
saws Documentation

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CHAPTER 1

Source Code

- [GitHub Repo](#)
- `genindex`
- `modindex`
- `search`

2.1 Motivation

2.1.1 AWS CLI

Although the [AWS CLI](#) is a great resource to manage your AWS-powered services, it's **tough to remember usage** of:

- 70+ top-level commands
- 2000+ subcommands
- Countless command-specific options
- Resources such as instance tags and buckets

2.1.2 SAWS: A Supercharged AWS CLI

SAWS aims to **supercharge** the AWS CLI with features focusing on:

- **Improving ease-of-use**
- **Increasing productivity**

Under the hood, SAWS is **powered by the AWS CLI** and supports the **same commands** and **command structure**.

SAWS and AWS CLI Usage:

```
aws <command> <subcommand> [parameters] [options]
```

SAWS features:

- Auto-completion of:

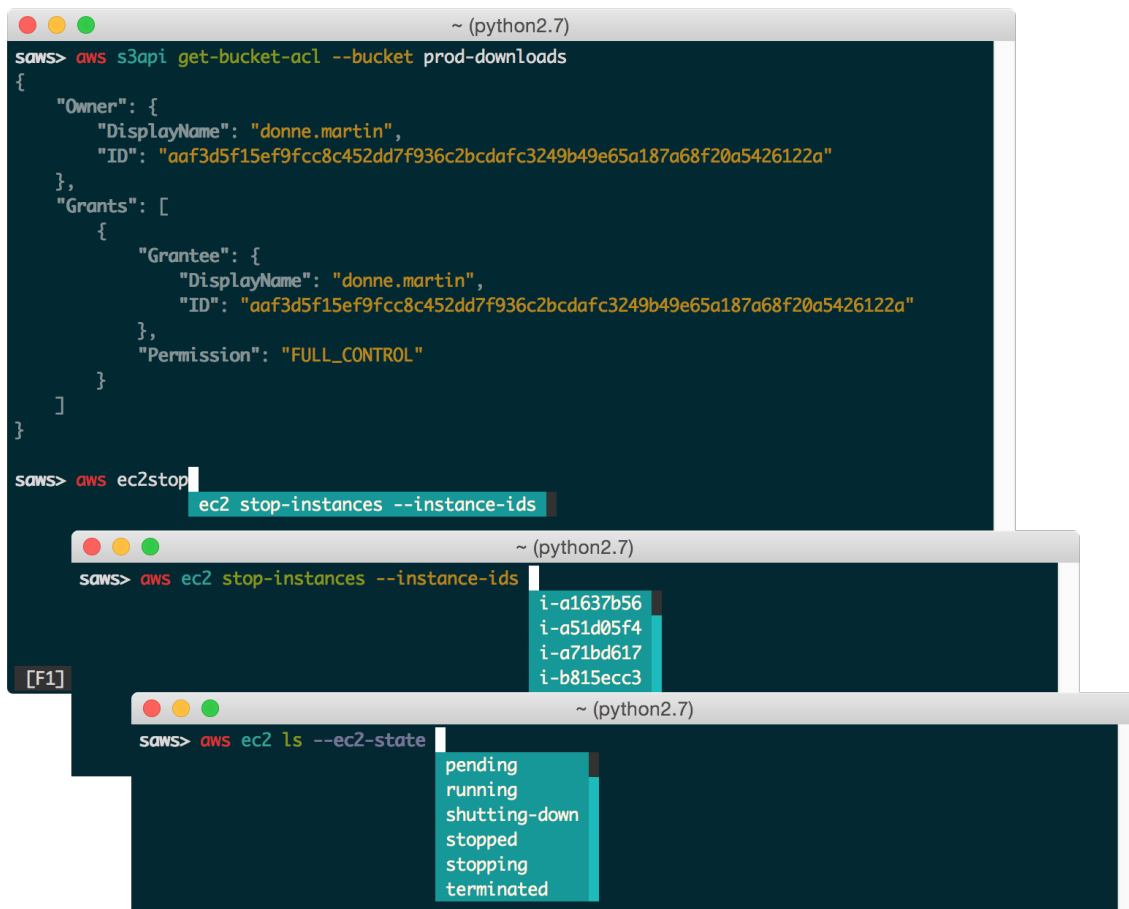
- Commands
 - Subcommands
 - Options
- Auto-completion of resources:
 - Bucket names
 - Instance ids
 - Instance tags
 - *More coming soon!*
- Customizable shortcuts
- Fuzzy completion of resources and shortcuts
- Fish-style auto-suggestions
- Syntax and output highlighting
- Execution of shell commands
- Command history
- Contextual help
- Toolbar options

SAWS is available for Mac, Linux, Unix, and *Windows*.

2.2 Index

2.2.1 Features

- *Syntax and Output Highlighting*
- *Auto-Completion of Commands, Subcommands, and Options*
- *Auto-Completion of AWS Resources*
 - *S3 Buckets*
 - *EC2 Instance Ids*
 - *EC2 Instance Tags*
 - *TODO: Add More Resources*
- *Customizable Shortcuts*
- *Fuzzy Resource and Shortcut Completion*
- *Fish-Style Auto-Suggestions*
- *Executing Shell Commands*
- *Command History*
- *Contextual Help*
 - *Contextual Command Line Help*
 - *Contextual Web Docs*



The image shows three overlapping terminal windows, each with a title bar indicating the environment is `~ (python2.7)`.

The top window shows the command `saws> aws s3api get-bucket-acl --bucket prod-downloads` and its output, a JSON object representing the bucket's ACL. The output shows the owner as `donne.martin` with ID `aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a`, and a single grant with the same owner and `FULL_CONTROL` permission.

The middle window shows the command `saws> aws ec2 stop-instances --instance-ids` with a list of instance IDs: `i-a1637b56`, `i-a51d05f4`, `i-a71bd617`, and `i-b815ecc3`.

The bottom window shows the command `saws> aws ec2 ls --ec2-state` with a list of EC2 instance states: `pending`, `running`, `shutting-down`, `stopped`, `stopping`, and `terminated`.

```
saws> aws s3api get-bucket-acl --bucket prod-downloads
{
  "Owner": {
    "DisplayName": "donne.martin",
    "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
  },
  "Grants": [
    {
      "Grantee": {
        "DisplayName": "donne.martin",
        "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
      },
      "Permission": "FULL_CONTROL"
    }
  ]
}

saws> aws ec2 stop-instances --instance-ids
i-a1637b56
i-a51d05f4
i-a71bd617
i-b815ecc3

saws> aws ec2 ls --ec2-state
pending
running
shutting-down
stopped
stopping
terminated
```

- *Toolbar Options*
- *Windows Support*

2.2.2 Installation and Tests

- *Installation*
 - *Pip Installation*
 - *Virtual Environment and Docker Installation*
 - *AWS Credentials and Named Profiles*
 - *Supported Python Versions*
 - *Supported Platforms*
- *Developer Installation*
 - *Continuous Integration*
 - *Dependencies Management*
 - *Unit Tests and Code Coverage*
 - *Documentation*

2.2.3 Misc

- *Contributing*
- *Credits*
- *Contact Info*
- *License*

2.3 Syntax and Output Highlighting

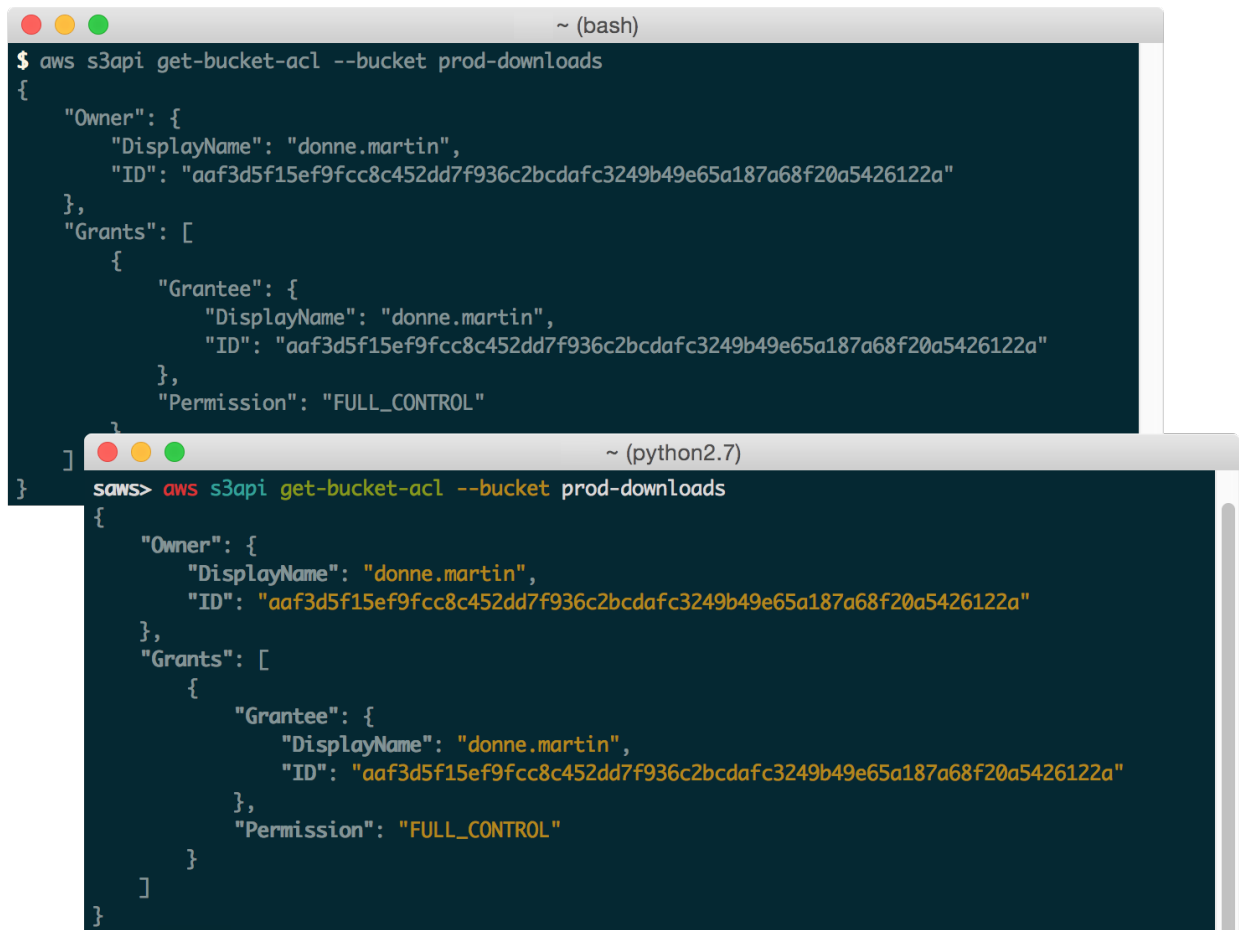
You can control which theme to load for syntax highlighting by updating your `~/.sawsrc` file:

```
# Visual theme. Possible values: manni, igor, xcode, vim, autumn, vs, rrt,  
# native, perldoc, borland, tango, emacs, friendly, monokai, paraiso-dark,  
# colorful, murphy, bw, pastie, paraiso-light, trac, default, fruity  
theme = vim
```

2.4 Auto-Completion of Commands, Subcommands, and Options

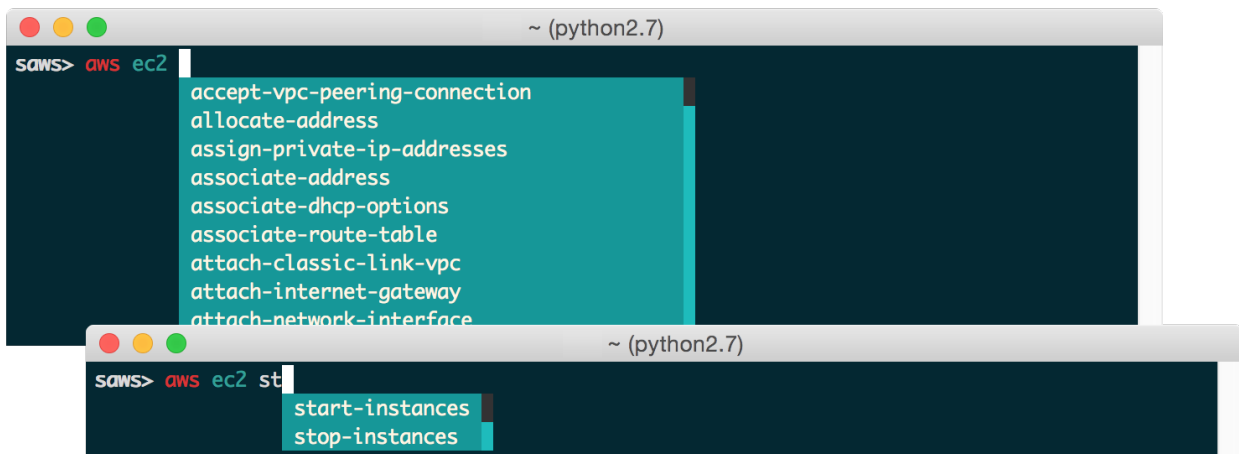
SAWS provides smart autocompletion as you type. Entering the following command will interactively list and auto-complete all subcommands **specific only** to `ec2`:

```
aws ec2
```



```
~ (bash)
$ aws s3api get-bucket-acl --bucket prod-downloads
{
  "Owner": {
    "DisplayName": "donne.martin",
    "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
  },
  "Grants": [
    {
      "Grantee": {
        "DisplayName": "donne.martin",
        "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
      },
      "Permission": "FULL_CONTROL"
    }
  ]
}

~ (python2.7)
saws> aws s3api get-bucket-acl --bucket prod-downloads
{
  "Owner": {
    "DisplayName": "donne.martin",
    "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
  },
  "Grants": [
    {
      "Grantee": {
        "DisplayName": "donne.martin",
        "ID": "aaf3d5f15ef9fcc8c452dd7f936c2bcdafc3249b49e65a187a68f20a5426122a"
      },
      "Permission": "FULL_CONTROL"
    }
  ]
}
```



```
~ (python2.7)
saws> aws ec2
accept-vpc-peering-connection
allocate-address
assign-private-ip-addresses
associate-address
associate-dhcp-options
associate-route-table
attach-classic-link-vpc
attach-internet-gateway
attach-network-interface

~ (python2.7)
saws> aws ec2 st
start-instances
stop-instances
```

2.5 Auto-Completion of AWS Resources

In addition to the default commands, subcommands, and options the AWS CLI provides, *SAWS* supports auto-completion of your AWS resources. Currently, bucket names, instance ids, and instance tags are included, with additional support for more resources *under development*.

2.5.1 S3 Buckets

Option for `s3api`:

```
--bucket
```

Sample Usage:

```
aws s3api get-bucket-acl --bucket
```

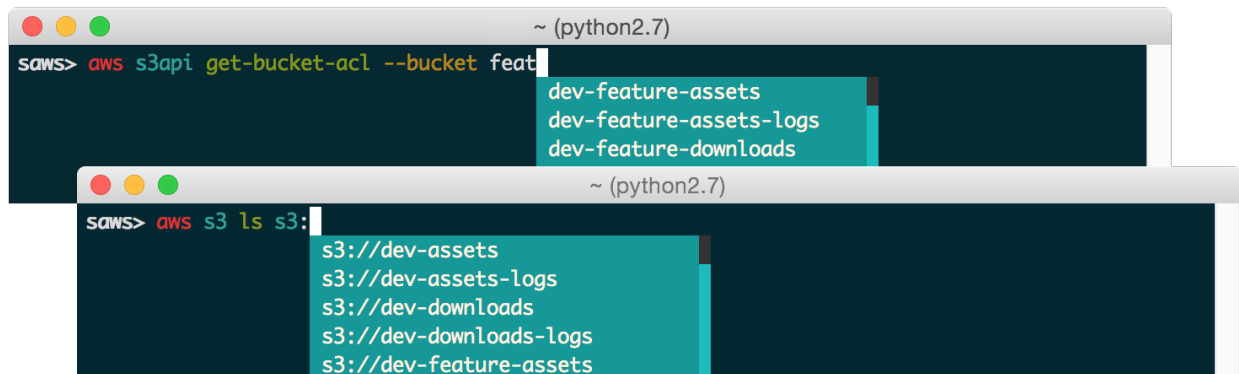
Syntax for `s3`:

```
s3://
```

Sample Usage:

```
aws s3 ls s3://
```

Note: The example below demonstrates the use of *fuzzy resource completion*:



2.5.2 EC2 Instance Ids

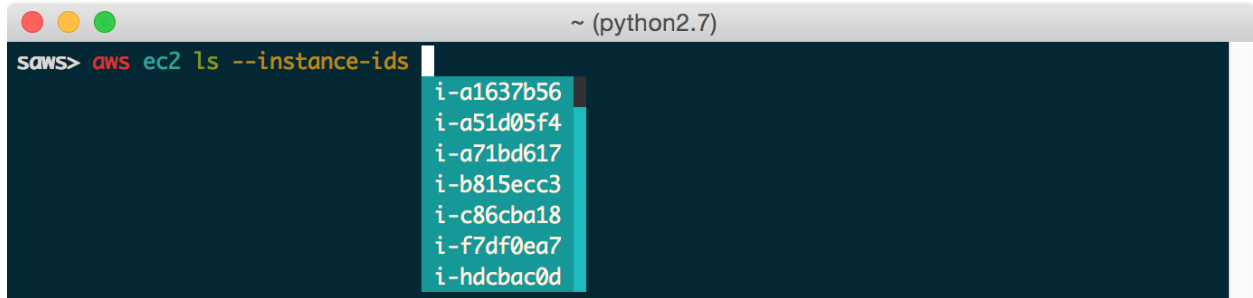
Option for `ec2`:

```
--instance-ids
```

Sample Usage:

```
aws ec2 describe-instances --instance-ids
aws ec2 ls --instance-ids
```

Note: The `ls` command demonstrates the use of *customizable shortcuts*:



```
saws> aws ec2 ls --instance-ids
i-a1637b56
i-a51d05f4
i-a71bd617
i-b815ecc3
i-c86cba18
i-f7df0ea7
i-hdcbac0d
```

2.5.3 EC2 Instance Tags

Option for `ec2`:

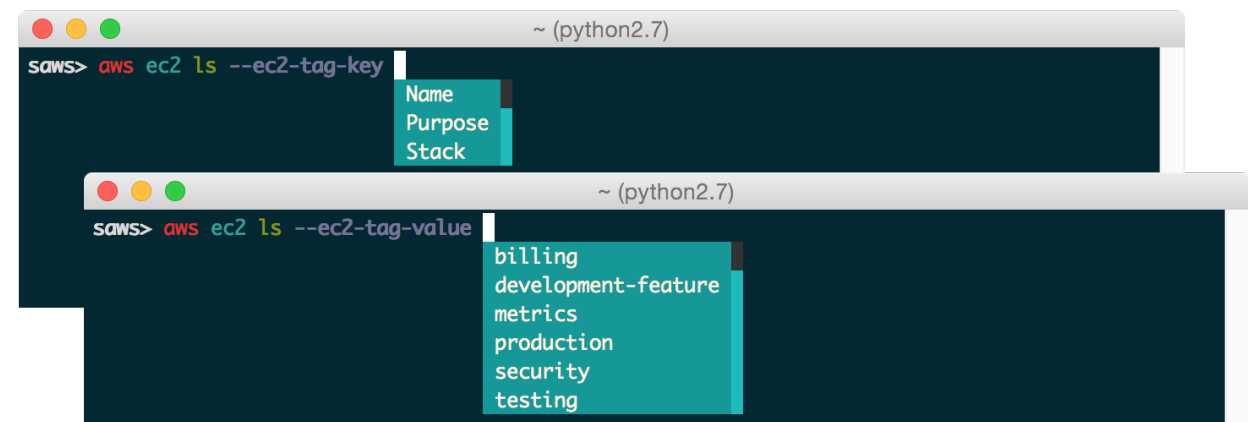
```
--ec2-tag-key
--ec2-tag-value
```

Sample Usage:

```
aws ec2 ls --ec2-tag-key
aws ec2 ls --ec2-tag-value
```

Tags support wildcards with the `*` character.

Note: `ls`, `--ec2-tag-value`, and `--ec2-tag-key` demonstrate the use of *customizable shortcuts*:



```
saws> aws ec2 ls --ec2-tag-key
Name
Purpose
Stack

saws> aws ec2 ls --ec2-tag-value
billing
development-feature
metrics
production
security
testing
```

2.5.4 TODO: Add More Resources

Feel free to *submit an issue or a pull request* if you'd like support for additional resources.

2.6 Customizable Shortcuts

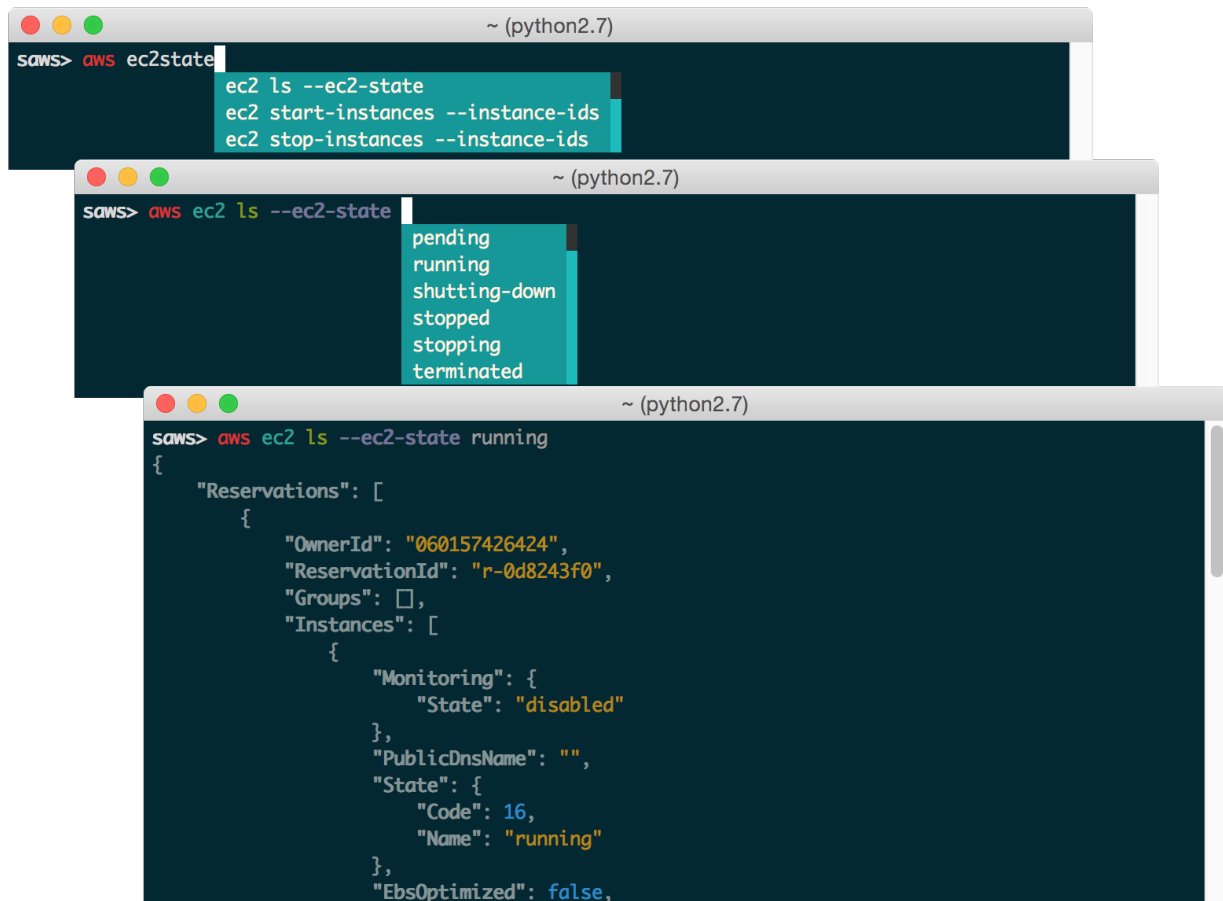
The `~/.saws.shortcuts` file contains shortcuts that you can modify. It comes pre-populated with several *handy shortcuts* out of the box. You can combine shortcuts with *fuzzy completion* for even less keystrokes. Below are a few examples.

List all EC2 instances:

```
aws ec2 ls
```

List all running EC2 instances:

```
aws ec2 ls --ec2-state running # fuzzy shortcut: aws ecstate
```



List all EC2 instances with a matching tag (supports wildcards *):

```
aws ec2 ls --ec2-tag-key      # fuzzy shortcut: aws ectagk
aws ec2 ls --ec2-tag-value    # fuzzy shortcut: aws ectagv
```

List EC2 instance with matching id:

```
aws ec2 ls --instance-ids     # fuzzy shortcut: aws eclsi
```

List all DynamoDB tables:

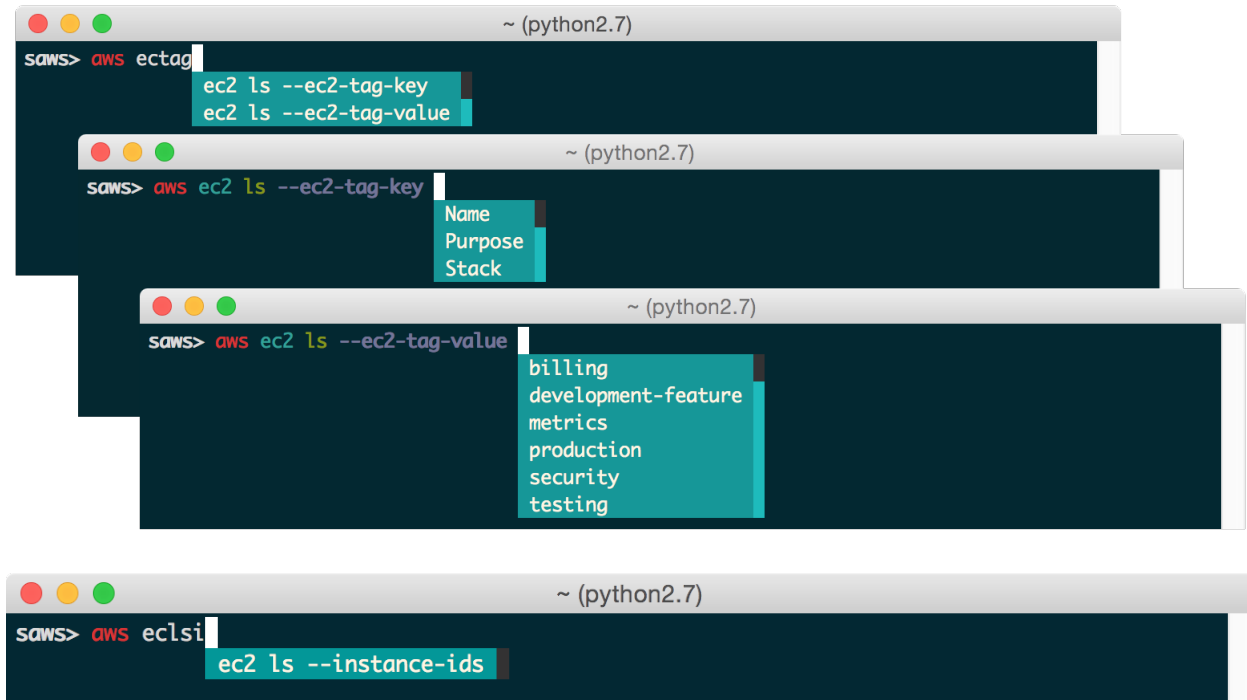
```
aws dynamodb ls # fuzzy shortcut: aws dls
```

List all EMR clusters:

```
aws emr ls # fuzzy shortcut: aws emls
```

Add/remove/modify shortcuts in your `~/.saws.shortcuts` file to suit your needs.

Feel free to submit:



- An issue to request additional shortcuts
- A pull request if you'd like to share your shortcuts (see *contributing guidelines*)

2.6.1 Fuzzy Resource and Shortcut Completion

To toggle fuzzy completion of AWS resources and shortcuts, use F3 key.

Sample fuzzy shortcuts to start and stop EC2 instances:

```
aws ecstop
aws ecstart
```

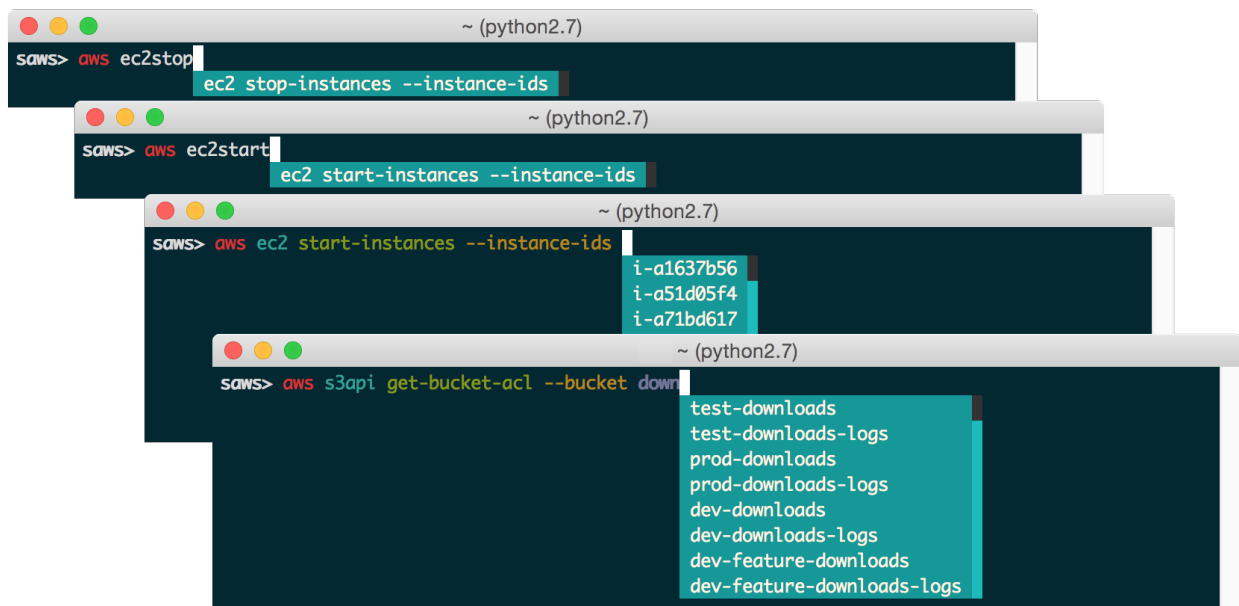
Note: Fuzzy completion currently only works with AWS *resources* and *shortcuts*.

2.7 Fish-Style Auto-Suggestions

SAWS supports Fish-style auto-suggestions. Use the `right arrow` key to complete a suggestion.

2.8 Executing Shell Commands

SAWS allows you to execute shell commands from the `saws>` prompt.

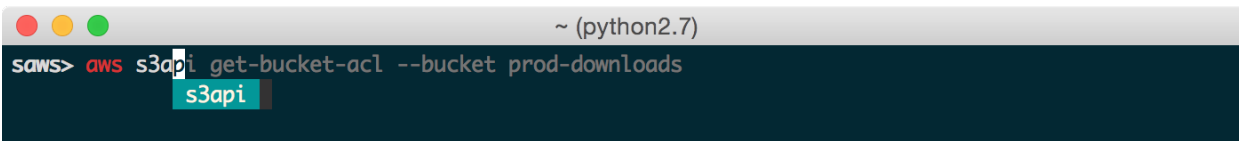


```
~ (python2.7)
saws> aws ec2stop
ec2 stop-instances --instance-ids

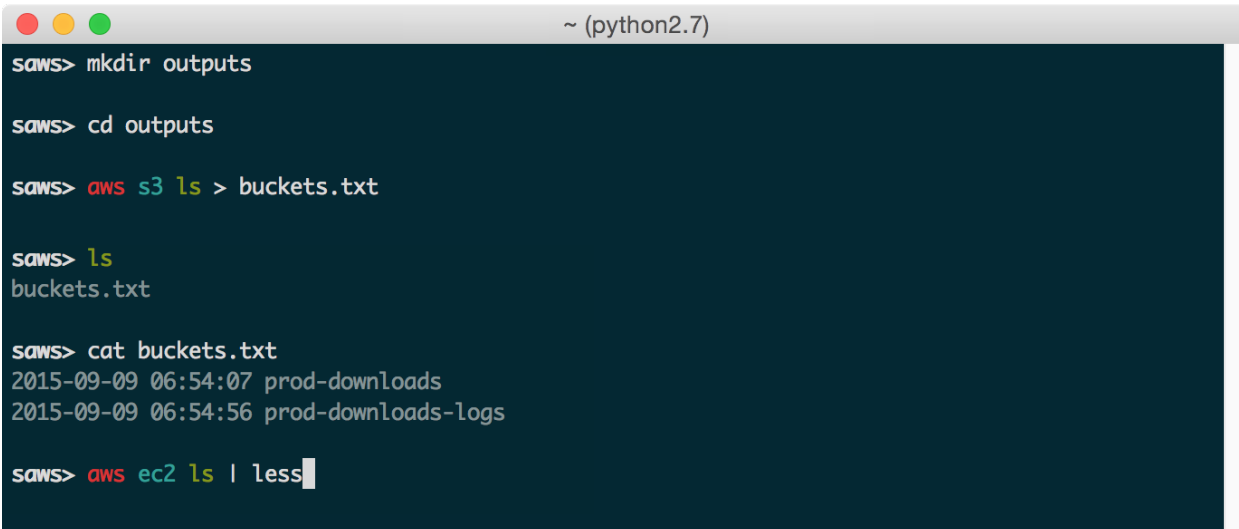
~ (python2.7)
saws> aws ec2start
ec2 start-instances --instance-ids

~ (python2.7)
saws> aws ec2 start-instances --instance-ids
i-a1637b56
i-a51d05f4
i-a71bd617

~ (python2.7)
saws> aws s3api get-bucket-acl --bucket down
test-downloads
test-downloads-logs
prod-downloads
prod-downloads-logs
dev-downloads
dev-downloads-logs
dev-feature-downloads
dev-feature-downloads-logs
```



```
~ (python2.7)
saws> aws s3api get-bucket-acl --bucket prod-downloads
s3api
```



```
~ (python2.7)
saws> mkdir outputs

saws> cd outputs

saws> aws s3 ls > buckets.txt

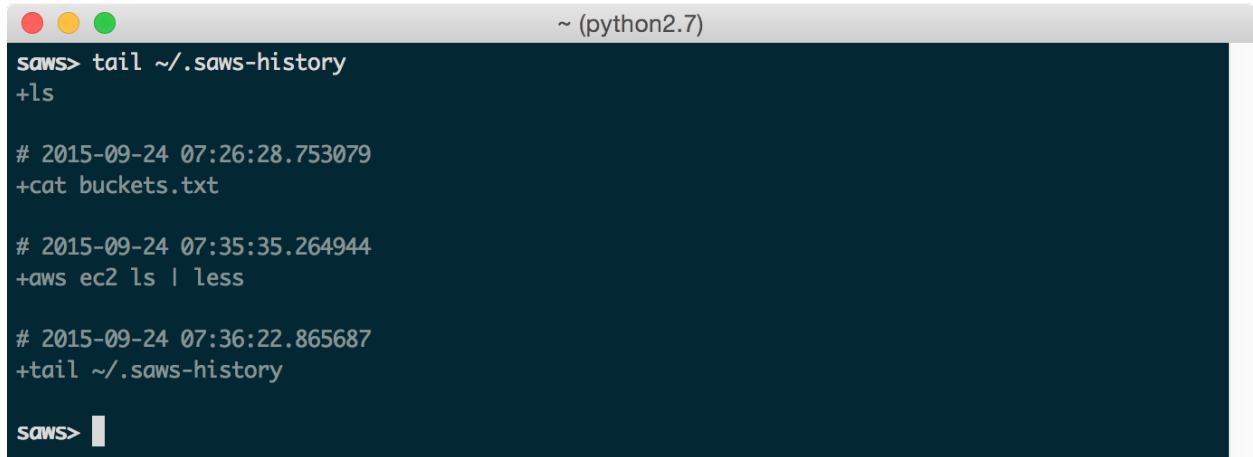
saws> ls
buckets.txt

saws> cat buckets.txt
2015-09-09 06:54:07 prod-downloads
2015-09-09 06:54:56 prod-downloads-logs

saws> aws ec2 ls | less
```


2.9 Command History

SAWS keeps track of commands you enter and stores them in `~/.saws-history`. Use the up and down arrow keys to cycle through the command history.



```

~ (python2.7)
saws> tail ~/.saws-history
+ls

# 2015-09-24 07:26:28.753079
+cat buckets.txt

# 2015-09-24 07:35:35.264944
+aws ec2 ls | less

# 2015-09-24 07:36:22.865687
+tail ~/.saws-history

saws>

```

2.10 Contextual Help

SAWS supports contextual command line help and contextual web docs.

2.10.1 Contextual Command Line Help

The `help` command is powered by the AWS CLI and outputs help within the command line.

Usage:

```
aws <command> <subcommand> help
```

2.10.2 Contextual Web Docs

Sometimes you're not quite sure what specific command/subcommand/option combination you need to use. In such cases, browsing through several combinations with the `help` command line is cumbersome versus browsing the online AWS CLI docs through a web browser.

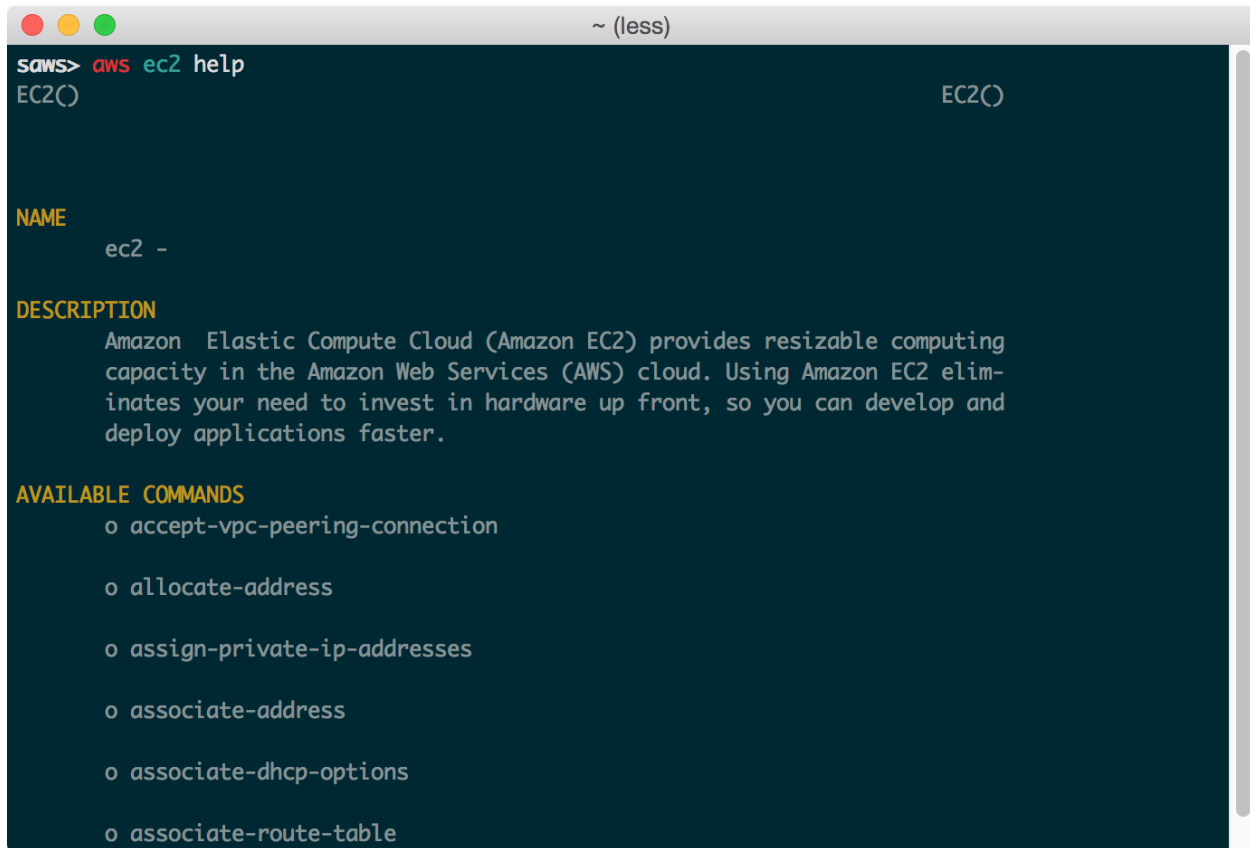
SAWS supports contextual web docs with the `docs` command or the `F9` key. SAWS will display the web docs specific to the currently entered command and subcommand.

Usage:

```
aws <command> <subcommand> docs
```

2.11 Toolbar Options

SAWS supports a number of toolbar options:



```
saws> aws ec2 help
EC2()

NAME
    ec2 -

DESCRIPTION
    Amazon Elastic Compute Cloud (Amazon EC2) provides resizable computing
    capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 elim-
    inates your need to invest in hardware up front, so you can develop and
    deploy applications faster.

AVAILABLE COMMANDS
    o accept-vpc-peering-connection
    o allocate-address
    o assign-private-ip-addresses
    o associate-address
    o associate-dhcp-options
    o associate-route-table
```

- F2 toggles *output syntax highlighting*
- F3 toggles *fuzzy completion of AWS resources and shortcuts*
- F4 toggles *completion of shortcuts*
- F5 refreshes *resources for auto-completion*
- F9 displays the *contextual web docs*
- F10 or control d exits SAWS

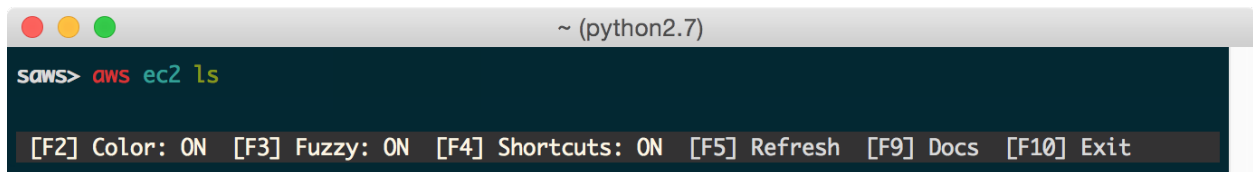
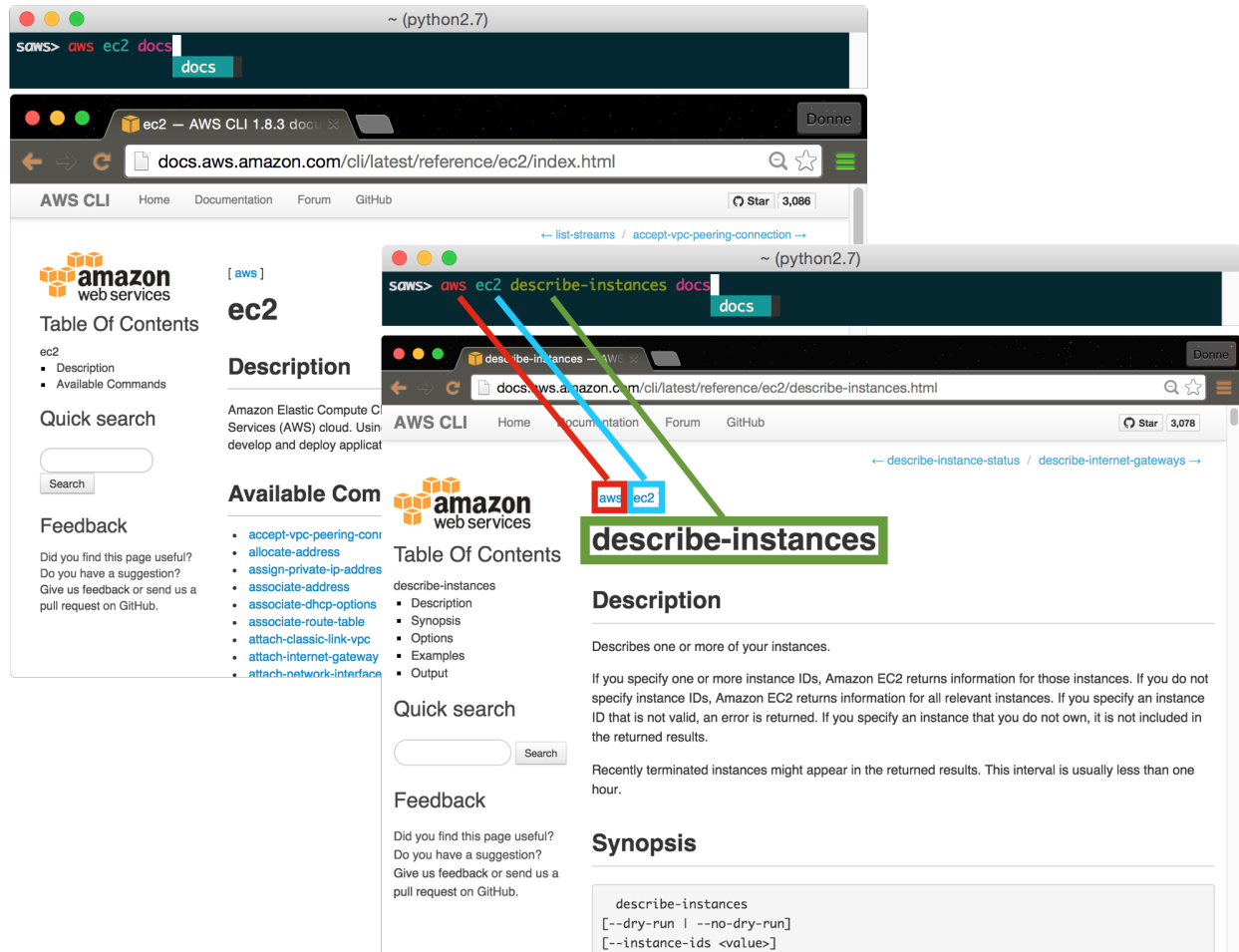
2.12 Windows Support

SAWS has been tested on Windows 7 and Windows 10.

On Windows, the `.sawsrc` file can be found in `%userprofile%`. For example:

```
C:\Users\dmartin\.sawsrc
```

Although you can use the standard Windows command prompt, you'll probably have a better experience with either `cmdex` or `conemu`.



2.13 Installation

2.13.1 Pip Installation

SAWS is hosted on [PyPI](#). The following command will install SAWS along with dependencies such as the [AWS CLI](#):

```
$ pip install saws
```

You can also install the latest SAWS from GitHub source which can contain changes not yet pushed to PyPI:

```
$ pip install git+https://github.com/donnemartin/saws.git
```

If you are not installing in a [virtualenv](#), run with `sudo`:

```
$ sudo pip install saws
```

Once installed, start SAWS:

```
$ saws
```

2.13.2 Virtual Environment and Docker Installation

It is recommended that you install Python packages in a [virtualenv](#) to avoid potential [issues with dependencies or permissions](#).

To view SAWS [virtualenv](#) and [Docker](#) installation instructions, click [here](#).

2.13.3 Mac OS X 10.11 El Capitan Users

There is a known issue with Apple and its included python package dependencies (more info at <https://github.com/pypa/pip/issues/3165>). We are investigating ways to fix this issue but in the meantime, to install saws, you can run:

```
$ sudo pip install saws --upgrade --ignore-installed six
```

2.13.4 AWS Credentials and Named Profiles

[Configure your credentials](#) with the AWS CLI:

```
$ aws configure
```

If you'd like to use a specific named profile with SAWS, run the following commands on OS X, Linux, or Unix:

```
$ export AWS_DEFAULT_PROFILE=user1  
$ saws
```

Or as a one-liner:

```
$ AWS_DEFAULT_PROFILE=user1 saws
```

Windows users can run the following commands:

```
> set AWS_DEFAULT_PROFILE=user1
> saws
```

Command line options for starting SAWS with a specific profile are [under development](#). For more details on how to install and configure the AWS CLI, refer to the following [documentation](#).

2.13.5 Supported Python Versions

- Python 2.6
- Python 2.7
- Python 3.3
- Python 3.4
- Pypy

Light testing indicates that SAWS also seems to be compatible with Python 3.5.

Pypy3 is not supported due to [lack of support](#) from [boto](#).

2.13.6 Supported Platforms

- Mac OS X
 - Tested on OS X 10.10
- Linux, Unix
 - Tested on Ubuntu 14.04 LTS
- Windows
 - Tested on Windows 7 and 10

2.14 Developer Installation

If you're interested in contributing to SAWS, run the following commands:

```
$ git clone https://github.com/donnemartin/saws.git
$ pip install -e .
$ pip install -r requirements-dev.txt
$ saws
```

2.14.1 Continuous Integration

Continuous integration details are available on [Travis CI](#).

2.14.2 Dependencies Management

Dependencies management details are available on [Gemnasium](#).

2.14.3 Unit Tests and Code Coverage

Run unit tests in your active Python environment:

```
$ python tests/run_tests.py
```

Run unit tests with `tox` on multiple Python environments:

```
$ tox
```

2.14.4 Documentation

Source code documentation is available on [Readthedocs.org](#).

Run the following to build the docs:

```
$ scripts/update_docs.sh
```

2.15 Contributing

Contributions are welcome!

Review the [Contributing Guidelines](#) for details on how to:

- Submit issues
- Submit pull requests

2.16 Credits

- [AWS CLI](#) by [AWS](#) for powering SAWS under the hood
- [Python Prompt Toolkit](#) by [jonathanslenders](#) for simplifying the creation of SAWS
- [Wharfee](#) by [j-bennet](#) for inspiring the creation of SAWS and for some handy utility functions

2.17 Contact Info

Feel free to contact me to discuss any issues, questions, or comments.

- Email: donne.martin@gmail.com
- Twitter: [donne_martin](#)
- GitHub: [donnemartin](#)

- LinkedIn: [donnemartin](#)
- Website: [donnemartin.com](#)

2.18 License

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