



## IRC Library for Python 3

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

**Erkle** is an event-driven IRC library for Python 3. Functions can be "hooked" to a specific event by using a function decorator named **hook**.

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# 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
```

```
from erkle import *

@hook.event("welcome")
def welcome(connection):
    connection.join("#erklelib")

@hook.event("join")
def cjoin(connection, nickname, host, channel):
    connection.msg(channel, "Hello world!")
    connection.quit()

bot = Erkle("mybot", "mybot", "Erkle Bot", "irc.efnet.org", 6667)
bot.connect()
```

*Example Erkle usage*

# Erkle

## Object creation

*Erkle* is an object that creates and manages an IRC connection. *Erkle()* can take eight arguments (see below). Once the *Erkle* object is created, use the **connect()** or **spawn()** method to cause the object to connect to the IRC server.

Argument	Type	Description
<b>nickname</b>	<i>string</i>	Sets the nickname the IRC client connection will use.
<b>username</b>	<i>string</i>	Sets the username the IRC client connection will use.
<b>realname</b>	<i>string</i>	Sets the realname the IRC client connection will use.
<b>server</b>	<i>string</i>	Sets the IP/hostname of the IRC server to connect to.
<b>port</b>	<i>integer</i>	Sets the port on the IRC server to connect to. <i>Default: 6667</i>
<b>password</b>	<i>string</i>	Sets the password the IRC client connection will send to the server if required. <i>Default: None</i>
<b>SSL</b>	<i>boolean</i>	Sets whether to use SSL to connect to the IRC server; set to True to use SSL. <i>Default: False</i>
<b>encoding</b>	<i>string</i>	What string encoding type the server connection users. <i>Default: utf-8</i>

## Methods

Method	Arguments	Description
<b>connect</b>	<i>None.</i>	Connects to the IRC server.
<b>spawn</b>	<i>None.</i>	Spawns a new thread, and connects to IRC using that thread.
<b>send</b>	<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.
<b>privmsg</b>	<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: <b>msg()</b>
<b>action</b>	<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: <b>me()</b>
<b>notice</b>	<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.
<b>join</b>	<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>	• <b>message</b> (string)	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>	• <b>user</b> (string)	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>	• <b>reason</b> (string)	Disconnects from the IRC server.

## Attributes

An *Erkle* 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).

## Hook decorator and events

Included with the *Erkle* object is the *hook* decorator. The *hook* decorator is used to decorate<sup>1</sup> functions that should be executed when specific events occur; this is called "hooking" an event. *hook* exposes one method: **event**. To hook an event, pass the name of the event (as a string) as the only argument to **event** method. For example, to hook an event named "connect", the decorator required would look like:

```
@hook.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.

<sup>1</sup> <https://www.python.org/dev/peps/pep-0318/>

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.

## Events

Event	Arguments	Description
<b>connect</b>	<ul style="list-style-type: none"><li>• <b>Erkle object</b></li></ul>	Triggered when the <i>Erkle</i> object connects to IRC.
<b>motd</b>	<ul style="list-style-type: none"><li>• <b>Erkle object</b></li><li>• <b>message</b> (string)</li></ul>	Triggered when the server's message of the day (MOTD) is received.
<b>welcome</b>	<ul style="list-style-type: none"><li>• <b>Erkle object</b></li></ul>	Triggered when registration with the IRC server is complete.
<b>nick-taken</b>	<ul style="list-style-type: none"><li>• <b>Erkle object</b></li><li>• <b>nickname</b> (string)</li></ul>	Triggered when <i>Erkle</i> 's nickname is already taken during registration; <b>nickname</b> contains the new nickname.
<b>ping</b>	<ul style="list-style-type: none"><li>• <b>Erkle object</b></li></ul>	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>	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.
<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.

## 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>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 greet everyone who joins that channel by name:

```
from erkle import *

SERVER = "irc.efnet.org"
PORT = 6667
CHANNEL = "#erklebot"

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

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

bot = Erkle("greetbot", "greetbot", "Erkle Bot", SERVER, PORT)
bot.connect()
```

...

# License

## MIT License

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