



## IRC Library for Python 3

<https://github.com/nutjob-laboratories/erkle>

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# Summary

*Erkle* is a low level, event-driven IRC library for Python 3, designed for both quick and dirty [IRC bots](#) or for full blown [IRC clients](#).

## Philosophy

*Erkle* was designed with the following in mind:

- **Little or no boilerplate code.** To write a IRC bot or client, the programmer should only have to write the functionality he or she wants to employ.
- **Modular code.** Most IRC bots or clients will require some common functionality. The programmer shouldn't have to [reinvent the wheel](#) every time they create a new bot or client. Code should be able to be isolated into [modules](#) for repeated use.
- **Little or no software requirements.** The library should use the Python standard library over third party libraries whenever possible.
- **Whenever possible, the library should mirror the protocol.** Having an understanding of how the IRC protocol works should give an understanding of how the library works.
- **General purpose.** The library should be able to be used for IRC bots, IRC clients, or any other IRC-based purpose, with no preference for any one specific function.

## Low Level

To use *Erkle*, understanding IRC and the IRC protocol is a necessity. *Erkle* is designed to be low level, meaning its interface is influenced by the protocol itself. Since there's no syntactic sugar to hide the difficult or complex parts of the protocol, *Erkle* code should be easy to understand if you understand the underlying protocol.

The IRC protocol is defined in a series of RFC documents:

- [RFC 1459](#)
- [RFC 2812](#)

## Why not use [Twisted](#) or [irclib](#)?

I wanted an IRC library with as few requirements as possible, and didn't require subclassing. I also wanted a client that was small enough to be bundled with an application, rather than requiring a user to install it through **pip** or some other package manager. Last, I wanted a library that wasn't focused on writing IRC bots or writing IRC clients; I wanted a library that would work for both. Since I couldn't find this library, I decided to write *Erkle*.

# Requirements

*Erkle* uses, for the most part, only modules in the Python standard library. To use [SSL/TLS](#) to connect to IRC servers, however, the [pyOpenSSL](#) library must be installed. To install this library via the Python package installer, [pip](#), execute this command:

```
pip install pyOpenSSL
```

## Python libraries

*Erkle* uses the following modules from the standard library:

- `sys`
- `socket`
- `collections`
- `string`
- `threading`
- `ssl` (only if it is available)

# Erkle Object

*Erkle* is an object that creates and manages an IRC connection. *Erkle()* takes a single argument (see below) on creation, a *dict* that configures the IRC client.

Argument	Type	Description
<b>config</b>	<i>dict</i>	<p>Sets the user information the client will use. The dictionary has four mandatory keys, and five optional ones:</p> <ul style="list-style-type: none"><li>• <b>nickname</b> (string) – Sets the nickname the client will use. The key can be shortened to "nick". Mandatory.</li><li>• <b>username</b> (string) – Sets the username the client will use. The key can be shortened to "user". Mandatory.</li><li>• <b>realname</b> (string) – Sets the real name the client will use. The key can be shortened to "real". Mandatory.</li><li>• <b>alternate</b> (string) – Sets the nickname the client will use if the initial nickname is already taken. The key can be shortened to "alt". Optional; if this key is missing, the client will use the client's nickname with an underscore appended.</li><li>• <b>server</b> (string) – Sets the host name or IP address of the IRC server the client will connect to. Mandatory.</li><li>• <b>port</b> (integer) – Sets the server port the client will connect to. Optional; if this key is missing, port 6667 is used.</li><li>• <b>password</b> (string) – Sets the password to be used to connect to the IRC server. Optional.</li><li>• <b>ssl</b> (boolean) – Sets whether SSL/TLS is used to connect to the server. Optional; if this key is missing or is set to <i>False</i>, the client will <i>not</i> use SSL/TLS to connect to the server.</li><li>• <b>encoding</b> (string) – Sets what string encoding the server uses. Optional; if this key is missing, UTF-8 is used as a default.</li></ul>

## Methods (pre-connection)

Once the *Erkle* object is created, use the `connect()` or `spawn()` methods to cause the object to connect to the IRC server.

Method	Arguments	Description
<code>connect</code>	<i>None.</i>	Connects to the IRC server.
<code>spawn</code>	<i>None.</i>	Spawns a new thread, and connects to IRC using that thread. A reference to the created thread is stored in the <i>Erkle</i> object, which can be retrieved with the <code>thread()</code> method.
<code>disable</code>	<ul style="list-style-type: none"><li>• <b>tag</b> (string)</li><li>• ...</li></ul>	Prevents any hooked functions tagged with <b>tag</b> from executing. Any number of tags can be enabled, as long as they are passed as individual arguments. See <i>Tags</i> , page 8. This method can be called while the client is connected.
<code>enable</code>	<ul style="list-style-type: none"><li>• <b>tag</b> (string)</li><li>• ...</li></ul>	Removes <b>tag</b> from the list of disabled tags; hooked functions with this tag will be executed as normal. Any number of tags can be enabled, as long as they are passed as individual arguments. See <i>Tags</i> , page 8. This method can be called while the client is connected.
<code>tag</code>	<ul style="list-style-type: none"><li>• <b>tag</b> (string)</li><li>• ...</li></ul>	Adds a <b>tag</b> to the <i>Erkle</i> object. Only hooked functions with that tag will be called when an event is triggered. See <i>Tags</i> , page 8. This method can be called while the client is connected. This method can be called while the client is connected.
<code>untag</code>	<ul style="list-style-type: none"><li>• <b>tag</b> (string)</li><li>• ...</li></ul>	Removes a <b>tag</b> from the <i>Erkle</i> object. See <i>Tags</i> , page 8. This method can be called while the client is connected. This method can be called while the client is connected.

## Methods (post-connection)

The following methods can only be used after the *Erkle* object's `connect()` or `spawn()` method has been called.

Method	Arguments	Description
<code>thread</code>	<i>None.</i>	If <i>Erkle</i> 's connection was started with the <code>spawn()</code> method, the object's <i>Thread</i> object (see <a href="#">the Python documentation for the Threading library</a> ) will be returned; otherwise, <b>None</b> is returned.
<code>kill</code>	<i>None.</i>	If <i>Erkle</i> 's connection was started with the <code>spawn()</code> method, this will terminate the object's thread.
<code>send</code>	<ul style="list-style-type: none"><li>• <b>data</b> (string)</li></ul>	Sends a "raw" message to the IRC server; the message will not be processed in any way before being sent.
<code>privmsg</code>	<ul style="list-style-type: none"><li>• <b>target</b> (string)</li><li>• <b>message</b> (string)</li></ul>	Sends a chat message to a channel or user. This can also be called via an alias: <code>msg()</code>
<code>action</code>	<ul style="list-style-type: none"><li>• <b>target</b> (string)</li><li>• <b>message</b> (string)</li></ul>	Sends a CTCP action message to a channel or user. This can also be called via an alias: <code>me()</code>
<code>notice</code>	<ul style="list-style-type: none"><li>• <b>target</b> (string)</li><li>• <b>message</b> (string)</li></ul>	Sends a notice to a user or channel.
<code>join</code>	<ul style="list-style-type: none"><li>• <b>channel</b> (string)</li><li>• <b>key</b> (string)</li></ul>	Joins a channel.

<b>part</b>	<ul style="list-style-type: none"> <li>• <b>channel</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Leaves a channel.
<b>kick</b>	<ul style="list-style-type: none"> <li>• <b>target</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Kicks a user from a channel (the client must be a channel operator in the channel).
<b>ban</b>	<ul style="list-style-type: none"> <li>• <b>channel</b> (string)</li> <li>• <b>mask</b> (string)</li> </ul>	Bans any user who's nick/host/username matches a mask from a channel (the client must be a channel operator in the channel). See <a href="#">RFC 1459</a> for more information on masks.
<b>unban</b>	<ul style="list-style-type: none"> <li>• <b>channel</b> (string)</li> <li>• <b>mask</b> (string)</li> </ul>	Removes a channel ban from a channel (the client must be a channel operator in the channel).
<b>lock</b>	<ul style="list-style-type: none"> <li>• <b>channel</b> (string)</li> <li>• <b>key</b> (string)</li> </ul>	Sets a channel key on a channel (the client must be a channel operator in the channel).
<b>unlock</b>	<ul style="list-style-type: none"> <li>• <b>channel</b> (string)</li> <li>• <b>key</b> (string)</li> </ul>	Removes a channel key from a channel (the client must be a channel operator in the channel).
<b>mode</b>	<ul style="list-style-type: none"> <li>• <b>target</b> (string)</li> <li>• <b>mode</b> (string)</li> </ul>	Sets a mode on a channel or user. See <a href="#">RFC 1459</a> for more information on modes.
<b>invite</b>	<ul style="list-style-type: none"> <li>• <b>user</b> (string)</li> <li>• <b>channel</b> (string)</li> </ul>	Sends a channel invitation to a user.
<b>away</b>	<ul style="list-style-type: none"> <li>• <b>message</b> (string)</li> </ul>	Sets the client to "away" on the IRC server.
<b>back</b>	<i>None.</i>	Sets the client to "back" on the IRC server.
<b>whois</b>	<ul style="list-style-type: none"> <li>• <b>user</b> (string)</li> </ul>	Requests WHOIS data on a user from the server. When the WHOIS data is received, the <b>whois</b> event will be triggered.
<b>list</b>	<i>None.</i>	Requests a list of channels from the server. When the channel list is received, the <b>list</b> event will be triggered.
<b>quit</b>	<ul style="list-style-type: none"> <li>• <b>reason</b> (string)</li> </ul>	Disconnects from the IRC server. If <i>Erkle</i> 's connection was started with the <b>spawn()</b> method, this will terminate the object's thread.

## Attributes

An *Erkle* object also has a number of attributes that store information about the server and client. Not all of these values will be available immediately; the values are populated as the server sends the appropriate data to the client. Most of these values should be available by the time the **welcome** event is triggered.

Attribute	Type	Description
<b>nickname</b>	<i>string</i>	The client's nickname.
<b>username</b>	<i>string</i>	The client's username.
<b>realname</b>	<i>string</i>	The client's realname.
<b>server</b>	<i>string</i>	The server's address.
<b>port</b>	<i>integer</i>	The server's port.
<b>password</b>	<i>string</i>	The password used to connect to the server, if there is one.
<b>usessl</b>	<i>boolean</i>	Whether SSL is being used for this connection or not.
<b>hostname</b>	<i>string</i>	The server's hostname.

<b>software</b>	<i>string</i>	The server's software.
<b>options</b>	<i>list</i>	A list of the options the server supports.
<b>network</b>	<i>string</i>	The network the server belongs to.
<b>commands</b>	<i>list</i>	A list of commands supported by the server.
<b>maxchannels</b>	<i>integer</i>	The maximum number of channels a client can join on the server.
<b>maxnicklen</b>	<i>integer</i>	The maximum number of characters allowed for a nickname on the server.
<b>channellen</b>	<i>integer</i>	The maximum number of characters allowed for a channel name on the server.
<b>topiclen</b>	<i>integer</i>	The maximum number of characters allowed for a channel topic on the server.
<b>kicklen</b>	<i>integer</i>	The maximum number of characters allowed for a kick message on the server.
<b>awaylen</b>	<i>integer</i>	The maximum number of characters allowed for an away message on the server.
<b>maxtargets</b>	<i>integer</i>	The maximum number of targets a message can be sent to on a server.
<b>modes</b>	<i>integer</i>	The maximum number of channel modes that can be set on the server.
<b>chantypes</b>	<i>list</i>	What channel types the server uses.
<b>prefix</b>	<i>list of lists</i>	What channel status prefixes the server uses; each entry contains a list with the first value being the status type, and the second value being the prefix used for that type.
<b>chanmodes</b>	<i>list</i>	What channel modes the server uses.
<b>casemapping</b>	<i>string</i>	The casemapping the server uses.
<b>spoofed</b>	<i>string</i>	If the client's host is spoofed by the server, then the spoofed host name will be stored here.
<b>users</b>	<i>dictionary of lists</i>	An in-memory database of channel users. The dictionary uses channel names for keys, and each dictionary entry is a list of the named channel's users.
<b>topic</b>	<i>dictionary</i>	An in-memory database of channel topics. The dictionary uses channel names for keys, and each dictionary entry is a string containing the named channel's topic (or <i>None</i> if the topic is blank or unknown).
<b>channels</b>	<i>list of lists</i>	An in-memory database of all the channels on a server. This attribute starts empty by default; it will only be populated if the <i>Erkle list()</i> method is called. Each entry in the list a list that contains, in this order: <ul style="list-style-type: none"> <li>0. channel name (string)</li> <li>1. number of users in the channel (integer)</li> <li>2. channel topic (string) (<i>None</i> if there's no topic)</li> </ul>

# The "irc" decorator, tags, and events

Included with the *Erkle* object is the *irc* decorator. The *irc* decorator is used to [decorate functions](#) that should be executed when specific events occur; this is called "hooking" an event. *irc* exposes one method: **event**. To hook an event, pass the name of the event (as a string) as the only argument to the **event** method. For example, to hook an event named "connect", the decorator required would look like:

```
@irc.event("connect")
```

Events can be hooked to an unlimited number of functions. Function hooks will be executed in the order in which they were hooked.

## Tags

Hooked functions can also have **tags**, which are any number of strings attached to the hooked function's event. To add tags to a hooked function, pass them as additional arguments (after the event) to the function's decorator. For example, to add the tags "myfunc" and "chat" to a function hooked to the "public" event, you would use:

```
@irc.event("public", "myfunc", "chat")
```

Tags are used with *Erkle*'s **disable()** and **enable()** methods (see *Methods on page 5*).

Hooked functions can have any number of tags, and tags do not have to be unique. Hooked functions that do *not* have any tags cannot be disabled with the **disable()** method.

The *Erkle* object can be tagged as well by using *Erkle*'s **tag()** and **untag()** methods. When a tag is added to the *Erkle* object, only hooked functions with that tag will be called when an event is triggered. *Erkle* objects can have multiple tags. By default, *Erkle* objects have no tags and will call every hooked function triggered by an event.

## Events

There are 23 IRC events that can be hooked. The hooked function can take a number of different arguments, depending on the event. The first (and sometimes only) argument passed to every hooked function is **connection**, which is the *Erkle* object running the IRC connection.

Event	Arguments	Description
<b>connect</b>	• <b>Erkle object</b>	Triggered when the <i>Erkle</i> object connects to IRC.
<b>motd</b>	• <b>Erkle object</b> • <b>message</b> (string)	Triggered when the server's message of the day (MOTD) is received.
<b>welcome</b>	• <b>Erkle object</b>	Triggered when registration with the IRC server is complete.
<b>nick-taken</b>	• <b>Erkle object</b> • <b>nickname</b> (string)	Triggered when <i>Erkle</i> 's nickname is already taken during registration; <b>nickname</b> contains the new nickname.
<b>ping</b>	• <b>Erkle object</b>	Triggered when the IRC server sends <i>Erkle</i> a PING command.



<b>join</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> </ul>	Triggered whenever a user joins a channel <i>Erkle</i> is in. <b>nickname</b> contains the user's nickname, <b>host</b> contains the user's host, and <b>channel</b> contains the name of the channel joined. This event will trigger when the <i>Erkle</i> object joins a channel as well.
<b>part</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered whenever a user leaves a channel <i>Erkle</i> is in. <b>nickname</b> contains the nickname of the user, <b>host</b> contains the user's host, <b>channel</b> contains the name of the channel, and <b>reason</b> contains the reason why the user quit. If no reason has been provided, <b>reason</b> will be set to <b>None</b> .
<b>quit</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered when a user quits the IRC server. <b>nickname</b> contains the user's nickname, <b>host</b> contains the user's host, and <b>reason</b> contains the reason why the user quit. If no reason has been provided, <b>reason</b> will be set to <b>None</b> .
<b>nick</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>new_nickname</b> (string)</li> </ul>	Triggered when a user changes their nickname. <b>nickname</b> contains the user's original nickname, <b>host</b> contains the user's host, and <b>new_nickname</b> contains the user's new nickname.
<b>names</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>channel</b> (string)</li> <li>• <b>users</b> (list)</li> </ul>	<p>Triggered when <i>Erkle</i> generates a list of users in a specific channel. This list will be regenerated every time a user changes their nick, quits IRC, or leaves a channel. <b>channel</b> contains the name of the channel, and <b>users</b> contains a list of users in that channel. If the server is configured for it, each user entry will contain the user's nickname and host, in the form <b>nickname!username@hostname</b>; otherwise, the entry will only contain the user's nickname. Channel status symbols ('@' for channel operators, '+' for voiced users, etc.) are prefixed to each user's nickname.</p> <p>Generated user lists are stored in the <i>Erkle</i> object, accessible in the <b>users</b> attribute.</p>
<b>public</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>message</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a public message. <b>nickname</b> contains the sender's nickname, <b>host</b> contains the sender's host, <b>channel</b> contains the name of the channel the message was sent to, and <b>message</b> contains the message contents.
<b>private</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>message</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a private message. <b>nickname</b> contains the sender's nickname, <b>host</b> contains the sender's host, and <b>message</b> contains the message contents.
<b>notice</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>sender</b> (string)</li> <li>• <b>message</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a notice message. <b>sender</b> contains the nickname of the sender, and <b>message</b> contains the message contents.
<b>action</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>target</b> (string)</li> <li>• <b>message</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a CTCP action message. <b>nickname</b> contains the sender's nickname, <b>host</b> contains the sender's host, <b>target</b> contains the name of the channel or username the message was sent to, and <b>message</b> contains the message contents.
<b>away</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives an "away" notification.
<b>back</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> </ul>	Triggered when <i>Erkle</i> unsets itself as "away".

<b>topic</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>topic</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a channel topic update. <b>nickname</b> contains the topic setter's nickname, <b>host</b> contains the setter's host, <b>channel</b> contains channel name, and <b>topic</b> contains the channel's topic. If the topic is set to an empty string, <b>topic</b> is set to <i>None</i> .
<b>mode</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>target</b> (string)</li> <li>• <b>mode</b> (string)</li> </ul>	Triggered when <i>Erkle</i> receives a channel or user mode change notification. <b>nickname</b> contains the mode setter's nickname, <b>host</b> contains the setter's host, <b>target</b> contains the user or channel the mode applies to, and <b>mode</b> contains the modes (and mode parameters) being set. If the mode is being set by the server, <b>nickname</b> and <b>host</b> will be set to the server's hostname.
<b>kick</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>target</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> receives a kick notification. <b>nickname</b> contains the kicker's nickname, <b>host</b> contains the kicker's host, <b>channel</b> contains the channel being kicked from, <b>target</b> contains the nickname of the user being kicked, and <b>reason</b> contains the reason given for the kick. If no reason is provided, <b>reason</b> will be set to <i>None</i> .
<b>kicked</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> is kicked from a channel. <b>nickname</b> contains the kicker's nickname, <b>host</b> contains the kicker's host, <b>channel</b> contains the channel being kicked from, and <b>reason</b> contains the reason given for the kick. If no reason is provided, <b>reason</b> will be set to <i>None</i> .
<b>invite</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>channel</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> receives a channel invitation. <b>nickname</b> contains the inviter's nickname, <b>host</b> contains the inviter's host, and <b>channel</b> contains the channel <i>Erkle</i> is being invited to.
<b>whois</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>nickname</b> (string)</li> <li>• <b>username</b> (string)</li> <li>• <b>host</b> (string)</li> <li>• <b>realname</b> (string)</li> <li>• <b>server</b> (string)</li> <li>• <b>idle</b> (integer)</li> <li>• <b>signon</b> (string)</li> <li>• <b>channels</b> (list)</li> <li>• <b>privileges</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> receives WHOIS data from the server. <b>nickname</b> contains the user's nickname, <b>username</b> contains the user's username, <b>host</b> contains the user's host, <b>realname</b> contains the user's realname, <b>server</b> contains the server the user is connected to, <b>idle</b> contains the number of seconds the user has been idle, <b>signon</b> contains the timestamp of when the user signed on to the server, <b>channels</b> contains a list of channels (with status) the user is in, and <b>privileges</b> contains any special privileges the user has (or <i>None</i> if the user has none).
<b>list</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>channels</b> (list of lists)</li> </ul>	Triggered whenever <i>Erkle</i> receives a channel list from the server. Each entry in <b>channels</b> is a list that contains, in this order: <ol style="list-style-type: none"> <li>0. channel name (string)</li> <li>1. number of users in the channel (integer)</li> <li>2. channel topic (string) (<i>None</i> if there's no topic)</li> </ol>
<b>line</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>line</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> receives a line of data from the server.
<b>error</b>	<ul style="list-style-type: none"> <li>• <b>Erkle object</b></li> <li>• <b>code</b> (string)</li> <li>• <b>subject</b> (string)</li> <li>• <b>reason</b> (string)</li> </ul>	Triggered whenever <i>Erkle</i> receives an error message from the server. <b>code</b> is the error's code (from the IRC RFC documents), <b>subject</b> is the "subject" of the error (if there is no "target", <b>subject</b> will be set to <i>None</i> ), and <b>reason</b> contains a short description of the error.

*Erkle*'s `connect()` is a blocking function, so hooked functions should be declared *before* `connect()` is called.

For programs with multiple IRC connections (and, thus, multiple *Erkle* objects), understand that hooked events apply to *every* connection. So, if you hook the "public" event to a function, that function will be called when *every connection triggers a "public" event*. To restrict some hooked functions to a specific *Erkle* object, add a tag to the object with the `tag()` method, and add that tag to any hooked functions you'd like the object to call.

## Event sets

*Erkle* contains a few sets of pre-written event handlers; they reside in the **erkle.events** package. To use an event set, simply import it.

<i>Package</i>	<b>erkle.events.dump</b>
<i>Hooks</i>	<b>action, away, back, connect, join, kick, kicked, mode, motd, names, nick, nick-taken, notice, part, ping, private, public, quit, topic, welcome</b>
<i>Description</i>	Prints event-specific data from every <b>Erkle</b> event to the console.

<i>Package</i>	<b>erkle.events.messages</b>
<i>Hooks</i>	<b>action, notice, private, public</b>
<i>Description</i>	Prints incoming messages to the console.

# Examples

## Greeter Bot

Here's an example bot that connect to an IRC server, join a channel, and greets everyone who joins that channel by name:

```
from erkle import *

CHANNEL = "#erklebot"

config = {
    'nickname': 'greetbot',
    'username': 'greetbot',
    'realname': 'Erkle Greeter Bot',
    'server': 'irc.efnet.org'
}

@irc.event("welcome")
def welcomed(connection):
    connection.join(CHANNEL)

@irc.event("join")
def joined(connection, nickname, host, channel):
    connection.msg("Welcome to "+CHANNEL+", "+nickname+"!")

bot = Erkle(config)
bot.connect()
```

# Auto-Op Bot

This bot will automatically grant channel operator status to any user in a list of nicknames contained in the script. The bot will have to be granted channel operator status by another channel operator, however.

```
from erkle import *

CHANNELS = [ "#erklebot", "#erklesupport", "#pythonfans" ]
OPERATORS = [ "alice", "bob", "carol", "dave" ]

config = {
    'nick': 'greetbot', 'user': 'greetbot', 'real': 'Erkle Greeter Bot',
    'server': 'irc.efnet.org', 'port': 6667
}

@irc.event("welcome")
def welcomed(connection):
    for channel in CHANNELS:
        connection.join(channel)

@irc.event("join")
def joined(connection, nickname, host, channel):
    if nickname in OPERATORS:
        connection.mode(channel, "+o "+nickname)
        connection.privmsg(nickname, "Welcome back, "+nickname)

bot = Erkle(config)
bot.connect()
```

...

# License

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