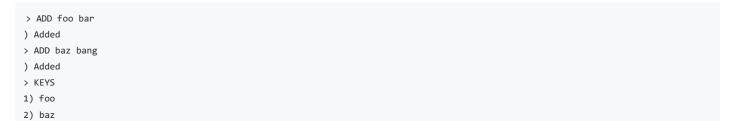
The Multi-Value Dictionary app is a command line application that stores a multivalue dictionary in memory. All keys and members are strings.

It should support the following commands.

KEYS

Returns all the keys in the dictionary. Order is not guaranteed.

Example



MEMBERS

Returns the collection of strings for the given key. Return order is not guaranteed. Returns an error if the key does not exists.

Example:

```
> ADD foo bar
> ADD foo baz
> MEMBERS foo
1) bar
2) baz

> MEMBERS bad
) ERROR, key does not exist.
```

ADD

Adds a member to a collection for a given key. Displays an error if the member already exists for the key.

```
> ADD foo bar
) Added
> ADD foo baz
) Added
> ADD foo bar
) ERROR, member already exists for key
```

REMOVE

Removes a member from a key. If the last member is removed from the key, the key is removed from the dictionary. If the key or member does not exist, displays an error.

```
> ADD foo bar
) Added
> ADD foo baz
) Added
> REMOVE foo bar
) Removed
> REMOVE foo bar
) ERROR, member does not exist
> KEYS
1) foo
> REMOVE foo baz
) Removed
> KEYS
) empty set
> REMOVE boom pow
) ERROR, key does not exist
```

REMOVEALL

Removes all members for a key and removes the key from the dictionary. Returns an error if the key does not exist.

Example:

```
> ADD foo bar
) Added
> ADD foo baz
) Added
> KEYS
1) foo

> REMOVEALL foo
) Removed

> KEYS
(empty set)

REMOVEALL foo
) ERROR, key does not exist
```

CLEAR

Removes all keys and all members from the dictionary.

> ADD foo bar		
) Added		
> ADD bang zip		
) Added		
> KEYS		
1) foo		
2) bang		
> CLEAR		
) Cleared		
> KEYS		
> KEYS (empty set)		
(empty set)		
(empty set) > CLEAR		
(empty set) > CLEAR		
<pre>(empty set) > CLEAR) Cleared</pre>		
<pre>(empty set) > CLEAR) Cleared > KEYS</pre>		

KEYEXISTS

Returns whether a key exists or not.

Example:

```
> KEYEXISTS foo
) false
> ADD foo bar
) Added
> KEYEXISTS foo
) true
```

MEMBEREXISTS

Returns whether a member exists within a key. Returns false if the key does not exist.

Example:

```
> MEMBEREXISTS foo bar
) false
> ADD foo bar
) Added
> MEMBEREXISTS foo bar
) true
> MEMBEREXISTS foo baz
) false
```

ALLMEMBERS

 $\hbox{Returns all the members in the dictionary. Returns nothing if there are none. Order is not guaranteed.}\\$

```
> ALLMEMBERS
(empty set)
> ADD foo bar
) Added
> ADD foo baz
) Added
> ALLMEMBERS
1) bar
2) baz
> ADD bang bar
) Added
> ADD bang baz
> ALLMEMBERS
1) bar
2) baz
3) bar
4) baz
```

ITEMS

Returns all keys in the dictionary and all of their members. Returns nothing if there are none. Order is not guaranteed.

```
> ITEMS
(empty set)
> ADD foo bar
) Added
> ADD foo baz
) Added
> ITEMS
1) foo: bar
2) foo: baz
> ADD bang bar
) Added
> ADD bang baz
> ITEMS
1) foo: bar
2) foo: baz
3) bang: bar
4) bang: baz
```