

SEC573 – Automating Information Security with Python

Topics

.exe	2-271-273
0b00100000	1-71
16-Bit UNICODE	1-73
16bit unicode	1-69
2to3	W-2-4, 1-224
division	1-229
issues	1-224

A

Alerts	
Unknown Unknowns	2-129
AND	1-116
args	2-320-321
Artifact	
Analysis	2-147
ASCII	1-68, 1-72
Assignment	1-26-27
Authentication	2-214-215
Captchas	2-218
Kerberos	2-215
NTLM	2-215
OAuth	2-215
Session Hijacking	2-217
SSL/TSL	2-216

B

Backdoor	W-5-4, 2-233
Alternatives	2-299, 2-306
base16	1-32
base2	1-32
Beacons	
Intersection	2-66
Binary	
Examples	1-71
Binary Data	
Regex	2-146
bit math operators	1-33
break	1-166
Browser User Agent Strings	2-61
Bytes	1-66
convert string	1-71

C

Captchas	2-218
Carving	2-120-121
Categorize Data	2-64
Character Frequency	2-71
Tables	2-72-73
Checksums	2-100
chr	1-74
continue	1-166
CookieJar	2-209-213

Cookies	2-207
Counter	
Long-Short Tail Analysis	2-63
counter	1-187
Covert Channels	2-108

D

Date/Time Format	2-187
datetime.datetime.fromtimestamp	2-187
Debugger	
debugger breakpoint options	1-212
python -m pdb	1-214
python debugger PDB	1-214
tracebacks	1-213
visual code debugger	1-210
visual code debugger interface	1-211
Debugging	W-2-3
Decimal	
Examples	1-71
deep copy lists	1-219
defaultdict	1-186
Dictionary	W-2-2, 1-175
.get	1-191
2 vs 3	1-179
Categorize Data	2-64
copy	1-177
items	1-183
keys	1-181
methods	1-178
speciality	1-185
counter	1-187
defaultdict	1-186
values	1-182
Difference	2-58
Directory	2-16
Subdirectory	2-18
DNS Hostnames	2-60
DNS Queries	2-238
dup2	W-5-6

E

Encapsulated Structures	2-127
enumerate	1-161, 1-163
Escape Characters	2-31
Exception	W-5-2, 2-253-257

F

FALSE	1-118
File	W-3-1
Directory	2-16
Find	2-20
Input	2-7
Methods	2-9
Operations	2-8
os.walk	2-20
Pathlib.Path	2-14

SEC573 – Automating Information Security with Python

Pathlib.Path.home	2-13-14
Paths	2-13
Read	2-10
gzip	2-22
zlib	2-22
With	2-8
Write	2-11
filegrabber.py	2-250
floats approximation	1-220
for	1-157
enumerate	1-161, 1-163
Forensics	2-115
Artifact Carving	2-116-118
Images	2-157-162
Live Hard-Drive Carving	2-120
Live Memory Carving	2-121
Registry	2-190-192
Format Characters	2-131
Function	W-1-3, 1-89
arguments	1-92
lambda	1-217
return	1-94

G

Generators	2-182
Yield	2-182
Geoip2	2-67-70
GET	2-196, 2-204
Cookies	2-207-209
gethostbyaddr	2-238
gethostbyname	2-238
Glob	2-16
Wildcards	2-19
global scope	1-100
GPS	2-154-155
gzip	2-22

H

Hard-Drive Carving	2-120
Hex	
Encoding	1-77
Examples	1-71
HTTP Communication	W-4-4

I

if	1-114
if elif	1-122
if else	1-120
Image Forensics	W-4-2
Images	
Analyse dead/static images	2-124
PIL → PIL	
Immutable	1-84
Integers	

decoding	1-74
encoding	1-74
Intersection	2-58
Beacons	2-66
io.BytesIO	2-107
io.StringIO	2-107
IP Addresses	2-62
Geoip2	2-67-70
IPv4	2-240
IPv6	2-240

K

Kerberos	2-215
kwargs	2-320-321

L

lambda functions	1-217
legb	1-99
len	1-81
Linux Live Network Capture	2-123
Linux Sniffing	2-122
List	1-141
.join	1-150
.split	1-149
comprehension	1-221
convert string	1-149
copies	1-148
deep copy	1-219
index	1-142
map	1-152
methods	1-144
slicing	1-147
sorting	1-153
sum	1-151
zip	1-151
Log file analysis	W-3-3
logical operators	1-115
Logs	

Analyzing	2-53
Browser User Agent Strings	2-61
Categorize Data	2-64
Character Frequency	2-71
DNS Hostnames	2-60
IP Addresses	2-62
Long-Short Tail Analysis	2-63
Counter	2-63
Slicing Timestamps	2-65
Long-Short Tail Analysis	2-63
Counter	2-63

M

Math Operators	1-29
Microsoft visual studio code	1-208
Module	
versions	1-194
Modules	W-1-2, 1-125

SEC573 – Automating Information Security with Python

built in	2-5
hashlib	2-5
http.server	2-5
https	2-5
pdb	2-5
re	2-5
socket	2-5
subprocess	2-5
sys	2-5
urllib	2-5
import	2-11
install	2-7
Load from Web	2-323-325
main	2-13-14
third party	2-6
beautiful soup	2-6
gmail	2-6
impacket	2-6
pexpect	2-6
plaso	2-6
requests	2-6
scapy	2-6
vs scripts	2-12
Mutable	1-84

N

Namespaces	1-98
non-blocking sockets	2-291
NTLM	2-215

O

OAuth	2-215
Objects	2-309
init	2-315-316
Python	2-310-313
Operators	
AND	1-116
Bit	1-33
FALSE	1-118
logical	1-115
shortcuts	1-116
Math	1-29
OR	1-117
Regex	2-34
TRUE	1-118
OR	1-117
ord	1-74
os.dup2	2-305
os.listdir	2-17
os.walk	2-20

P

Packet Analysis	W-3-4
Assembly Issues	2-101

Bad Checksums	2-100
Custom single purpose analyzer	2-93
Duplicate Packets	2-99
IP Packet Fragmentation	2-102
OS Dependent Reassembly	2-104
Overlapping Fragments	2-103
Packet Order	2-97
PacketLists	2-81
Reassemble Payloads	2-96
reassembly.py	2-105-106
Scapy	2-79
Sorting Packets	2-98
Streams	2-94
Parser	2-128
Unknown Unknowns	2-129
Parsing Data Structures	W-4-1
Path	2-13, 1-195
Glob	2-16
os.listdir	2-17
os.walk	2-20
Path.exists	2-15
Pathlib.Path	2-14
Pathlib.Path.home	2-13-14
rGlob	2-18
PCAP	2-126
PcapReader	2-83
Pen Test	
Use case	2-232
PEP	1-14
PhysicalDrive0	2-120
PIL	2-149
Key functions	2-151
Metadata	2-152-153
Open	2-150
pip	2-7-9
Pipe	2-265
Popen	2-265
POST	2-197-198, 2-204
Cookies	2-207-209
Print	1-20
Format Specifier	1-62-64
Process Execution	W-5-3, 2-263-268
Proxies	2-206
PyInstaller	2-271-273
Pyterpreter	W-5-6, 2-206
stdio control	2-322
Python	
Backdoor	2-233
environments	1-193
Interpreter	1-15
path	1-195
python -c	1-21, 1-131
python -i	1-214
python -m pdb	1-214

R

Randomness	
------------------	--

SEC573 – Automating Information Security with Python

Character Frequency	2-71
range	1-160
rdpcap	2-81
re → Regex	
reassembly.py	2-105-106
recv	2-242
limitations	2-283
recvall	W-5-5, 2-286-287
delimiter-based	2-289
fixed-byte	2-288
select.select() based	2-293-294
timeout-based non-blocking sockets	2-290
Regex	W-3-2, 2-27
Back referencing	2-45-46
Binary Data	2-146
Capture Groups	2-40
Named	2-44
Custom Sets	2-33
Escape Characters	2-31
Flags	2-36
Greedy Matching	2-37
Logical OR	2-34
Match	2-43
Modifiers	2-36
NOT custom set	2-38
re	2-28
findall	2-28
match	2-28
search	2-28
Repeating Characters	2-35
Rules	2-29-30
Search	2-43
Testing	2-48
Registry → Windows	
Registry	
Registry Forensics	W-4-3
Remote Python	2-326
Requests	2-194, 2-200-202
Authentication	2-214-215
Cookies	2-207-209
https	2-216
Proxies	2-206
Session	2-203
SSL/TLS	2-216

S

Scapy	2-79
PacketLists	2-81
Layers	2-90-92
Sessions	2-87-88
Structure	2-89
PcapReader	2-83
plist	2-84
rdpcap	2-81
Read	2-81
Sniff	2-82
time Order	2-82

Timestamp Order	2-94
Write	2-81
wrpcap	2-81
scripts vs modules	2-12
send	2-242
limitations	2-283
sendall	2-284-285
Session Hijacking	2-217
Sets	2-54
Copy	2-57
Difference	2-58
Intersection	2-58
Beacons	2-66
Methods	2-55
Operators	2-56
Union	2-58
Update	2-58
Shortcut operators	1-119
site modules	1-198
site packages	1-198
Sniff	2-82
Socket Essentials	W-5-1
Sockets	2-237
AF-INET	2-240
AF-INET6	2-240
AF-PACKET	2-123
bind listen accept	2-241
Connections	2-241
gethostbyaddr	2-238
gethostbyname	2-238
IPv4	2-240
IPv6	2-240
non-blocking sockets	2-291
RCVALL-ON	2-122
Receiving	2-242
recv	2-242
send	2-242
SIO-RCVALL	2-122
SOCK-DGRAM	2-239
SOCK-RAW	2-123
SOCK-STREAM	2-240
socket.ntohs(0x0003)	2-123
TCP	2-240
timeout-based non-blocking sockets	2-290-292
Transmit	2-242
UDP	2-239
sort vs sorted	1-155
sorting	1-153
SQL	2-164
Basic Statements	2-166-167
Database Modules	2-173
Joins	2-168
sqlite3	2-174-175
Subqueries	2-171
Union	2-169-170
sqlite3	2-174-175
SSL/TSL	2-216
Standard libraries	1-197

SEC573 – Automating Information Security with Python

stderr 2-300-303
stdin 2-300-303
stdout 2-300-303
String
 convert bytes 1-71
 Escape Characters 2-31
Strings W-1-2, 1-59
 .format 1-61
 encoders and decoders 1-82
 encoding 1-72
 find 1-87
 fstring 1-64
 len 1-81
 methods 1-77
 count 1-78
 in 1-78
 lower 1-78
 replace 1-78
 split 1-78
 title 1-78
 upper 1-78
 raw strings 1-65
 slicing 1-75
strings convert list 1-149
STRUCT 2-130
 Ether Header Struct 2-136
 Format Characters 2-131
 ICMP Header Struct 2-140-144
 IP Header Struct 2-137
 Pack 2-135
 TCP Header Struct 2-138
 UCP Header Struct 2-139
 Unpack 2-132-133
 Unpack Bits as Flags 2-134
Subprocesses 2-263
 Pipe 2-265
 Popen 2-265
 wait 2-264-265
Syntax
 namespaces 1-98
 spacing 1-96
 white space 1-96
sys 2-300-303
sys.metapath 2-324
sys.path 1-200

T

TCP 2-237
 Client 2-243
 Server Example 2-244
 Sockets 2-240
TCP Streams 2-86
Timestamps
 Slicing 2-65
TRUE 1-118
try/except/else 2-255-257
Tuple 1-171

sorted 1-173
Types
 Reassign 1-27

U

UDP 2-237
 Sockets 2-239
unichr 1-74
UNICODE 1-73
Union 2-58
Unpack 2-316-319
 args 2-320-321
 kwargs 2-320-321
Urllib 2-196, 2-198
utf8 1-70

V

Variable 1-23
 global scope 1-100
 resolution legb 1-99
 typing 1-101
venv 1-201
virtual environment W-2-3, 1-202

W

Web
 Browser
 GET/POST 2-204
 Encoding 2-195
 GET 2-196
 POST 2-197
 Requests 2-194, 2-200-202
 Session 2-203
 Urllib 2-196
 Websites 2-194
Webimport 2-325
while 1-164
Windows
 Registry 2-177-181
 Date/Time Format 2-187
 Forensics 2-190-192
 Network Profiles 2-186
 WiFi 2-184-185, 2-188
 Windows Live Network Capture 2-122
 Windows Sniffing 2-122
Wireshark
 TCP Streams 2-86
With 2-8
wpcap 2-81

X

XOR 1-162

Z

zlib 2-22