

Redis & ExpressionEngine Development



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Minneapolis, MN, USA

Who am I?

Geoff Cowan

Owner/Founder/Tea Maker @Orionesque a
Tech consultancy based in the UK.

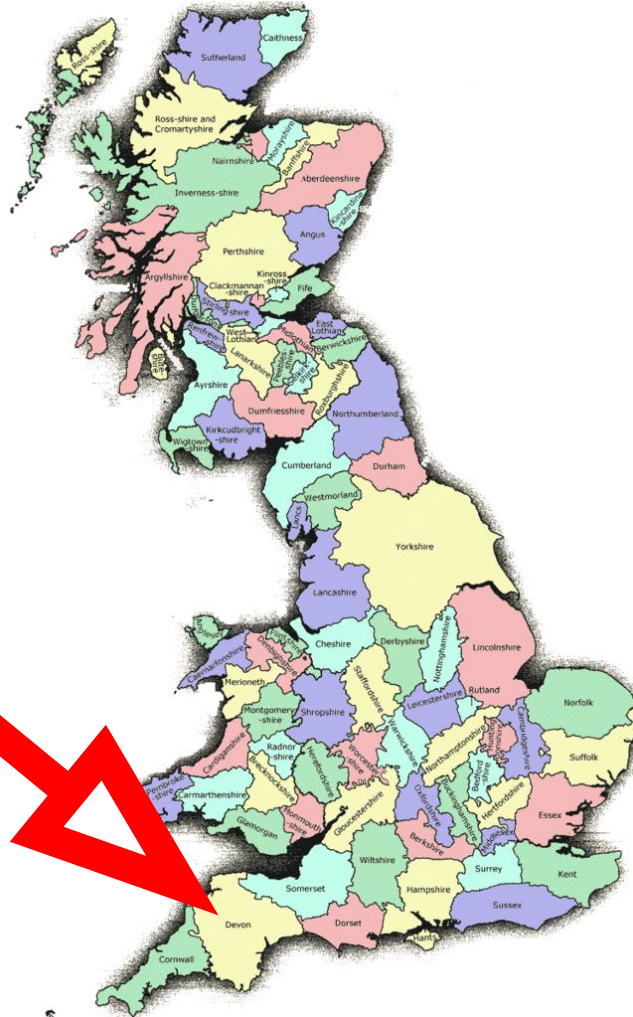
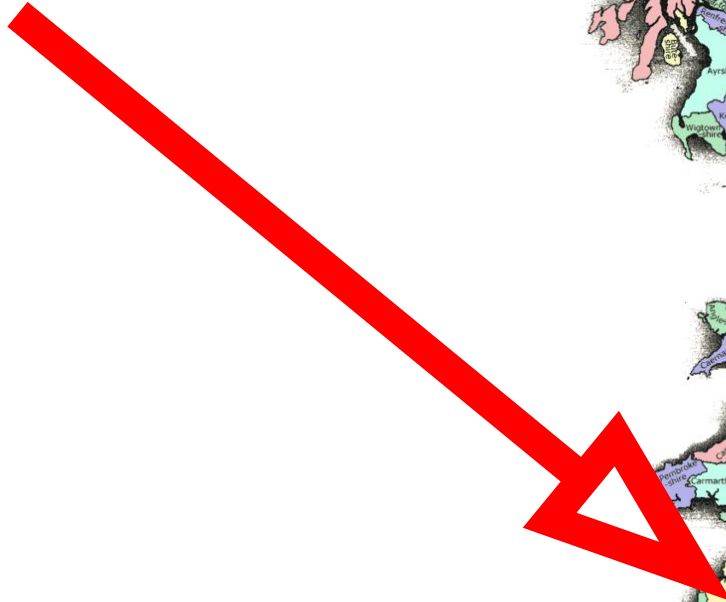
Mix of project lead roles, down and dirty
development and performance assessments.

Been around the #eecms world since v1.6.x-ish

Available for hire :-)



Orionesque







Carl Crawley

Made By Hippo

#carlshead



What is Redis?

An open source, stable, in memory key-value store which is ideal for building high performance, scalable web applications.

It's one of the family of “NoSQL” alternatives.

It's blazing fast (approx. 70,000 read/writes/sec on a standard 4GB linode box)

Handles Data Partitioning, Replication, Persistence.

All in memory and super efficient - 1 Million small key / value pairs use around 85MB of memory



redis

Anyone using Redis?



What's it for?

Caching

Scoreboards / Leaderboards / Counts

Searching / Filtering

Expiring of Content

Real time Analysis - Stats/Monitoring/etc

Pub/Sub / Message Broker

Queues



redis

Getting Redis

Depends on your environment...

For Mac.. homebrew “`brew install redis-server`”

For Windows - It's complicated

For Linux - Generally avoid “`apt-get install redis-server`” or “`yum install redis-server`” as they tend to be out of date. Instead search out a newer repo for your distro

Configuration

Again, dependant on your environment.
Generally there is a redis.conf somewhere like “**etc/redis/redis.conf**”

Update this to customise your install for things like operating Ports, Security, Data Safety etc.

By default redis is only contactable locally ie **127.0.0.1**

```
# Redis configuration file example.
#
# Note that in order to read the configuration file, Redis must be
# started with the file path as first argument:
#
# ./redis-server /path/to/redis.conf

# Note on units: when memory size is needed, it is possible to specify
# it in the usual form of 1k 5GB 4M and so forth:
#
# 1k => 1000 bytes
# 1kb => 1024 bytes
# 1m => 1000000 bytes
# 1mb => 1024*1024 bytes
# 1g => 1000000000 bytes
# 1gb => 1024*1024*1024 bytes
#
# units are case insensitive so 1GB 1Gb 1gB are all the same.

##### INCLUDES #####

# Include one or more other config files here. This is useful if you
# have a standard template that goes to all Redis servers but also need
# to customize a few per-server settings. Include files can include
# other files, so use this wisely.
#
# Notice option "include" won't be rewritten by command "CONFIG REWRITE"
# from admin or Redis Sentinel. Since Redis always uses the last processed
# line as value of a configuration directive, you'd better put includes
# at the beginning of this file to avoid overwriting config change at runtime.
#
# If instead you are interested in using includes to override configuration
# options, it is better to use include as the last line.
#
# include /path/to/local.conf
# include /path/to/other.conf
```

Security

By default only listens to localhost.

You can set a password for all commands.

There is no concept out of the box for ACL. If you can connect, you can run Any command.. Like FLUSHALL

You can rename commands in the config file:

```
Rename-command FLUSHALL "DontYouDarePushThis"
```

```
Rename-command FLUSHALL "" // Disable completely
```

Persistence

If it's all in memory.. Doesn't it get lost?

RDB vs AOF vs SAVE? What?

Autosaving

Backing Up?



Clients / Drivers

C / D / Go / Haskell / Lua / Node.js / Perl

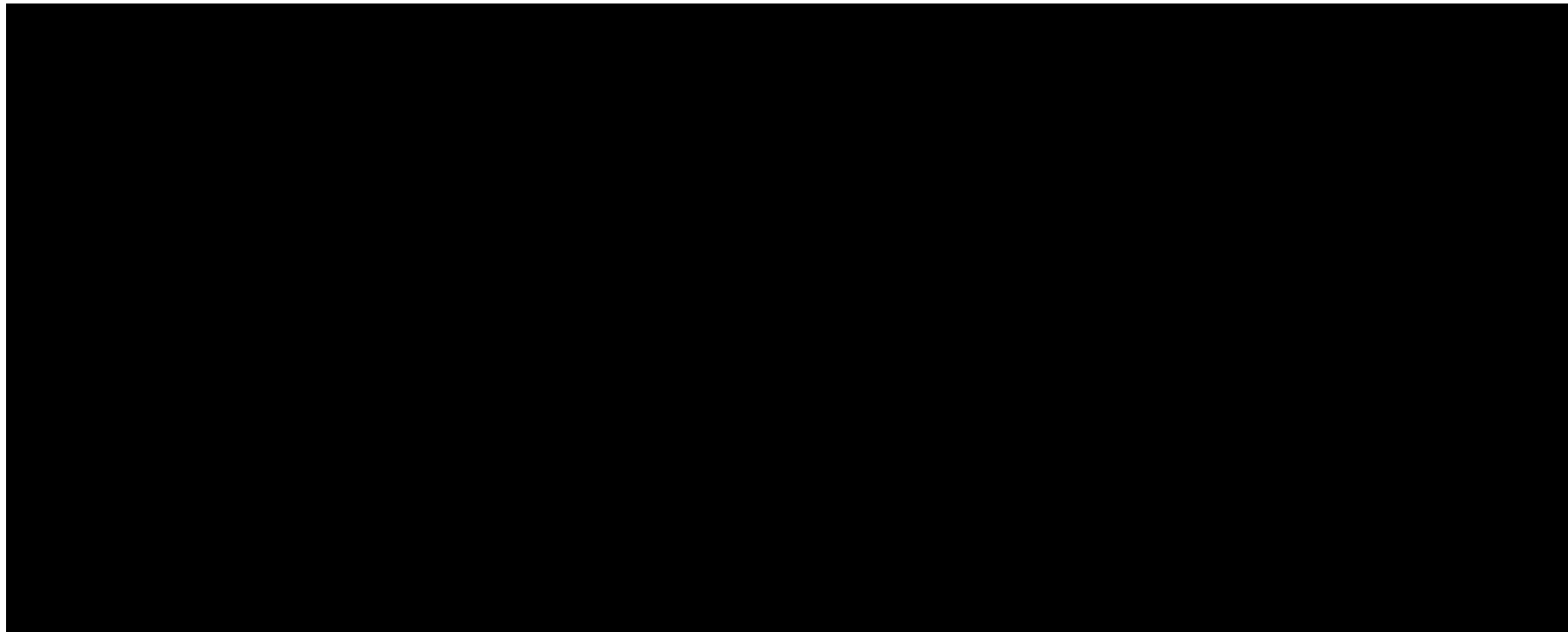
PHP / Python / R / Ruby / Rust

Scala / Swift / VB

To name but a few :)

Hint.. I'll be talking PHP today :-)

CLI - redis-cli



Keys.....

Keys in Redis are kinda important :)

Think of them as the same as PHP array keys.. With a bit more... oomph.

Naming conventions matter I generally go for “object-type:id:field” as rule.. Like “product:888:title”. Technically you can call them pretty much anything you like.

Keys can be set to expire (think Snapchat) in a set time, or by default, live forever.

Commands include:

EXISTS EXPIRE PERSIST KEYS DEL

Redis Data Types

Strings

Hashes

Lists

Sets

Sorted Sets

Other Funky Stuff

Redis Data Types ::: Strings

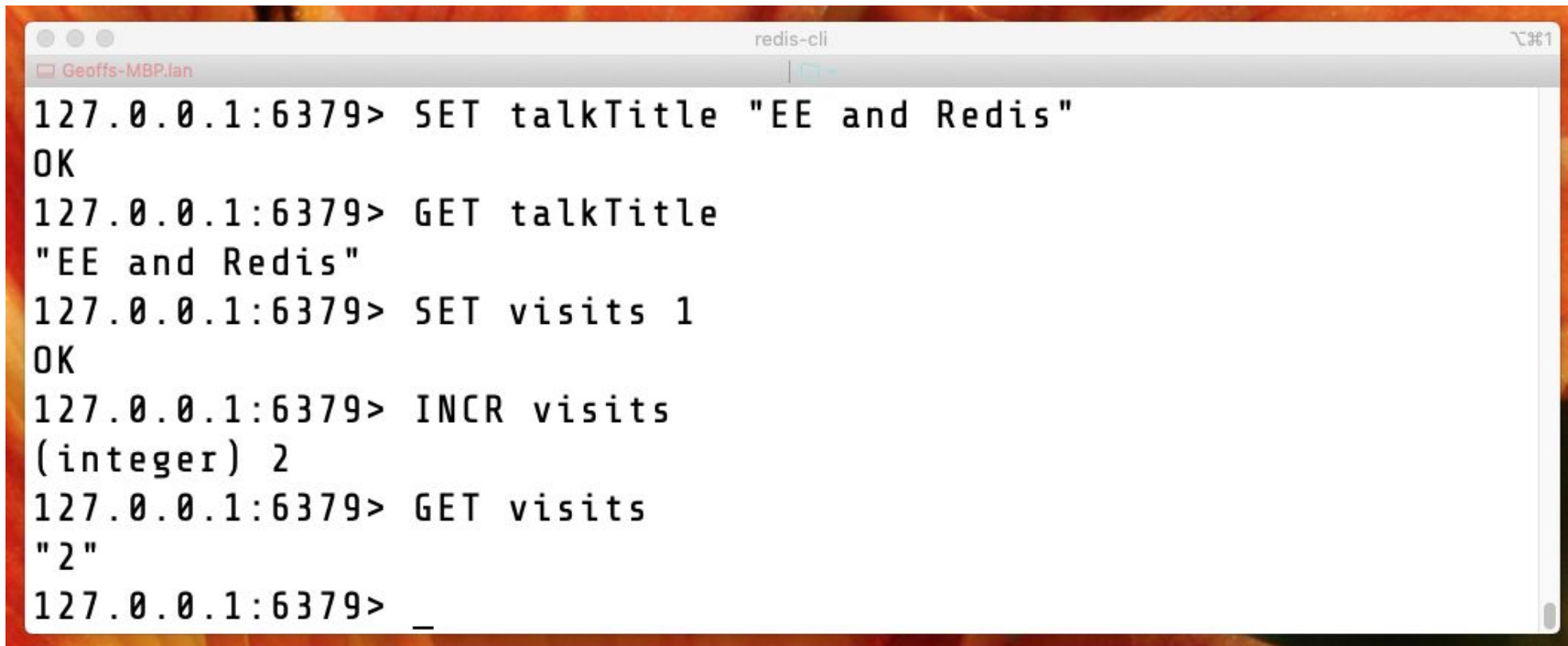
Strings

The most basic of all the data types. Allow the storage of a simple key/value pair. The value can be a string or numerical.

Core commands:

SET	MSET	INCR	DECR	SETEX
GET	MGET	INCRBY	DECRBY	SETNX

Redis Data Types ::: Strings



```
redis-cli
127.0.0.1:6379> SET talkTitle "EE and Redis"
OK
127.0.0.1:6379> GET talkTitle
"EE and Redis"
127.0.0.1:6379> SET visits 1
OK
127.0.0.1:6379> INCR visits
(integer) 2
127.0.0.1:6379> GET visits
"2"
127.0.0.1:6379> _
```

Redis Data Types ::: Hashes

Essentially just more strings.

A way of mapping multiple things to a key, useful for storing objects.

Core commands:

HSET

HMSET

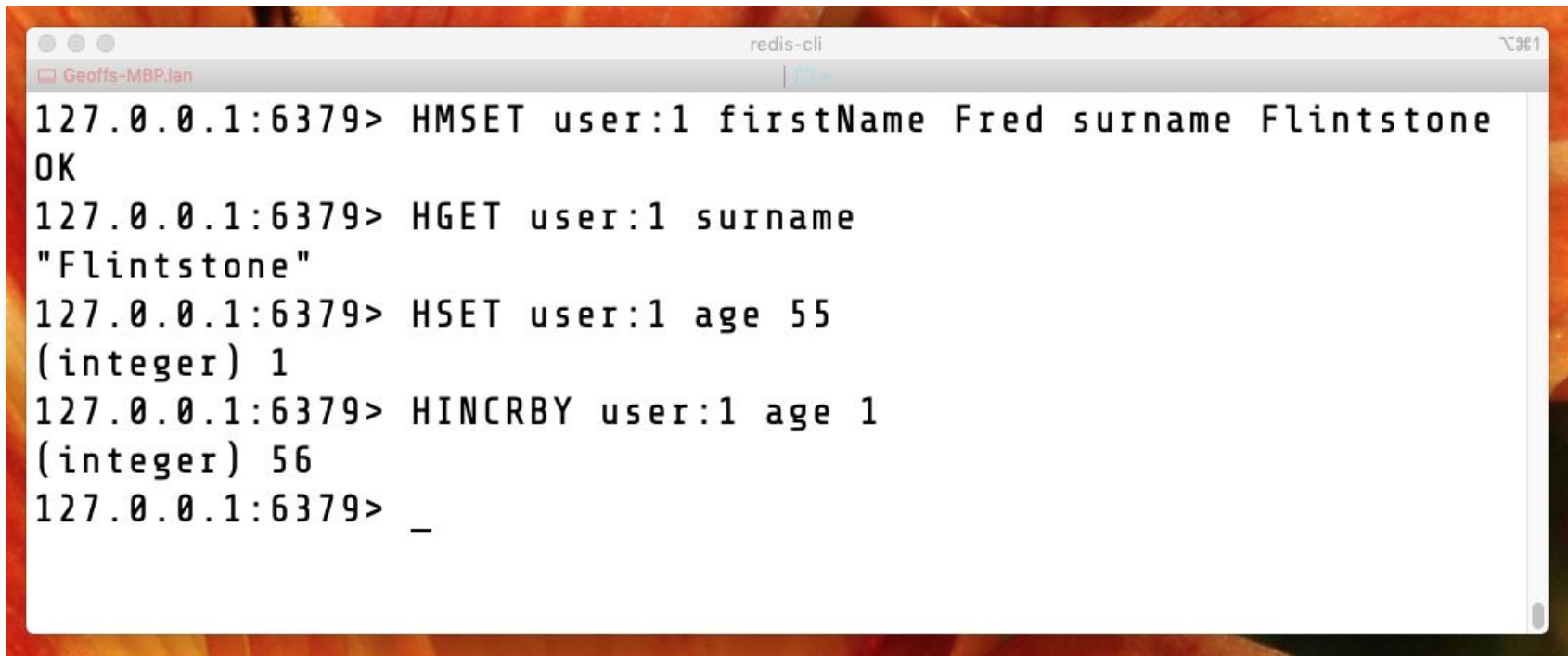
HINCRBY

HLEN

HGET

HMGET

Redis Data Types ::: Hashes

A screenshot of a Redis CLI terminal window. The window title is "redis-cli" and the user is "Geoffs-MBP.ian". The terminal shows a series of commands and their outputs: 1. Command: HMSET user:1 firstName Fred surname Flintstone; Output: OK. 2. Command: HGET user:1 surname; Output: "Flintstone". 3. Command: HSET user:1 age 55; Output: (integer) 1. 4. Command: HINCRBY user:1 age 1; Output: (integer) 56. 5. Command: _; Output: _.

```
redis-cli
127.0.0.1:6379> HMSET user:1 firstName Fred surname Flintstone
OK
127.0.0.1:6379> HGET user:1 surname
"Flintstone"
127.0.0.1:6379> HSET user:1 age 55
(integer) 1
127.0.0.1:6379> HINCRBY user:1 age 1
(integer) 56
127.0.0.1:6379> _
```

Redis Data Types ::: Lists

Collections of ordered values, duplicates allowed.

Core commands:

LPUSH

LPOP

LINDEX

RPUSH

RPOP

LRANGE

Stuff I Did Today...

Ate Breakfast

Read my Book

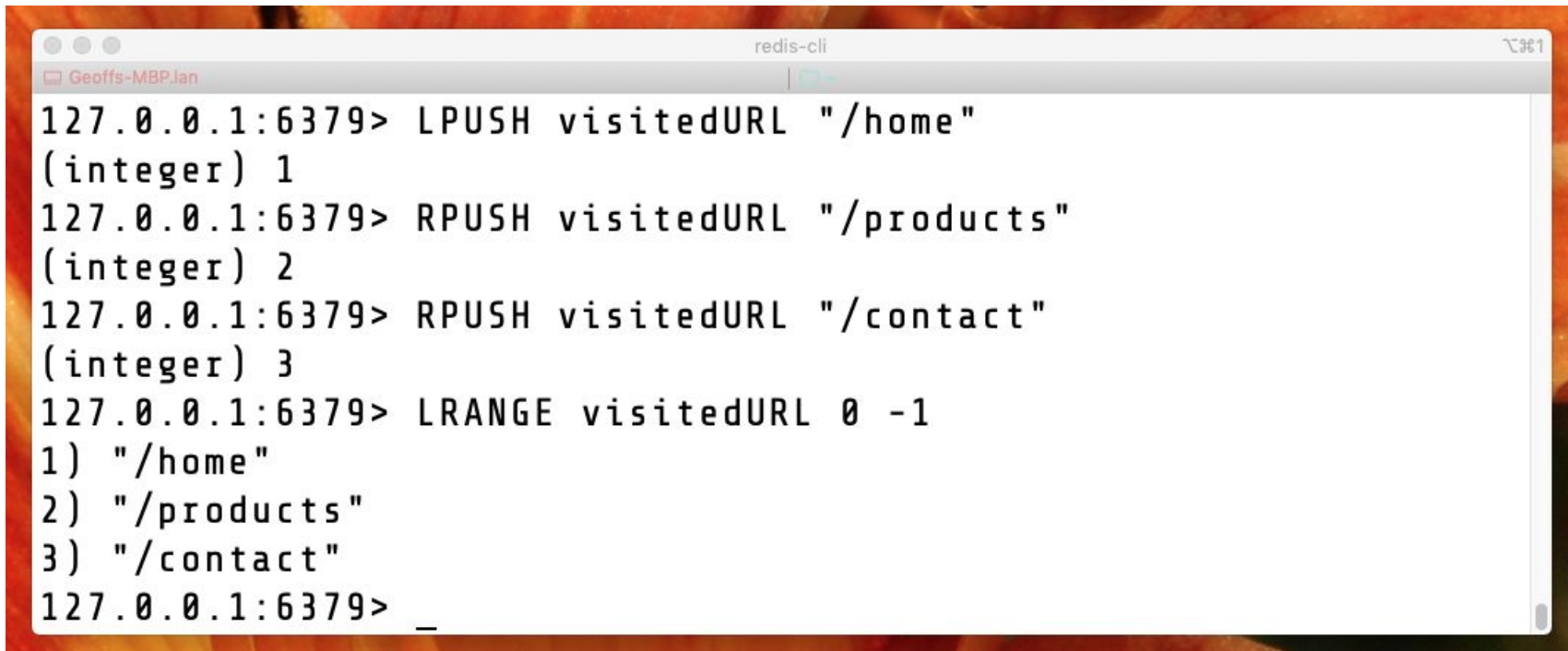
Drank Tea

Walked the Dog

Drank Tea

Thought about the world

Redis Data Types ::: Lists

A screenshot of a Redis CLI terminal window. The window title is "redis-cli" and the user is "Geoffs-MBP.ian". The terminal shows a series of commands and their outputs. The commands are: LPUSH visitedURL "/home", RPush visitedURL "/products", RPush visitedURL "/contact", and LRange visitedURL 0 -1. The outputs are: (integer) 1, (integer) 2, (integer) 3, and a list of three elements: 1) "/home", 2) "/products", 3) "/contact". The terminal ends with a prompt character "_".

```
redis-cli
127.0.0.1:6379> LPUSH visitedURL "/home"
(integer) 1
127.0.0.1:6379> RPush visitedURL "/products"
(integer) 2
127.0.0.1:6379> RPush visitedURL "/contact"
(integer) 3
127.0.0.1:6379> LRange visitedURL 0 -1
1) "/home"
2) "/products"
3) "/contact"
127.0.0.1:6379> _
```

Redis Data Types ::: Sets

Collections of unique, unsorted string elements

Core commands:

SADD

SCARD

SDIFF

SDIFFSTORE

SMEMBERS

SINTER

SUNION

SUNIONSTORE

Redis Data Types ::: Sets

```
127.0.0.1:6379> SADD blue 1 3 9 5
(integer) 3
127.0.0.1:6379> SINTER red blue
1) "1"
2) "3"
127.0.0.1:6379> _
4) 4
5) "5"
127.0.0.1:6379> _
```

Redis Data Types ::: Sorted Sets

Collections of unique strings, ordered by user defined scoring

Core commands:

ZADD

ZCARD

ZDIFF

ZCOUNT

ZREM

ZRANGE

SUNION

SUNIONSTORE

Redis Data Types ::: Sorted Sets

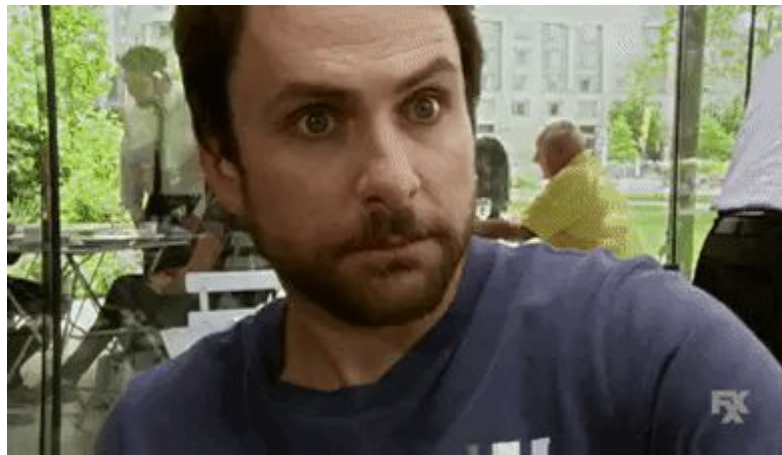
```
redis-cli
Geoffs-MacBook-Pro.local | ~/sites/redis/system/user/addons/oc_redis
127.0.0.1:6379> ZADD leaderboard 20 "Harry"
(integer) 1
127.0.0.1:6379> ZADD leaderboard 50 "Dick"
(integer) 1
127.0.0.1:6379> ZADD leaderboard 100 "Harry"
(integer) 0
127.0.0.1:6379> ZRANGE leaderboard 0 -1 WITHSCORES
1) "Dick"
2) "50"
3) "Harry"
4) "100"
127.0.0.1:6379>
```

Other Funky Stuff?

Bit Arrays (or Bitmaps) - Don't ask....

HyperLogLog - Oh boy...

Streams





ExpressionEngine



redis

EE Addon + Redis?

Predis is a flexible and feature-complete PHP client library for the [Redis](#) key-value store.

<https://github.com/nrk/predis>

```
cd system/user/addons
```

```
mkdir addon_name
```

```
composer init // follow the steps
```

```
composer require predis/predis
```

Edit Entry **Auto Saved (11:49 PM)**

Save

Save & New

Save & Close

Publish Date Categories Options

▼ **Title ***

Product Awesome

^ **URL title ***

▼ **Colours**

Red Blue Green Yellow Pink Lemon Khaki

Save

Save & New

Save & Close

An Extension that does little

```
return array(  
    'author'           => 'Geoff Cowan - Orionesque.com',  
    'author_url'      => 'https://www.orionesque.com',  
    'description'     => 'Example Redis Helper for EE5.x',  
    'docs_url'        => 'https://www.orionesque.com/redis-ee',  
    'name'            => 'Redis-EE',  
    'namespace'       => 'Orionesque\EERedis',  
    'version'         => '1.0.0',  
    'settings_exist' => TRUE  
);
```

(addon.setup.php)

Register the Hook

```
function activate_extension()  
{  
    $this->settings = array(  
        'port'      => 6379,  
        'host'      => "127.0.0.1"  
    );  
    $data = array(  
        'class'     => __CLASS__,  
        'method'    => 'parse_colours_to_redis',  
        'hook'      => 'after_channel_entry_update',  
        'settings'  => serialize($this->settings),  
        'priority'  => 10,  
        'version'   => $this->version,  
        'enabled'   => 'y'  
    );  
    ee()->db->insert('extensions', $data);  
}
```

Talk to Redis via Predis

```
require PATH_THIRD."YOURADDON/vendor/autoload.php";

$redisConfig = array('port' => 6379,
                    'host' => '127.0.0.1'
                    );

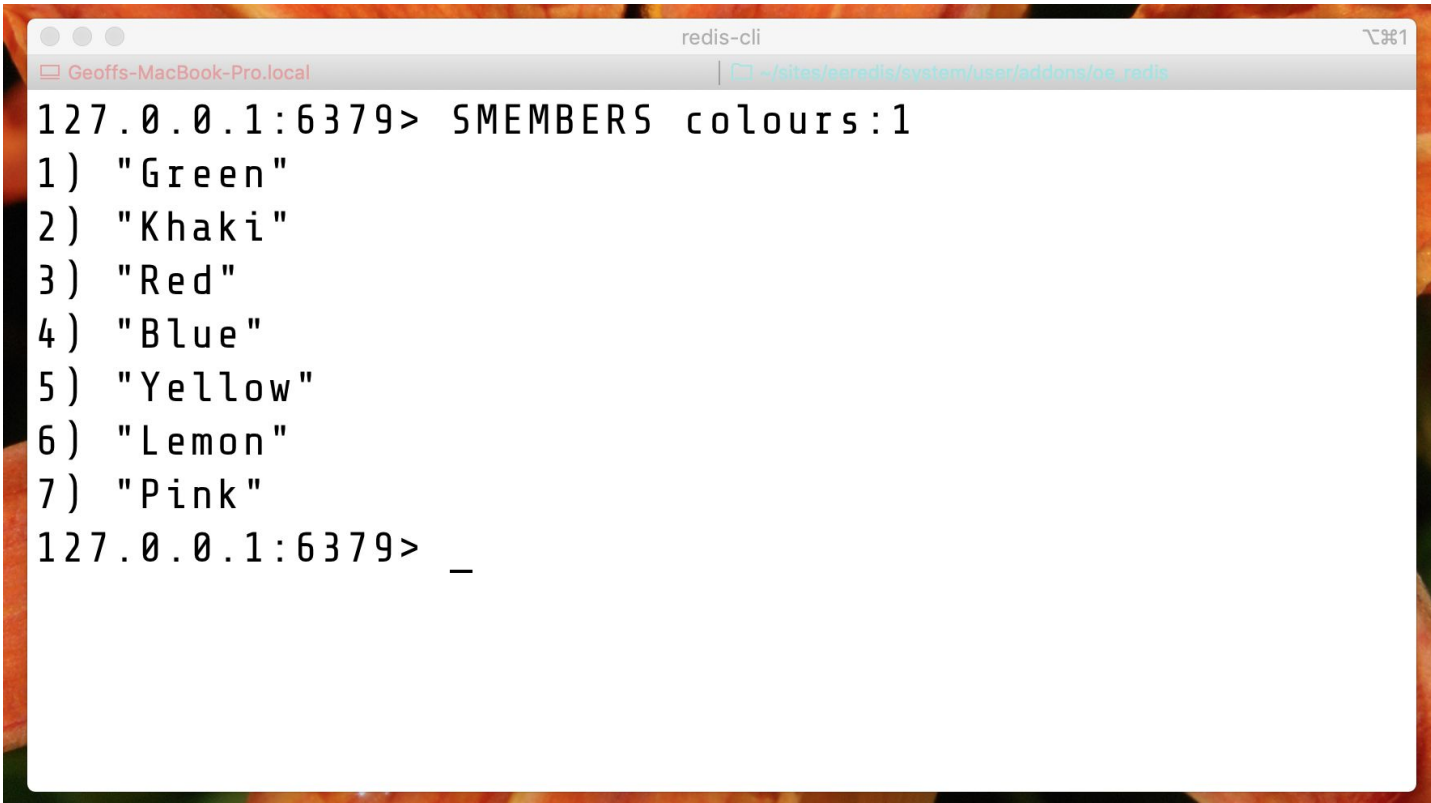
$redis = new Predis\Client($redisConfig);
```

Fire the Hook

```
function parse_colours_to_redis($str, $obj, $mod)
{
    if (ee()→extensions→active_hook('after_channel_entry_update') ≡ TRUE)
    {
        $redis = new Predis\Client(array('port' => $this→settings['port']));
        $colours = explode(" ", $obj['field_id_1']); // Great Security :-)
        $redis→del('colours:'.$obj['entry_id']);

        // Shove em into Redis
        foreach ($colours as $c)
        {
            $redis→sAdd('colours:'.$obj['entry_id'], $c);
        }
    }
}
```

Check Redis...



```
redis-cli
Geoffs-MacBook-Pro.local | ~/sites/earedis/system/user/addons/oe_redis
127.0.0.1:6379> SMEMBERS colours:1
1) "Green"
2) "Khaki"
3) "Red"
4) "Blue"
5) "Yellow"
6) "Lemon"
7) "Pink"
127.0.0.1:6379> _
```



ExpressionEngine



redis

Further Reading

Redis Commands

<https://redis.io/commands>

Redis & Reddit and View Counting

<https://redditblog.com/2017/05/24/view-counting-at-reddit/>

Bitmaps

<https://blog.getspool.com/2011/11/29/fast-easy-realtime-metrics-using-redis-bitmaps/>

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