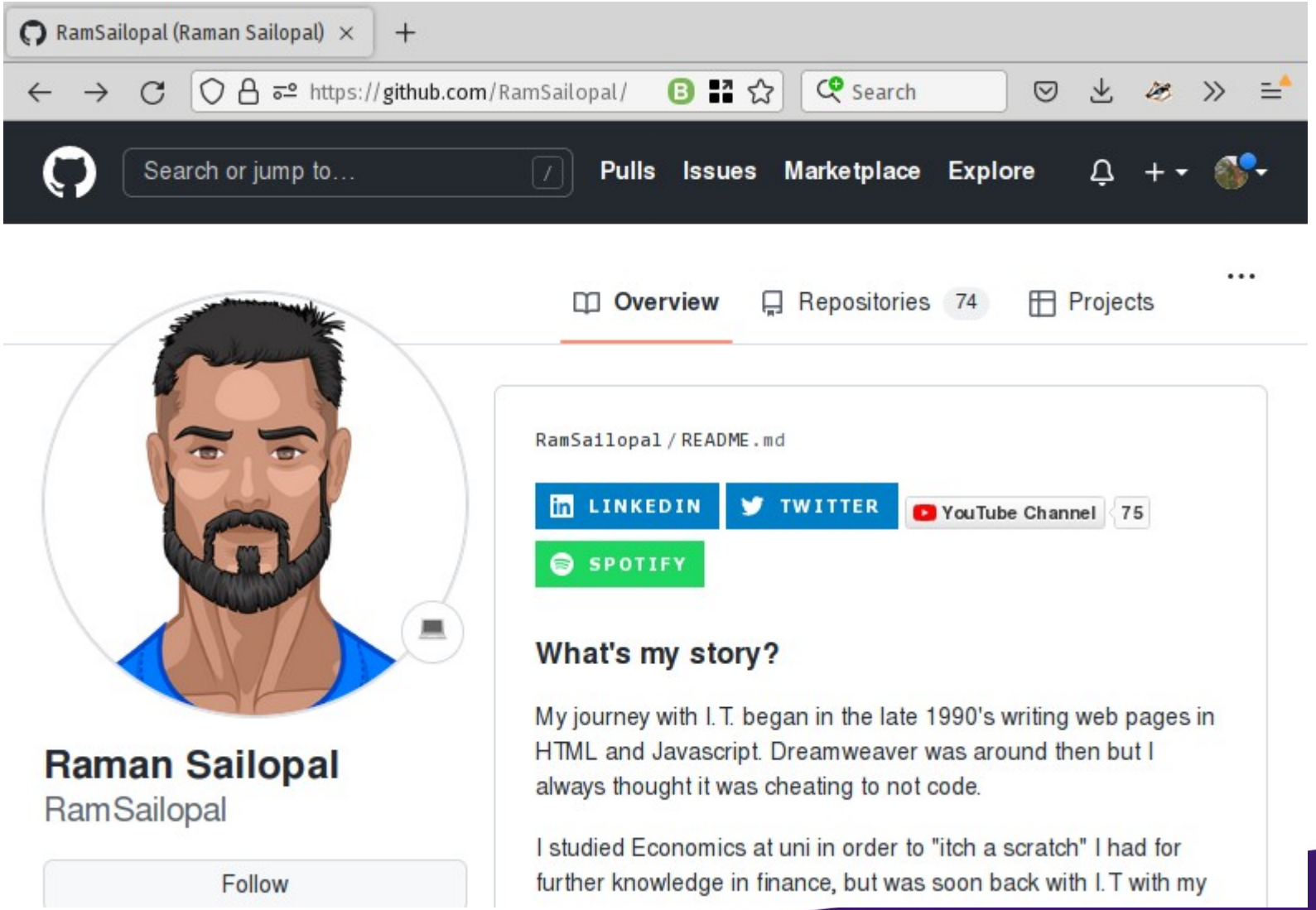
- CI/CD: Yes

Continuous Release



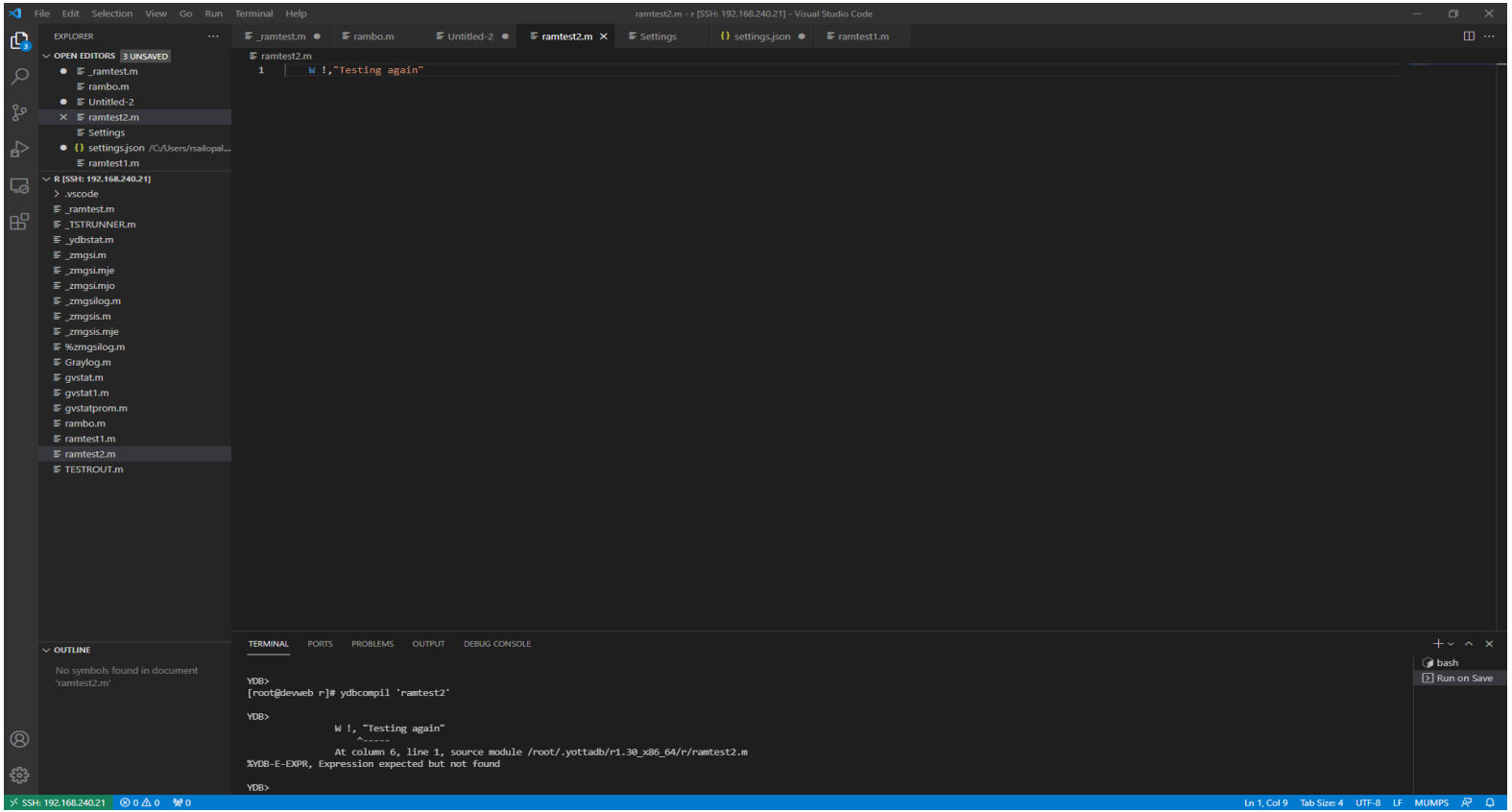
YottaDB

Ecosystem Examples


RamSailopal (Raman Sailopal)
https://github.com/RamSailopal/
Search
Search or jump to...
Pulls
Issues
Marketplace
Explore
Overview
Repositories 74
Projects
RamSailopal / README.md
LINKEDIN
TWITTER
YouTube Channel 75
SPOTIFY
What's my story?
My journey with I.T. began in the late 1990's writing web pages in HTML and Javascript. Dreamweaver was around then but I always thought it was cheating to not code.
I studied Economics at uni in order to "itch a scratch" I had for further knowledge in finance, but was soon back with I.T with my
Raman Sailopal
RamSailopal
Follow

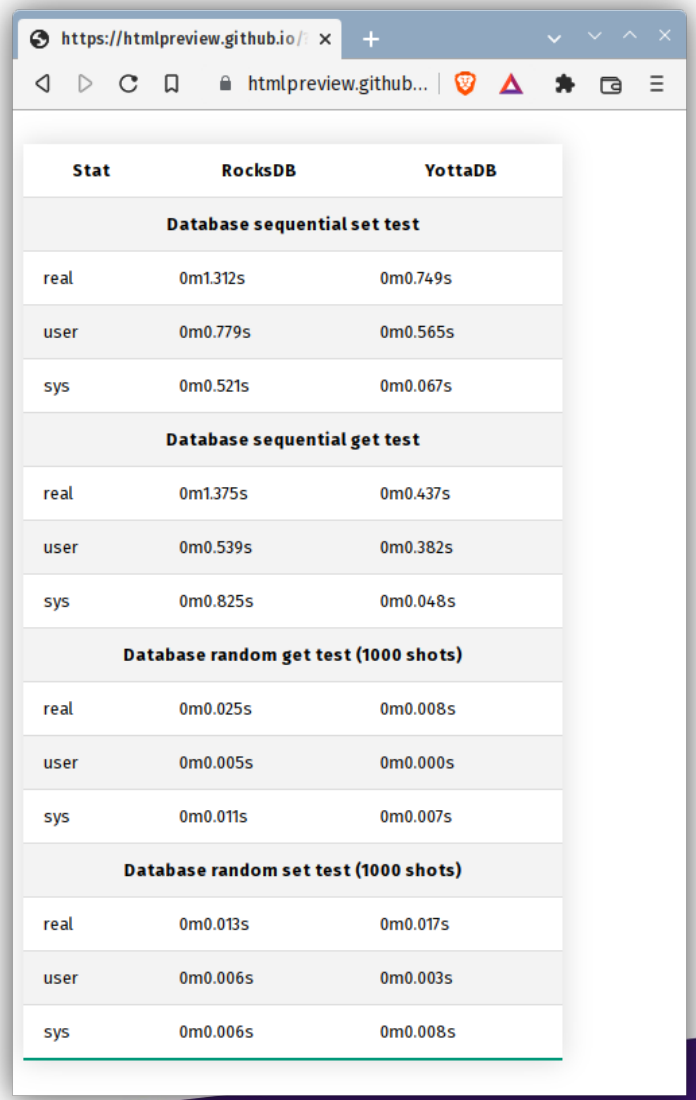
Grafana Dashboard

Editing in Visual Studio



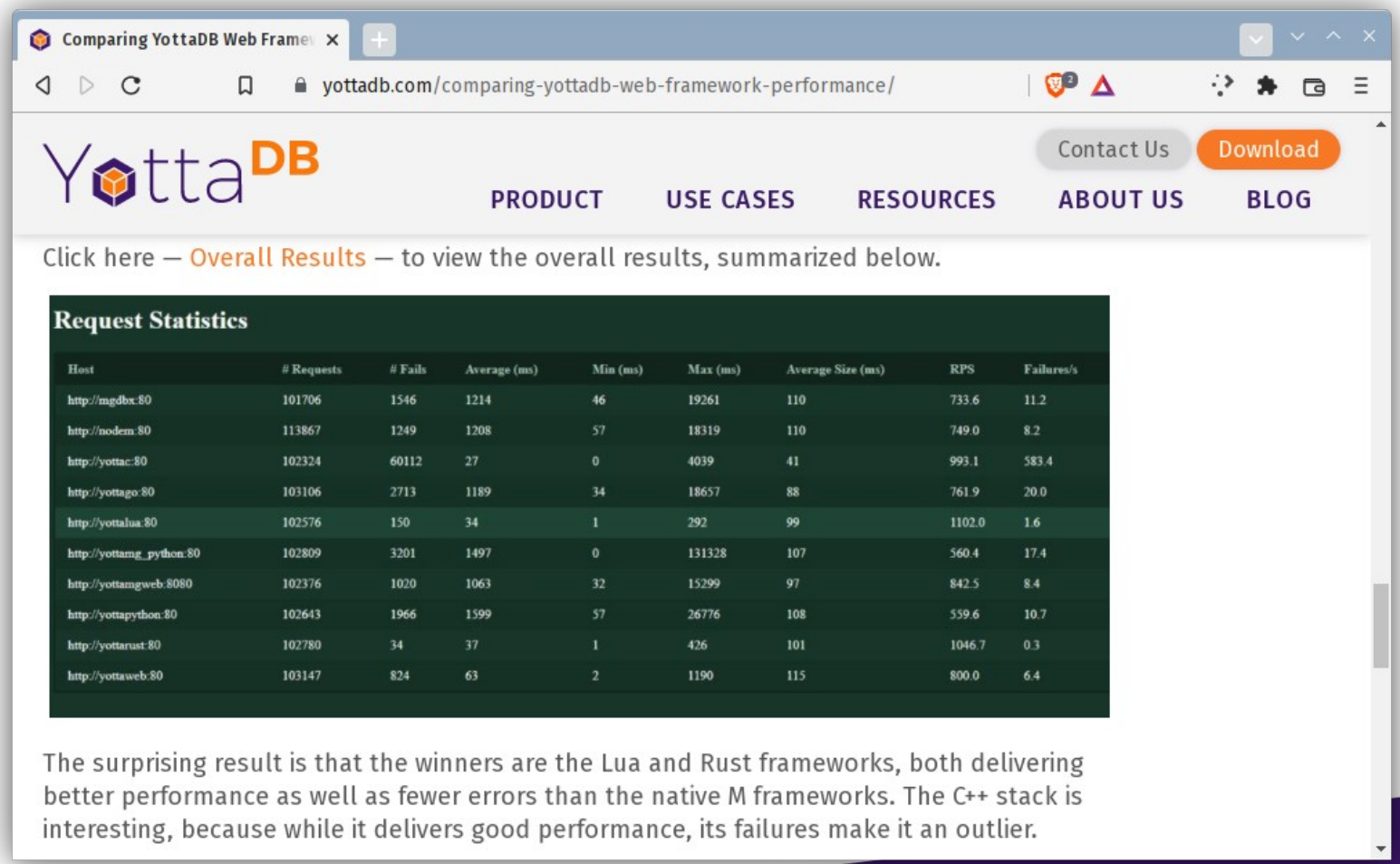
YottaDB vs RocksDB

https://github.com/RamSailopal/YottaDBvsRocksDB



Stat	RocksDB	YottaDB
Database sequential set test		
real	0m1.312s	0m0.749s
user	0m0.779s	0m0.565s
sys	0m0.521s	0m0.067s
Database sequential get test		
real	0m1.375s	0m0.437s
user	0m0.539s	0m0.382s
sys	0m0.825s	0m0.048s
Database random get test (1000 shots)		
real	0m0.025s	0m0.008s
user	0m0.005s	0m0.000s
sys	0m0.011s	0m0.007s
Database random set test (1000 shots)		
real	0m0.013s	0m0.017s
user	0m0.006s	0m0.003s
sys	0m0.006s	0m0.008s

YottaDB Web Framework Performance



Stef Lalli

YottaDB

- JsonHIVES – JSON document store
  - Like MongoDB or Couchbase
  - (Still in development)

jsonHIVES vs. MongoDB* … 1

YottaDB

- Caveats
  - jsonHIVES is still in development
  - Both were compared “out of the box” with no tuning or optimization

* courtesy Stefano Lalli

jsonHIVES vs. MongoDB … 2

YottaDB

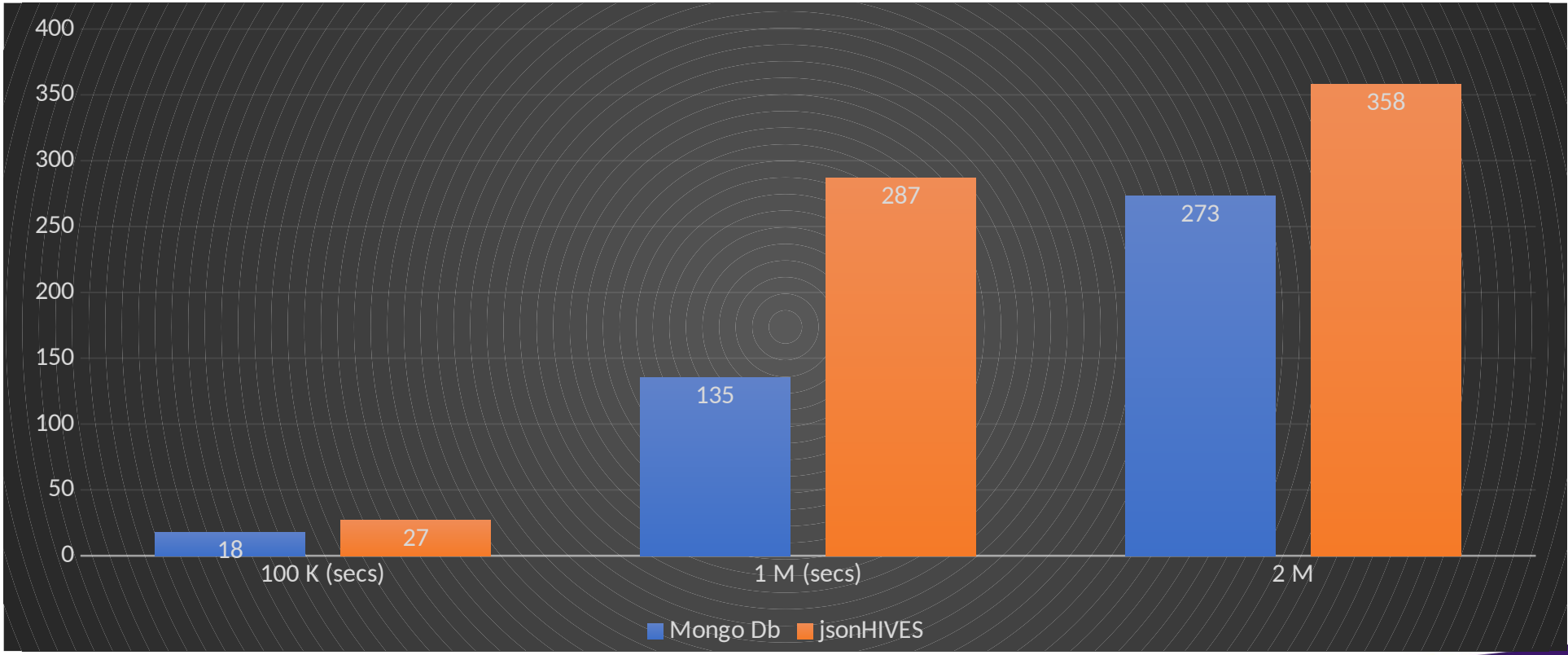
- Identical data
  - 100 million identical records
  - Each record contains 15 nodes, i.e., 1.5 billion nodes
  - Indexes on searched fields
- Docker containers had same number of CPUs & RAM

jsonHIVES vs. MongoDB … 3

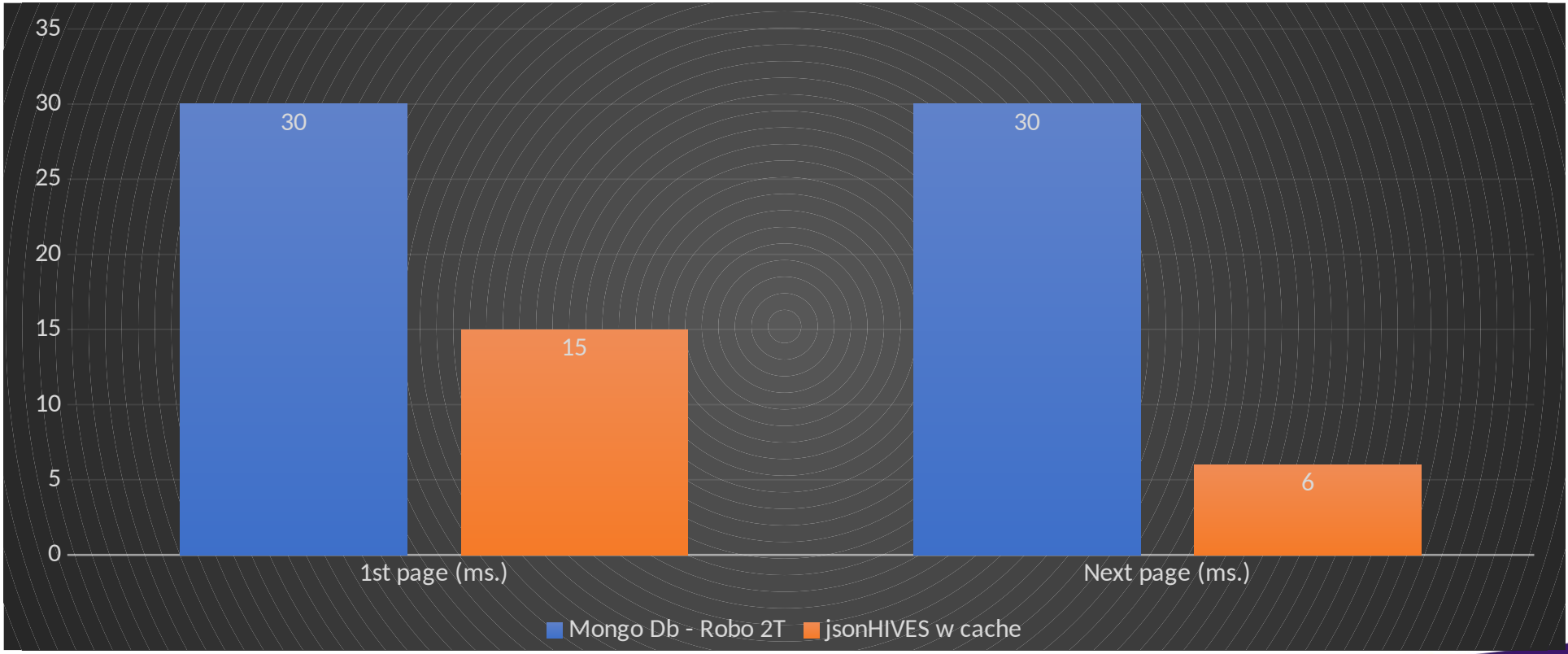
YottaDB

- Clients
  - JsonHIVES – node.js driver
  - MongoDB – Robo2T (now called bongo)
- Page fetches with 50 records (750 nodes)

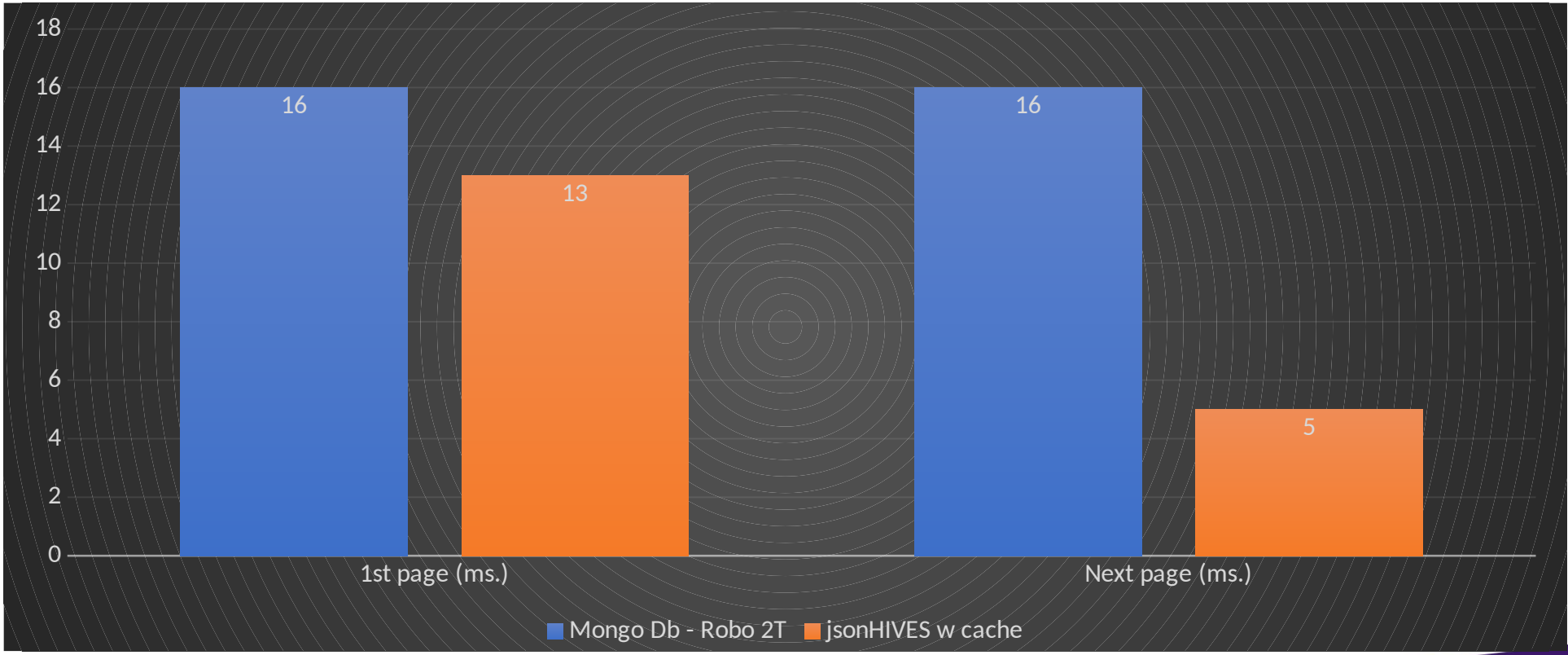
Bulk Insert Records



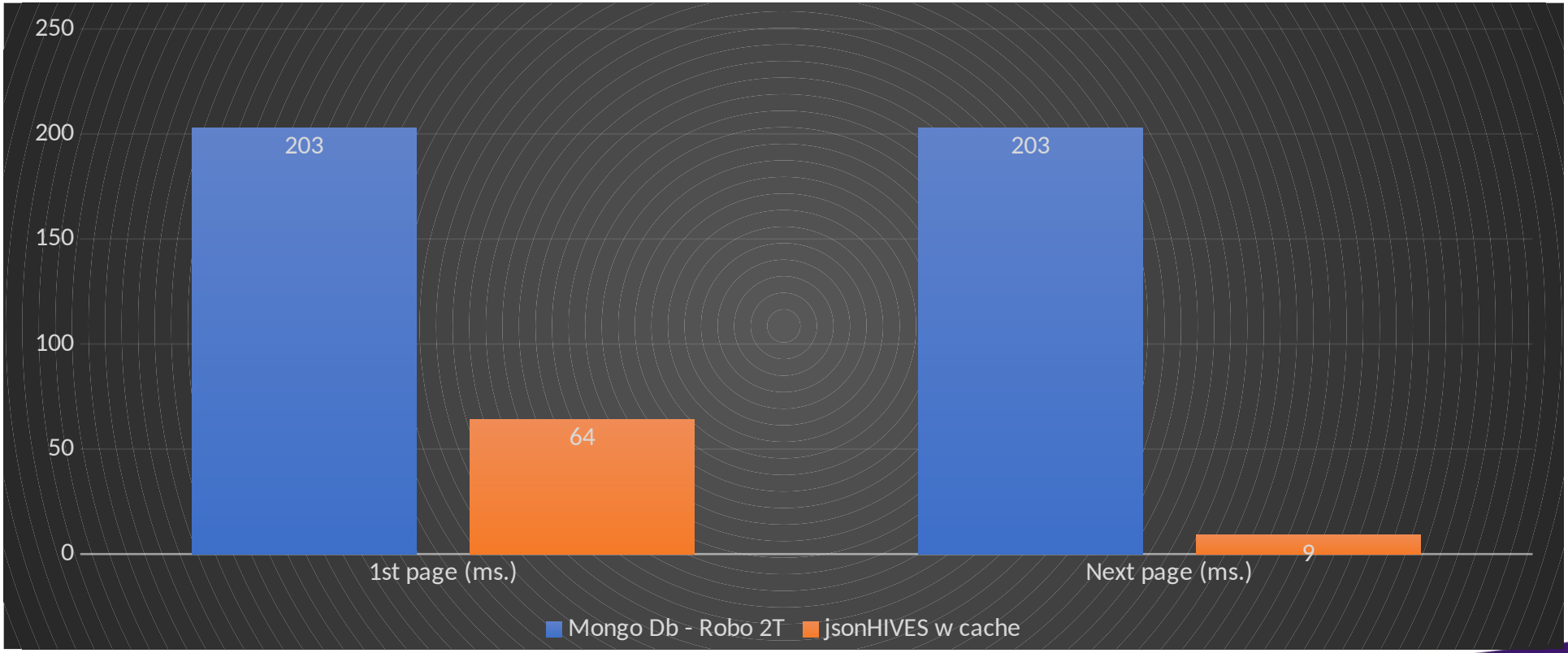
SELECT * WHERE name.last = "RAMOS"



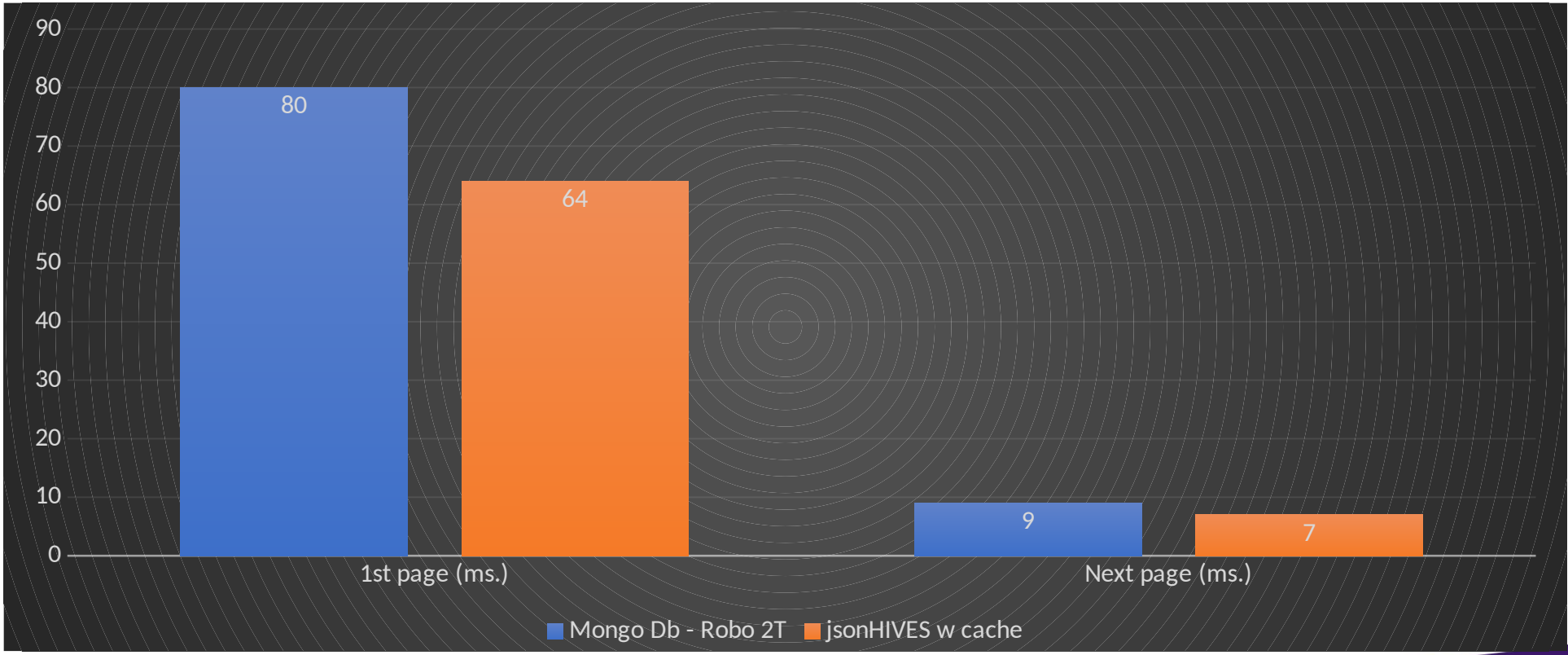
SELECT * WHERE zip = 90210



SELECT * WHERE city = "San Francisco" AND state = "California"

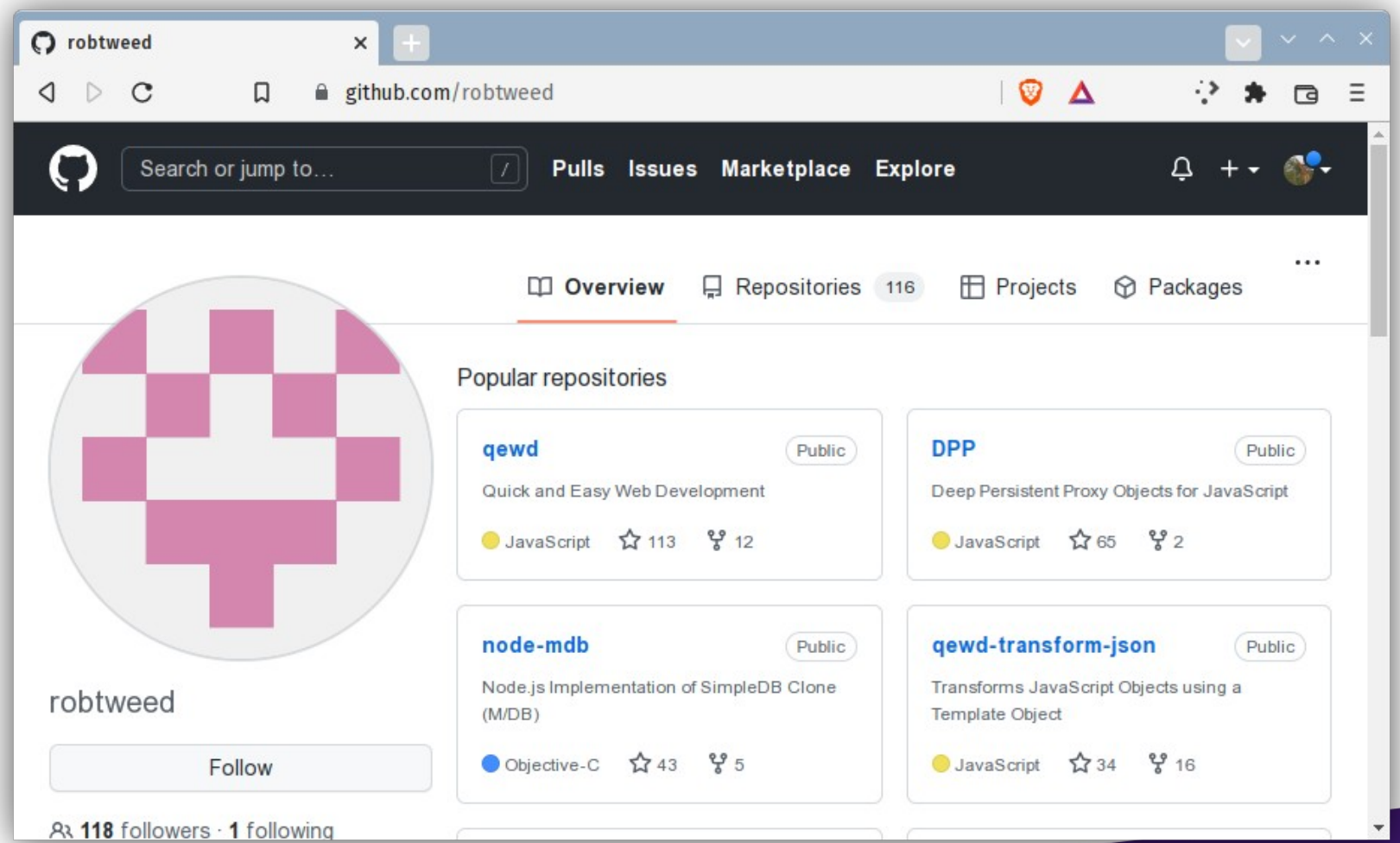


SELECT * WHERE state LIKE "%as" (/as$/)



Licensing

- MongoDB – not FOSS
  - https://opensource.org/sspl-not-open-source
- YottaDB – 100% FOSS (AGPL v3)
- jsonHIVES – to be released as FOSS (AGPL v3)


robtweed
github.com/robtweed
Search or jump to…
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Overview
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Packages
Popular repositories
qewd
Public
Quick and Easy Web Development
JavaScript 113 12
DPP
Public
Deep Persistent Proxy Objects for JavaScript
JavaScript 65 2
node-mdb
Public
Node.js Implementation of SimpleDB Clone (M/DB)
Objective-C 43 5
qewd-transform-json
Public
Transforms JavaScript Objects using a Template Object
JavaScript 34 16
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https://github.com/robtweed/global_storage/blob/master/Performance.md

	YottaDB	IRIS	Redis	Berkeley DB	LMDB
Set	1.23	1.16	194.19	1.70	3,672.02
Get	0.78	0.87	49.71	1.45	1.13
XML parse	3.22	3.70	27.34	3.69	161.45
XML output	0.74	0.82	4.06	0.93	0.73

All times in seconds

XML parse:

- 3,471 DOM nodes
- 287,604 API calls

YottaDB

Roadmap

Foundations To Build On

YottaDB

- Successes to build on
  - Largest VistA system (Hakeem)
  - Large banking systems (tens of millions of accounts)
  - Paying customers for multiple language & SQL access
- Waiting for success
  - IoT applications – good technical fit, but looking for first adopter

More Attention Needed

YottaDB

- Recruiting – continuing challenge to find talent
- Marketing
  - Paused for pandemic; slowly resuming
  - May need to find partner(s)

YottaDB

Thank You!

K.S. Bhaskar
bhaskar@yottadb.com