

MSPaintr: Bottle Report

Github: <https://github.com/bottlepy/bottle/blob/master/bottle.py>

Documentation: <https://bottlepy.org/docs/dev/bottle-docs.pdf>

1. What does this technology (library/framework/service) accomplish for you?

Usage: <https://github.com/hhuang36/MSPaintr/blob/master/backend/server.py>

Bottle is a web-framework for Python which has a built-in HTTP Server. Bottle helps us serve our frontend (images, HTML and CSS files), specifically through the following functions:

Get

We use the get method to serve the proper file(s) which correspond to a certain path. For example, if the path is “/login”, we make sure to serve the Login.html file for the login page.

Run

Run sets the host and port for our server in the main function and starts a new server instance.

Redirect

For our site, “/” and “/home” both bring users to the news feed. In order to link both paths to the news feed, we use redirect to bring users who go to the “/home” path to the “/” path, so we can serve the Home.html file.

Route

Route helps us redirect users who go to the “/home” path to the “/” path.

Response

Response, as the name implies, helps us send responses to the client. It stores all metadata including headers and the status codes. It also makes it easy to set the content type and character set of the files we are trying to serve (html, css, png, etc.).

static_file

This function retrieves a file and returns the bytes from that file, based on the specified file name and type which are passed in as parameters. Essentially, static_file is how we get the data that we send in the response to the client.

2. How does this technology accomplish what it does?

Get

Link: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L942>

Get calls route, which is explained later. Get takes in a path and request type (e.g. GET and POST). These parameters are then passed in to route.

Run

Link: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L3637>

The run method takes in the host and port number as parameters. If no host or port is specified, the default for them are '127.0.0.1' and '8080', respectively. Run starts a new server instance with the specified parameters, which blocks until the server is terminated (Control-c).

Open

Link: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L2735>

Open finds the file corresponding to the filename specified as a parameter. It first looks up the file using the filename. If there isn't a file found with the filename, it returns a IOError. Otherwise, it will create a new file object from the file found and return it.

Redirect

Link: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L2818>

Redirect calls response to set the location header and either update the status code to a user defined one, or 302 (if the server protocol is HTTP/1.1) else 303. This then will raise an error while the server is generating the response. This error is handled by setting the response equal to the error (which contains the header information) and is then sent on to the user.

Route

Link: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L892>

Route is a decorator which binds code to a specified path which is passed in as a parameter to the function. Upon a request to a path, the corresponding function is called. The return value of that function is then sent to the client. As mentioned previously, it creates a list of plugins needed and then any plugins which are not installed.

Request

Links: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L4351>

<https://github.com/bottlepy/bottle/blob/master/bottle.py#L1931>

Request is set to a new instance of the LocalRequest class. In LocalRequest, a BaseRequest is initialized. As explained in the comments, the BaseRequest class is a “wrapper for WSGI environment dictionaries that adds a lot of convenient access methods and properties.” After this initialization, the global ‘environ’ variable is set to ‘_local_property()’, which is a function that returns the request context/properties as a new property object. Whenever an attribute is added to a request, those attributes are actually added into the ‘environ’ variable. Essentially, this is a way to save and retrieve request-specific data.

Response

Links: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L4355>

<https://github.com/bottlepy/bottle/blob/master/bottle.py#L1941>

Response is used to store all metadata including headers and the status codes that will be included in the response. This allows for dictionary-like storing of headers, as well as updating of the headers.

static_file

Links: <https://github.com/bottlepy/bottle/blob/master/bottle.py#L2844>

static_file takes in the filename, root directory and mimetype as parameters. It first checks if the root directory exists, and if it does, it will check that a file with the specified name exists in that directory. Both checks will throw errors if they do not exist

or if permission is denied to a file. Afterwards, the function checks if the mimetype is set or not. If not, the function will try to guess the mimetype. If the mimetype is set, it sets the content type header of our response to that mimetype. Then, other headers such as content length and date is set. Finally, a new HTTPResponse is returned which contains the bytes of the file requested and headers.

3. What license(s) or terms of service apply to this technology?

The license for Bottle can be found at:

<https://github.com/bottlepy/bottle/blob/master/LICENSE>

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