

## Question 5

Manipulate/Complete the following code to :

- 5.1. install curl,
- 5.2. Create a directory structure Labs with subfolders lab1 and lab2
- 5.3. From your home directory find out when files were last accessed.  
ls -l --time=atime

Code :

Import paramiko, time and regular expresion

```
1  # -----
2  #
3  # File      : L00170171_Q5_File_2.py
4  # Created   : 23/11/2021 13:59
5  # Author    : Lukasz S.
6  # Version   : v1.0.0
7  # Licencing : (C) 2021 Lukasz S.
8  #
9  # Description : Manipulate/Complete the following code to :
10 #             1. install curl,
11 #             2. Create a directory structure Labs with subfolders
12 #             lab1 and lab2
13 #             3. From your home directory find out when files were
14 #             last accessed.
15 #
16 # -----
17
18 import paramiko
19 import time
20 import re
21
22 # Open SSH connection to the device
23
24
```

Connection to VM using SSH

```
L00170171_Q5_File_2.py x
24
25 def ssh_connection(ip):
26     try:
27
28         username = 'l00170171'
29         password = 'lukasz123'
30
31         print("Establishing a connection...")
32         session = paramiko.SSHClient()
33         session.set_missing_host_key_policy(paramiko.AutoAddPolicy())
34         session.connect(ip.rstrip("\n"), username=username, password=password)
35         connection = session.invoke_shell()
36
```

1. Install Curl but firs we need to update ubuntu

```
36
37  # First we need to update Ubuntu box before install Curl
38  stdin, stdout, stderr = session.exec_command('echo lukasz123 | sudo -S apt-get update\n')
39
40  output = ""
41
42  for line in stdout:
43      output = output + line
44  if output != "":
45      print(f"Ubuntu update:\n{output}")
46  else:
47      print("There was no output for this command")
48
```

Output:

```
L00170171_Q5_File_2 x
"/Users/luca/Library/Mobile Documents/com~apple~CloudDocs/LYIT - School/Assignme
Establishing a connection...
Ubuntu update:
Hit:1 http://ie.archive.ubuntu.com/ubuntu hirsute InRelease
Hit:2 http://ie.archive.ubuntu.com/ubuntu hirsute-updates InRelease
Hit:3 http://ie.archive.ubuntu.com/ubuntu hirsute-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu hirsute-security InRelease
```

Installation Curl

```
48
49 # Installation Curlly
50 stdin, stdout, stderr = session.exec_command('echo lukasz123 | sudo -S apt-get install -y curl\n')
51
52 output = ""
53
54 for line in stdout:
55     output = output + line
56     if output != "":
57         print(f"Curl installed:\n{output}")
58     else:
59         print("There was no output for this command")
60
61 # File last accessed
62 stdin, stdout, stderr = session.exec_command('ls -l --time=atime\n')
63
64 output = ""
65
66 for line in stdout:
67     output = output + line
68     if output != "":
69         print(f"File last accessed:\n{output}")
70     else:
71         print("There was no output for this command")
72
```

Output:

```
Run: L00170171_Q5_File_2
Curl installed:
Reading package lists...
Building dependency tree...
Reading state information...
The following package was automatically installed and is no longer required:
  libllvm11
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 15 not upgraded.
Need to get 170 kB of archives.
After this operation, 430 kB of additional disk space will be used.
Get:1 http://ie.archive.ubuntu.com/ubuntu hirsute-updates/main amd64 curl amd64 7.74.0-1ubuntu2.3 [170 kB]
Fetched 170 kB in 1s (321 kB/s)
Selecting previously unselected package curl.
(Reading database ... 169183 files and directories currently installed.)
Preparing to unpack .../curl_7.74.0-1ubuntu2.3_amd64.deb ...
Unpacking curl (7.74.0-1ubuntu2.3) ...
Setting up curl (7.74.0-1ubuntu2.3) ...
Processing triggers for man-db (2.9.4-2) ...
```

Curl on VM

```
l00170171@l00170171-virtual-machine: ~
l00170171@l00170171-virtual-machine:~$ curl --version
curl 7.74.0 (x86_64-pc-linux-gnu) libcurl/7.74.0 OpenSSL/1.1.1j zlib/1.2.11 brotli/1.0.9 libidn2/2.3.0 libpsl/0.21.0 (+libidn2/2.3.0) libssh/0.9.5/openssl/zlib nghttp2/1.43.0 librtmp/2.3
Release-Date: 2020-12-09
Protocols: dict file ftp ftps gopher http https imap imaps ldap ldaps mqtt pop3 pop3s rtmp scp sftp smb smbs smtp smtps telnet tftp
Features: alt-svc AsynchDNS brotli GSS-API HTTP2 HTTPS-proxy IDN IPV6 Kerberos L argefile libz NTLM NTLM_WB PSL SPNEGO SSL TLS-SRP UnixSockets
l00170171@l00170171-virtual-machine:~$
```

## 2. Creating folder Lab and subfolders Lab1 and Lab2Output to show created folders

```
L00170171_Q5_File_2.py x
73 # Creating new folders
74 session.exec_command("mkdir Labs\n") # Creating folder Lab
75 session.exec_command("mkdir Labs/Lab1\n") # Creating subfolder Lab1
76 session.exec_command("mkdir Labs/Lab2\n") # Creating subfolder Lab2
77
78 # Showing created folder Labs
79 stdin, stdout, stderr = session.exec_command('ls\n')
80
81 output = ""
82
83 for line in stdout:
84     output = output + line
85 if output != "":
86     print(f"Folder Labs:\n{output}")
87 else:
88     print("There was no output for this command")
89
90 # Showing created subfolders
91 stdin, stdout, stderr = session.exec_command('ls ./Labs\n')
92
93 output = ""
94
95 for line in stdout:
96     output = output + line
97 if output != "":
98     print(f"Labs subfolders:\n{output}")
99 else:
100     print("There was no output for this command")
101
```

Output to show created folder and subfolders:

```
L00170171_Q5_File_2 x
Folder Labs:
Desktop
Documents
Downloads
Labs
Music
Pictures
Public
snap
Templates
Videos

Labs subfolders:
Lab1
Lab2

Commands successfully executed on 192.168.178.122

Process finished with exit code 0
```

## 3. Showing when files were last accessed:

```
60
61 # File last accessed
62 stdin, stdout, stderr = session.exec_command('ls -l --time=atime\n')
63
64 output = ""
65
66 for line in stdout:
67     output = output + line
68 if output != "":
69     print(f"File last accessed:\n{output}")
70 else:
71     print("There was no output for this command")
72
```

Output:

```
L00170171_Q5_File_2 ×
"/Users/luca/Library/Mobile Documents/com~apple~CloudDocs/LYIT -
Establishing a connection...
File last accessed:
total 40
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 13:17 Desktop
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Documents
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Downloads
drwxrwxr-x 4 l00170171 l00170171 4096 Nov 24 11:51 Labs
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Music
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Pictures
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Public
drwx----- 3 l00170171 l00170171 4096 Nov 24 11:36 snap
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 13:17 Templates
drwxr-xr-x 2 l00170171 l00170171 4096 Nov 23 14:23 Videos
```