COS 330

Practical 3

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Contents

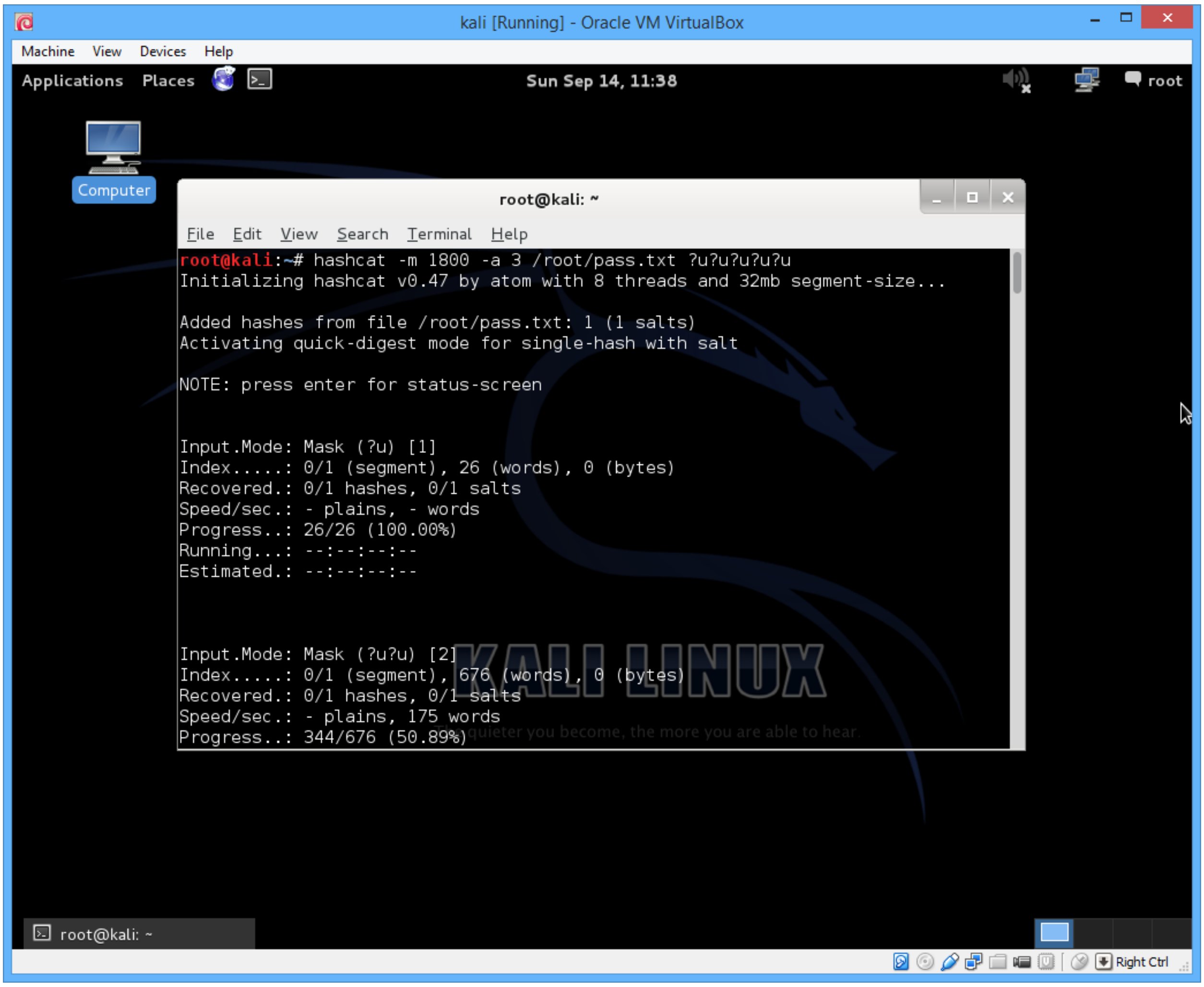
1 Task 1

Find the password hash for the root account on your Kali Linux virtual machine (hint -look at '/etc/shadow' as root). Place the hash in your own file (hint - consult online documentation for shadow file format and look in '/etc/login.defs'). Use hashcat to bruteforce the password (hint - use 'hashcat -h' and online documentation). Provide the following for your answer:

1.1 Hash type used by Kali Linux. [1]

Hashtype : SHA-512

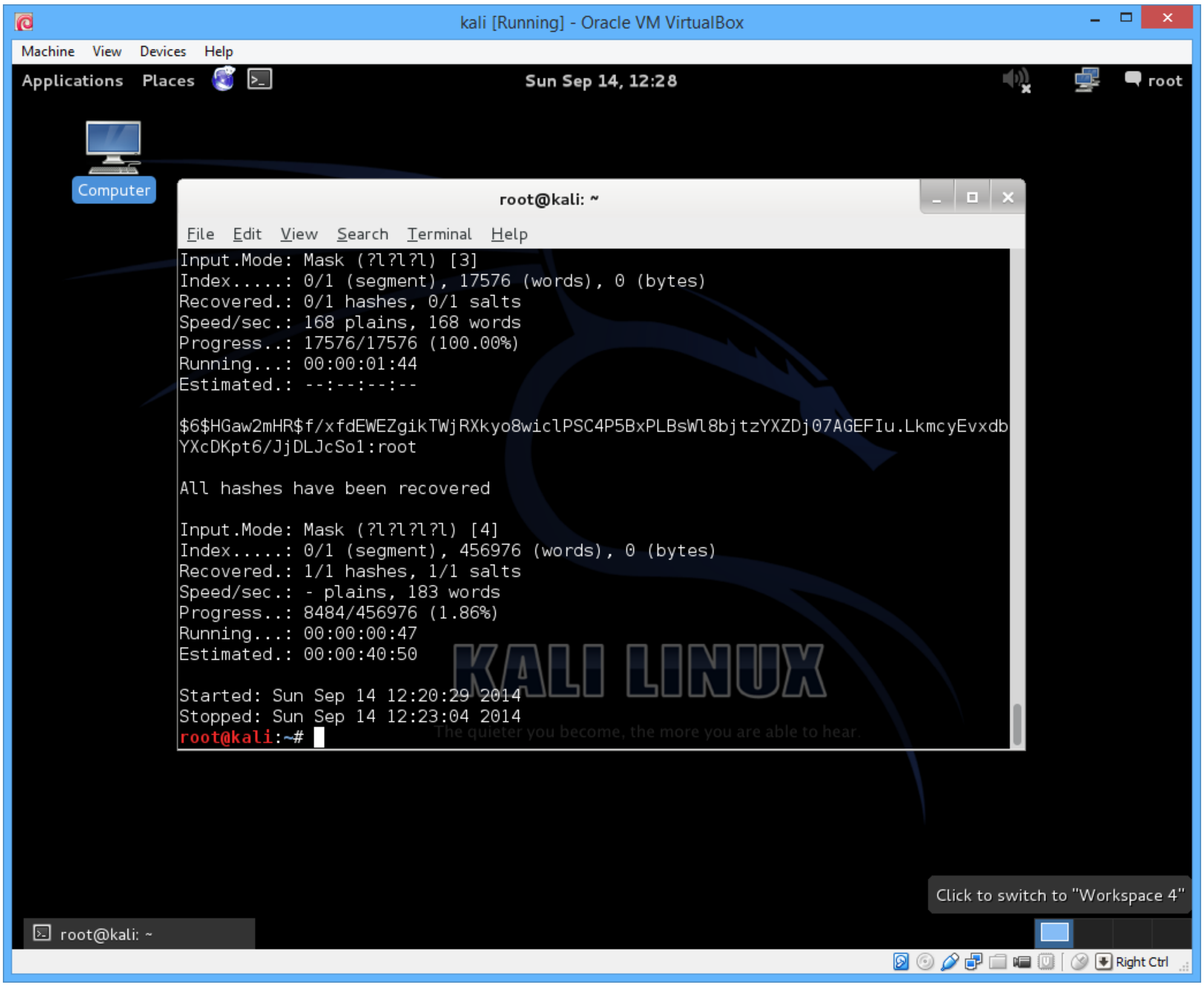
1.2 Hashcat command line with parameters used. [4]



```
root@kali:~# hashcat -m 1800 -a 3 /root/pass.txt ?u?u?u?u?u
Initializing hashcat v0.47 by atom with 8 threads and 32mb segment-size...

Added hashes from file /root/pass.txt: 1 (1 salts)
Activating quick-digest mode for single-hash with salt

NOTE: press enter for status-screen


Input.Mode: Mask (?u) [1]
Index.....: 0/1 (segment), 26 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, - words
Progress..: 26/26 (100.00%)
Running...: --:--:--:--
Estimated.: --:--:--:--



Input.Mode: Mask (?u?u) [2]
Index.....: 0/1 (segment), 676 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 175 words
Progress..: 344/676 (50.89%)
```

Figure 1: task 1b

1.3 Screenshot of hashcat clearly showing the retrieved password (root) and time elapsed. [2]



kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:28
root
Computer
root@kali: ~
File Edit View Search Terminal Help
KALI LINUX
The quieter you become, the more you are able to hear.
Click to switch to "Workspace 4"
root@kali: ~
Right Ctrl

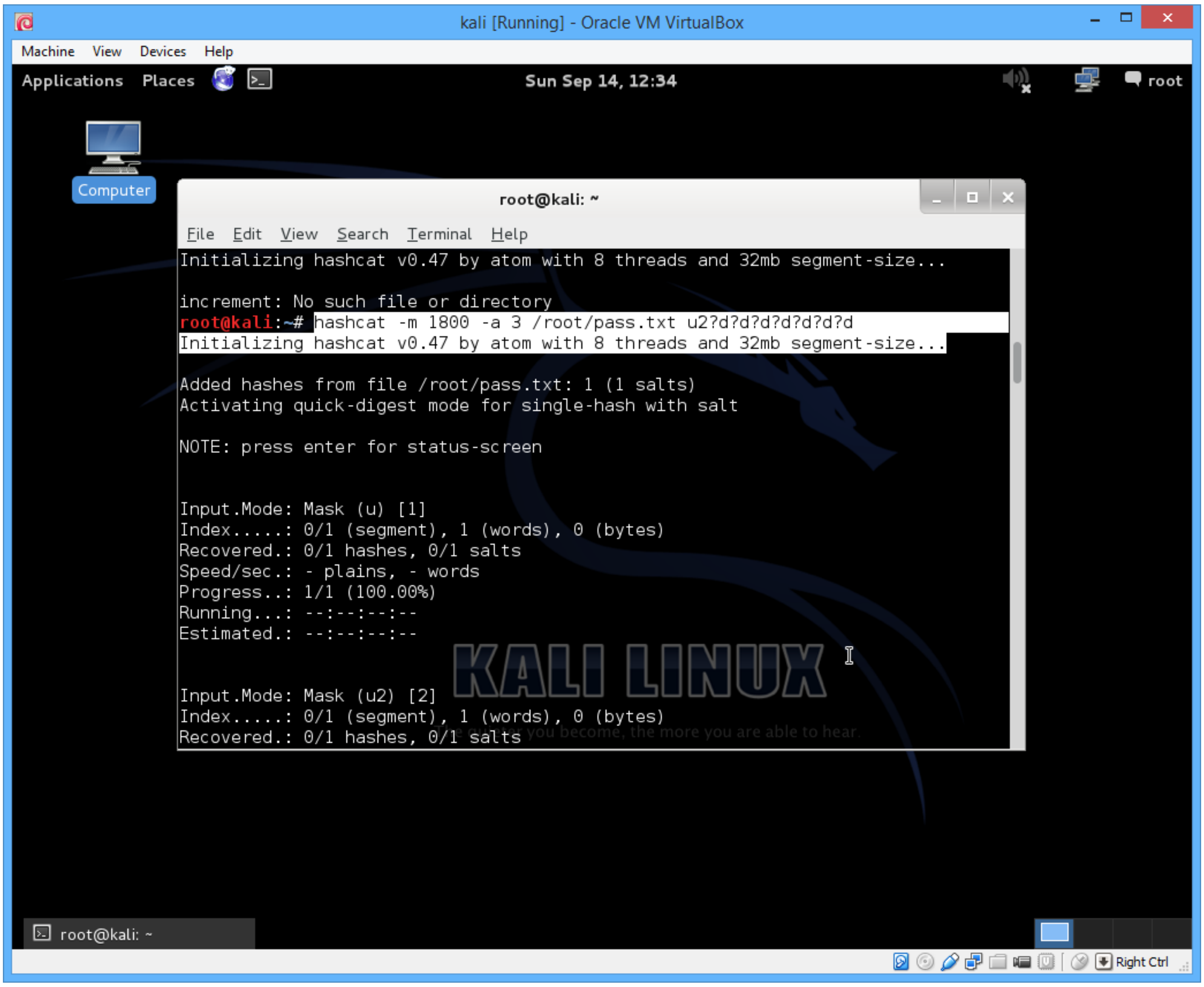
```
Input.Mode: Mask (?l?l?l) [3]
Index.....: 0/1 (segment), 17576 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: 168 plains, 168 words
Progress..: 17576/17576 (100.00%)
Running...: 00:00:01:44
Estimated.: --:--:--:--

$6$HGaw2mHR$f/xfdEWEZgikTWjRXkyo8wiclPSC4P5BxPLBsWl8bjtzYXZDj07AGEFIu.LkmcyEvxdb
YXcDKpt6/JjDLJcSo1:root

All hashes have been recovered

Input.Mode: Mask (?l?l?l?l) [4]
Index.....: 0/1 (segment), 456976 (words), 0 (bytes)
Recovered.: 1/1 hashes, 1/1 salts
Speed/sec.: - plains, 183 words
Progress..: 8484/456976 (1.86%)
Running...: 00:00:00:47
Estimated.: 00:00:40:50

Started: Sun Sep 14 12:20:29 2014
Stopped: Sun Sep 14 12:23:04 2014
root@kali:~#
```

Figure 2: task 1c

2 Task 2

Now use hashcat on the password hash of your own account. Show that the chosen password is weak if the format is known. Provide the following for your answer:

2.1 Hashcat command line with parameters used. [4]

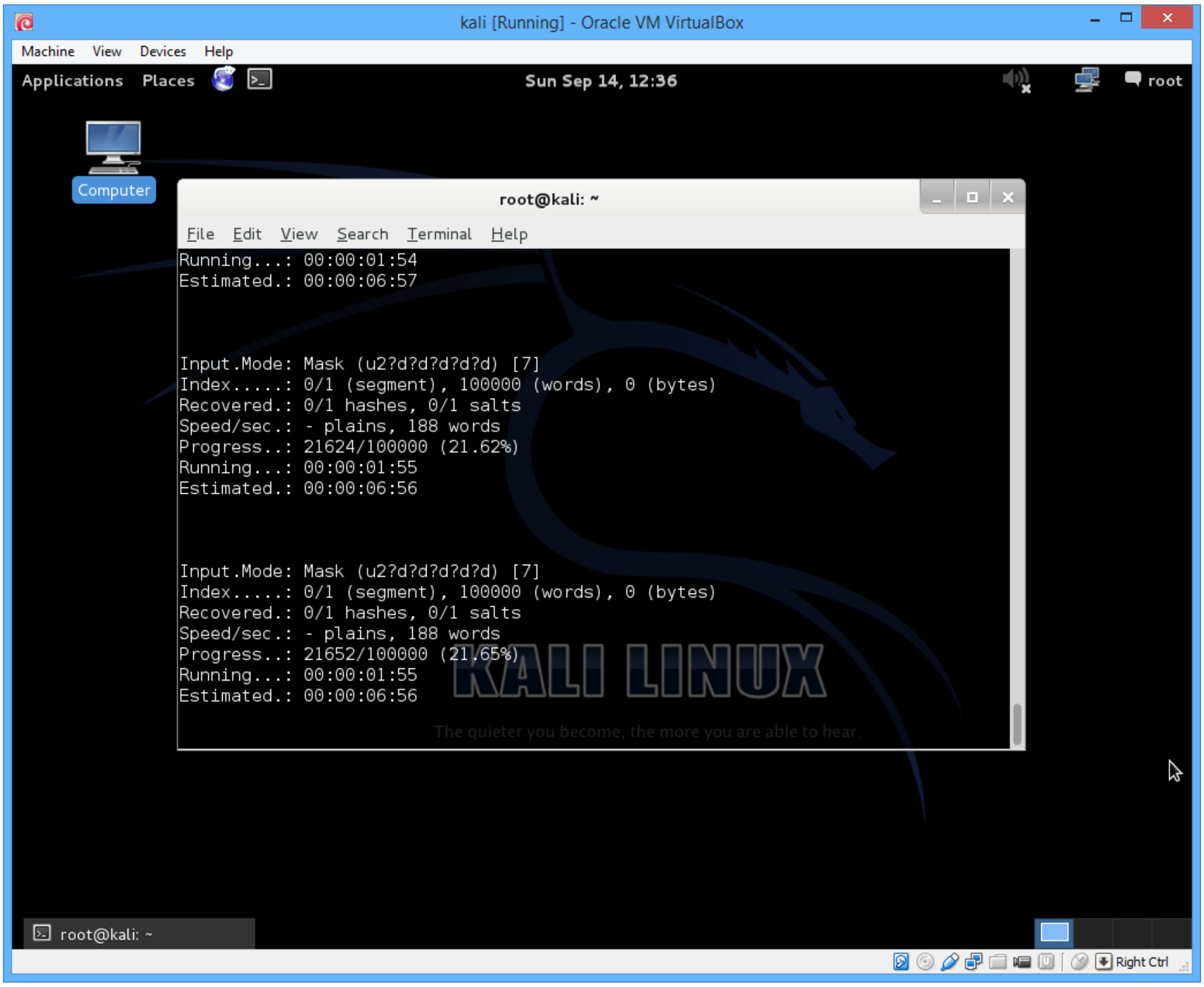


kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:34
root
Computer
root@kali: ~
File Edit View Search Terminal Help
KALI LINUX
root@kali: ~
Right Ctrl

```
Initializing hashcat v0.47 by atom with 8 threads and 32mb segment-size...

increment: No such file or directory
root@kali:~# hashcat -m 1800 -a 3 /root/pass.txt u2?d?d?d?d?d?d?d
Initializing hashcat v0.47 by atom with 8 threads and 32mb segment-size...

Added hashes from file /root/pass.txt: 1 (1 salts)
Activating quick-digest mode for single-hash with salt

NOTE: press enter for status-screen


Input.Mode: Mask (u) [1]
Index.....: 0/1 (segment), 1 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, - words
Progress..: 1/1 (100.00%)
Running...: --:--:--:--
Estimated.: --:--:--:--


Input.Mode: Mask (u2) [2]
Index.....: 0/1 (segment), 1 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
```

Figure 3: task 2a

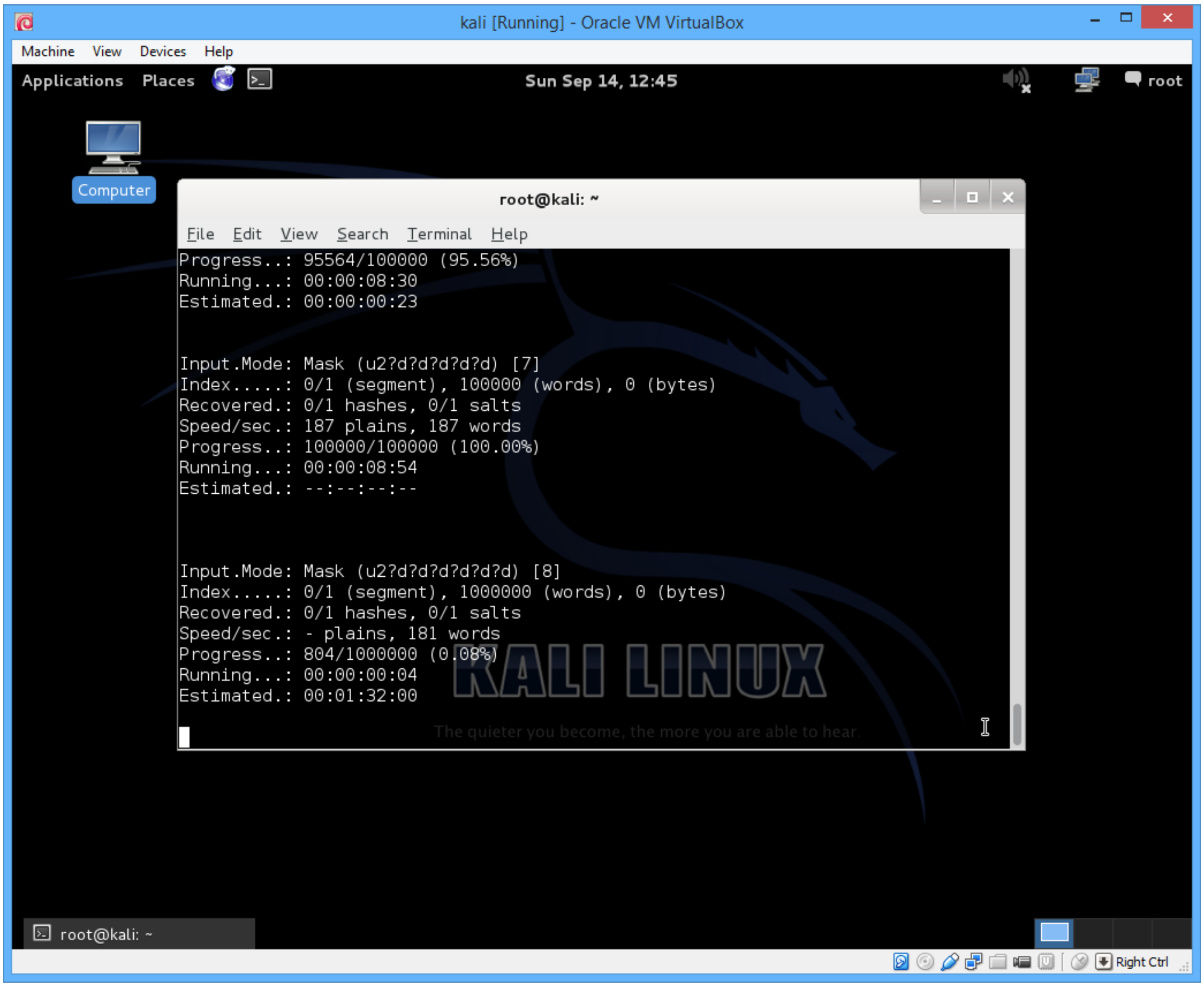
2.2 Screenshot of hashcat running (status) with time left estimation. [2]



kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:36
root
Computer
root@kali: ~
File Edit View Search Terminal Help
KALI LINUX
The quieter you become, the more you are able to hear.
root@kali: ~
Right Ctrl

```
Running...: 00:00:01:54
Estimated.: 00:00:06:57


Input.Mode: Mask (u2?d?d?d?d?d) [7]
Index.....: 0/1 (segment), 100000 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 188 words
Progress..: 21624/100000 (21.62%)
Running...: 00:00:01:55
Estimated.: 00:00:06:56


Input.Mode: Mask (u2?d?d?d?d?d) [7]
Index.....: 0/1 (segment), 100000 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 188 words
Progress..: 21652/100000 (21.65%)
Running...: 00:00:01:55
Estimated.: 00:00:06:56
```

Figure 4: task 2b - running



kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:45
root
Computer
root@kali: ~
File Edit View Search Terminal Help
KALI LINUX
The quieter you become, the more you are able to hear
root@kali: ~
Right Ctrl

```
Progress..: 95564/100000 (95.56%)
Running...: 00:00:08:30
Estimated.: 00:00:00:23


Input.Mode: Mask (u2?d?d?d?d?d) [7]
Index.....: 0/1 (segment), 100000 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: 187 plains, 187 words
Progress..: 100000/100000 (100.00%)
Running...: 00:00:08:54
Estimated.: --:--:--:--



Input.Mode: Mask (u2?d?d?d?d?d?d) [8]
Index.....: 0/1 (segment), 1000000 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 181 words
Progress..: 804/1000000 (0.08%)
Running...: 00:00:00:04
Estimated.: 00:01:32:00
```

Figure 5: task 2b - running

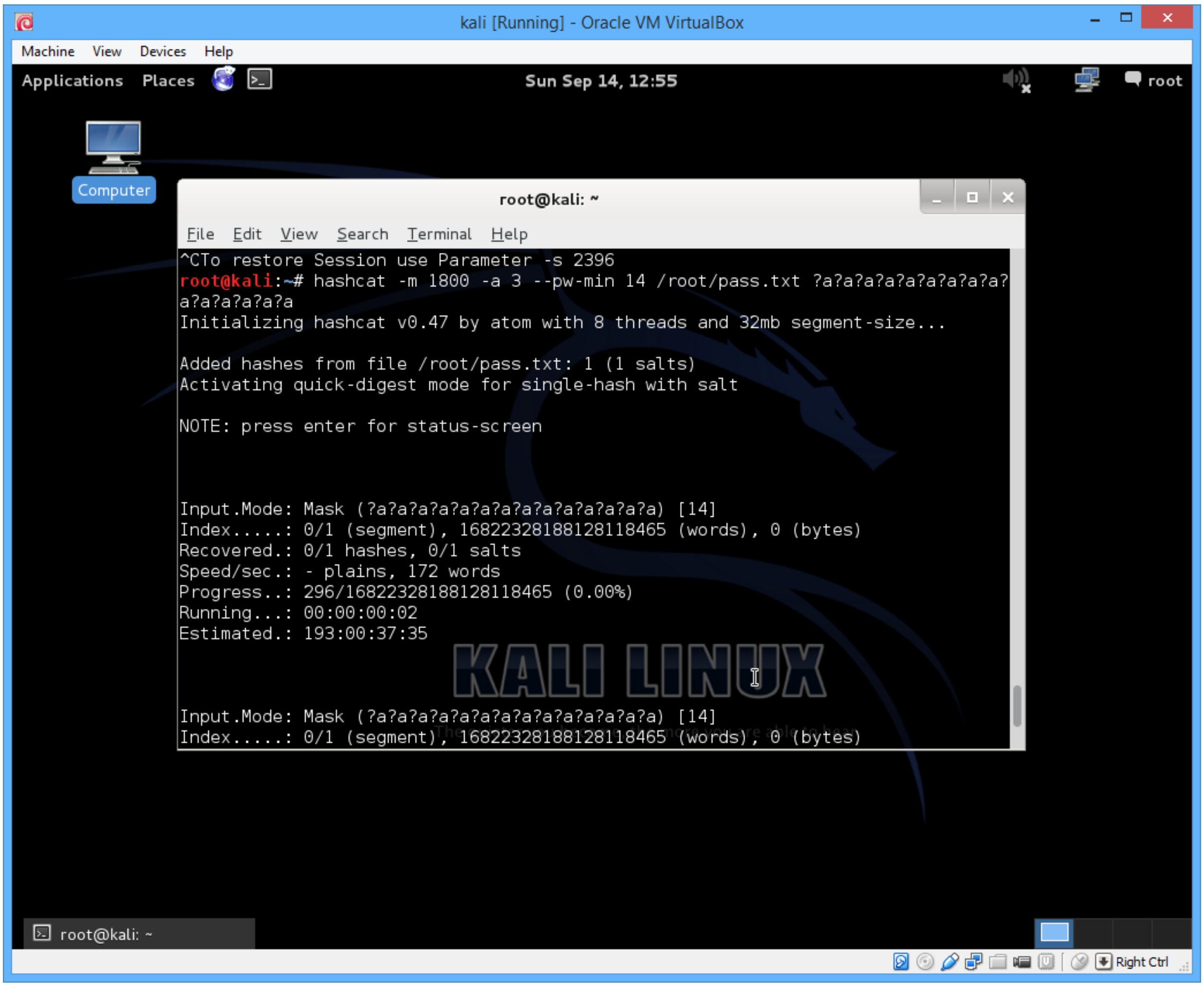
3 Task 3

Change your password to a strong password. Use hashcat to prove the password is strong. Provide the following for your answer:

3.1 Your chosen password. [1]

Chosen Password: F@.k3pSW*d!171

3.2 Hashcat command line with parameters used. [4]

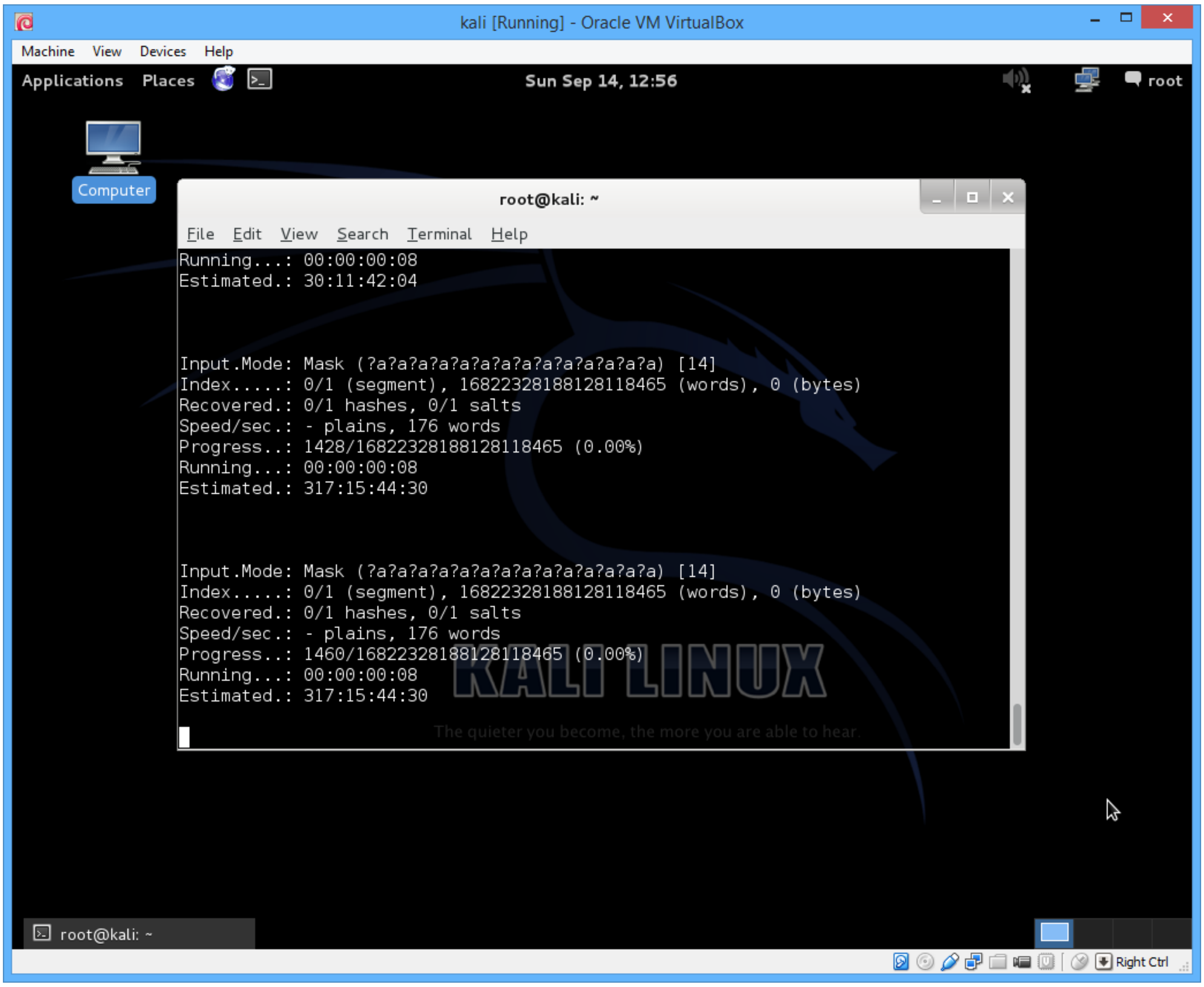


kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:55
root
Computer
root@kali: ~
File Edit View Search Terminal Help
Right Ctrl

```
^CTo restore Session use Parameter -s 2396
root@kali:~# hashcat -m 1800 -a 3 --pw-min 14 /root/pass.txt ?a?a?a?a?a?a?a?a?a?
a?a?a?a?a
Initializing hashcat v0.47 by atom with 8 threads and 32mb segment-size...

Added hashes from file /root/pass.txt: 1 (1 salts)
Activating quick-digest mode for single-hash with salt

NOTE: press enter for status-screen



Input.Mode: Mask (?a?a?a?a?a?a?a?a?a?a?a?a?a?a) [14]
Index.....: 0/1 (segment), 16822328188128118465 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 172 words
Progress..: 296/16822328188128118465 (0.00%)
Running...: 00:00:00:02
Estimated.: 193:00:37:35



Input.Mode: Mask (?a?a?a?a?a?a?a?a?a?a?a?a?a?a) [14]
Index.....: 0/1 (segment), 16822328188128118465 (words), 0 (bytes)
```

Figure 6: task 3b

3.3 Screenshot of hashcat running (status) with time left estimation. [2]


kali [Running] - Oracle VM VirtualBox
Machine View Devices Help
Applications Places
Sun Sep 14, 12:56
root
Computer
root@kali: ~
File Edit View Search Terminal Help
KALI LINUX
The quieter you become, the more you are able to hear.
root@kali: ~
Right Ctrl

```
Running...: 00:00:00:08
Estimated.: 30:11:42:04



Input.Mode: Mask (?a?a?a?a?a?a?a?a?a?a?a?a?a?a) [14]
Index.....: 0/1 (segment), 16822328188128118465 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 176 words
Progress..: 1428/16822328188128118465 (0.00%)
Running...: 00:00:00:08
Estimated.: 317:15:44:30



Input.Mode: Mask (?a?a?a?a?a?a?a?a?a?a?a?a?a?a) [14]
Index.....: 0/1 (segment), 16822328188128118465 (words), 0 (bytes)
Recovered.: 0/1 hashes, 0/1 salts
Speed/sec.: - plains, 176 words
Progress..: 1460/16822328188128118465 (0.00%)
Running...: 00:00:00:08
Estimated.: 317:15:44:30
```

Figure 7: task3c