

Roxanne

A very simple key/value server..

- create /key/value
- read /key
- delete /key

<http://github.com/rothrock/Roxanne>

Roxanne

That supports **composite** keys.

- create /key/[key].../value
- read /key/[key]...
- delete /key/[key]...
- **keys** /[key]/[key]...
- **count** /[key]/[key]...

Why?

- Intellectual exercise.
- Key/value stores are all the rage now.
 - **Amazon** - Dynamo
 - **Yahoo!** - Sherpa
 - **LinkedIn** - Voldemort
- Differentiation.
 - very small and simple.
 - composite keys help group and sort.

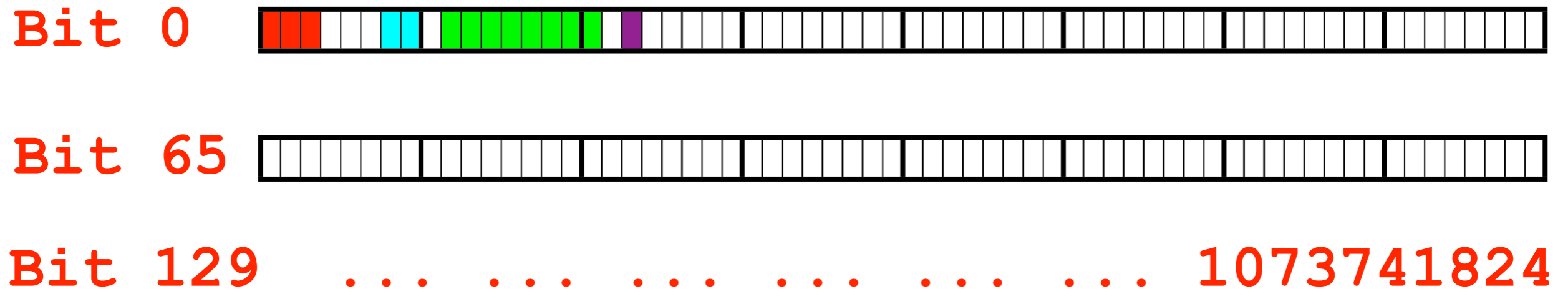
Files

```
$ du -skh /var/roxanne/*
```

```
128M /var/roxanne/block_bitmap
64K /var/roxanne/db
64M /var/roxanne/idx
24K /var/roxanne/keydb
0B /var/roxanne/keydb_freelist
```

Bitmap and DB

Database Block Bitmap



Database Blocks

4KB	4KB	4KB	4KB
4KB	4KB	4KB	4KB
4KB	4KB	4KB	4KB
4KB	4KB	4KB	4KB
4KB	4KB	4KB	...

Hash Index

0

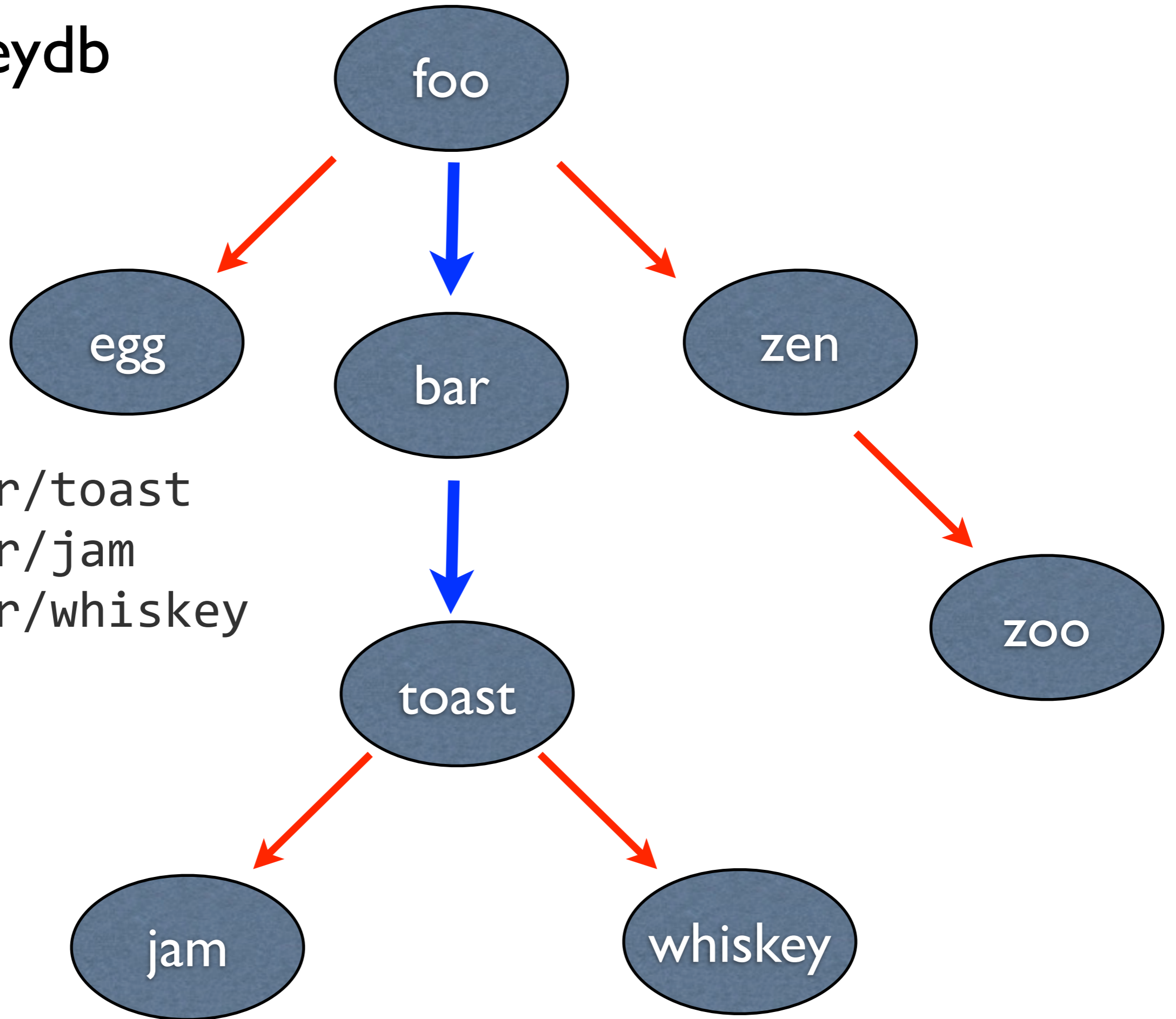
key: /employee/beau offset: 6 length: 2 next: NULL	key: /contractor/ann offset: 0 length: 3 next: 65536
...	...
key: /mgr/fred offset: 9 length: 8 next: NULL	...

chaining
off the
end

key: /contractor/ann
offset: 0
length: 3
next: NULL

65535

Keydb



/foo/bar/toast
/foo/bar/jam
/foo/bar/whiskey
/zen
/zoo
/egg

To do

- better logging.
- more dynamic config.
- authentication/authorization.
- red-black trees.
- multiple database support.
- TESTS.
- Freelists.
- better block allocation algo.
- Crash recovery.
- Atomic operations.