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1  #!/usr/bin/env python3
2  # See https://docs.python.org/3.2/library/socket.html
3  # for a description of python socket and its parameters
4  import socket
5
6  import os
7  import stat
8  import sys
9  import urllib.parse
10 import datetime
11
12 from threading import Thread
13 from argparse import ArgumentParser
14
15 BUFSIZE = 4096
16 CRLF = '\r\n'
17 METHOD_NOT_ALLOWED = 'HTTP/1.1 405 METHOD NOT ALLOWED{}Allow: GET, HEAD, POST
18 • {}Connection: close{}{}'.format(CRLF, CRLF, CRLF, CRLF)
19 OK = 'HTTP/1.1 200 OK{}{}{}'.format(CRLF, CRLF, CRLF, CRLF)
20 NOT_FOUND = 'HTTP/1.1 404 NOT FOUND{}Connection: close{}{}'.format(CRLF, CRLF,
21 • CRLF, CRLF)
22 FORBBIDDEN = 'HTTP/1.1 403 FORBIDDEN{}Connection: close{}{}'.format(CRLF, CRLF,
23 • CRLF, CRLF)
24 MOVED_PERMANENTLY = 'HTTP/1.1 301 MOVED PERMANENTLY{}Location: https://
25 • www.cs.umn.edu/{}Connection:close{}{}'.format(CRLF, CRLF, CRLF, CRLF)
26
27 def get_contents(fname):
28     with open(fname, 'r') as f:
29         return f.read()
30
31 def check_perms(resource):
32     stmode = os.stat(resource).st_mode
33     return (getattr(stat, 'S_IROTH') & stmode) > 0
34
35 def client_talk(client_sock, client_addr):
36     print('talking to {}'.format(client_addr))
37     data = client_sock.recv(BUFSIZE)
38     while data:
39         filename = data.split()[1]
40         f = open('MyContacts.html')
41         outputdata = f.read()
42         # print(data.decode('utf-8'))
43         client_sock.send(bytes('HTTP/1.0 200 OK\n', 'utf-8'))
44         client_sock.send(bytes('Content-Type: text/html\n', 'utf-8'))
45         client_sock.send(bytes('\n', 'utf-8')) # header and body should b
46         for i in range(0, len(outputdata)):
47             client_sock.send(bytes(outputdata[i], 'utf-8'))
48         client_sock.shutdown(1)
49         client_sock.close()
50         break
51     # data = client_sock.recv(BUFSIZE)

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48
49     # clean up
50     # client_sock.shutdown(1)
51     # client_sock.close()
52     # print('connection closed.')
53
54 class EchoServer:
55     def __init__(self, host, port):
56         print('listening on port {}'.format(port))
57         self.host = host
58         self.port = port
59
60         self.setup_socket()
61
62         self.accept()
63
64         self.sock.shutdown()
65         self.sock.close()
66
67     def setup_socket(self):
68         self.sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
69         self.sock.bind((self.host, self.port))
70         self.sock.listen(128)
71
72     def accept(self):
73         while True:
74             (client, address) = self.sock.accept()
75             th = Thread(target=self.accept_request, args=(client, address))
76             th.start()
77
78     def accept_request(self, client_sock, client_addr):
79         data = client_sock.recv(BUFSIZE)
80         req = data.decode('utf-8')
81         response = self.process_request(req)
82         client_sock.send(bytes(response, "utf-8"))
83         client_sock.shutdown(1)
84         client_sock.close()
85         print('connection closed.')
86
87     def process_request(self, request):
88         linelist = request.strip().split(CRLF)
89         reqline = linelist[0]
90         rlwords = reqline.split() #Method, URL, HTTP
91         if len(rlwords) == 0:
92             return ''
93         if rlwords[0] == 'HEAD':
94             resource = rlwords[1][1:] #Skip beginning /
95             return self.head_request(resource)
96         elif rlwords[0] == 'GET':
97             resource = rlwords[1][1:] #Skip beginning /
98             return self.get_request(resource)
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99         else: #ad elif for get, post
100             return METHOD_NOT_ALLOWED
101
102     def head_request(self, resource):
103         path = os.path.join('.', resource)
104         if not os.path.exists(resource):
105             ret = NOT_FOUND
106         elif not check_perms(resource):
107             ret = FORBIDDEN
108         else:
109             ret = OK
110         return ret
111
112     def get_request(self, resource):
113         path = os.path.join('.', resource)
114         if not os.path.exists(resource):
115             ret = NOT_FOUND
116         elif not check_perms(resource):
117             ret = FORBIDDEN
118         else:
119             if (path.endswith(".jpg")):
120                 filetype = 'image/*'
121             if (path.endswith(".png")):
122                 filetype = 'image/*'
123             elif (path.endswith(".css")):
124                 filetype = 'text/css'
125             else:
126                 filetype = 'text/html'
127             file_contents = get_contents(path)
128             # print(data.decode('utf-8'))
129             ret = 'HTTP/1.0 200 OK\nContent-Type: ' + str(filetype) + '\n\n'
130             ret += file_contents
131         return ret
132
133
134     def parse_args():
135         parser = ArgumentParser()
136         parser.add_argument('--host', type=str, default='localhost',
137                             help='specify a host to operate on (default: localhost)')
138         parser.add_argument('-p', '--port', type=int, default=9001,
139                             help='specify a port to operate on (default: 9001)')
140         args = parser.parse_args()
141         return (args.host, args.port)
142
143
144     if __name__ == '__main__':
145         (host, port) = parse_args()
146         EchoServer(host, port)

```