Sri Lanka Institute of Information Technology

B.Sc. Special Honours Degree
in
Information Technology
(Cyber Security)

Final Semester Examination
Year 2, Semester 1(2019)

IE2012 – Systems Administration and Network Programming

Duration: 2 Hours

Instructions to candidates:
- This paper has 4 questions.
- There is an additional 10 minutes reading time provided.
- Answer all questions.
- Marks for each question are given.
- Total mark is 100.
- This paper contains 5 pages including cover page.

Question 1   [25 marks]

a). Explain the usage of boot loaders like **LILO** and **GRUB**.

(3 marks)

b). List down few important files you find in the **/boot** directory.

(3 marks)

c). What are the Linux **Run Levels**, Explain with few examples?

(3 marks)

d). Discuss the importance of **Systemd** command and targets.

(4 marks)

e). Explain the purpose of MBR(Master Boot Record)

(4 marks)

f). Explain the steps in mounting and unmounting a partition with an example.

(4 marks)

g). Explain the usage of **fdisk** command.

(4 marks)

a)   Describe the usage of **MobaXterm** or **Putty** tool that used in bandit war game.

[5 marks]

b)   Select **five** commands from below list and write short description for each.

cd, pwd, ls, mkdir, rm, rmdir, touch, cat, file

[5 marks]

c)   What is the correct command to identify the password that is stored in the **only human-readable** file in a directory?

[5 marks]

d)   Explain the following commands with a suitable example.

    i)   find . -type f -readable ! -executable -size 1033c
    ii)   find / -user bandit7 -group bandit6 -size 33c 2>/dev/null

[5 marks]

e). Identify the correct commands to get the password from below given scenario.

The password for the next level is stored in the file data.txt, where all lowercase (a-z) and uppercase (A-Z) letters have been rotated by 13 positions

[5 marks]

a). Explain the tools you used in the **hackthebox** exercise

[5 marks]

b). Explain three hacking methodologies you used within the exercise

[5 marks]

c). Discuss four major challenges you faced during the **hakthebox** walkthrough.

[5 marks]

d). Explain **five** linux commands used in the walkthrough with examples.

[5 marks]

e). Write down the process in connecting to the **hackthebox** VPN.

[5 marks]

Question 4   **[25 marks]**

a). Explain what is a SSL certificate and the need of it.

[3 marks]

b). Assume you need to set up SSL on your website, explain the procedure.

[3 marks]

c). Explain the following command.

openssl req –x509 –nodes –days 365 –newkey rsa:2048 –keyout /etc/apache2/ssl/apache.key –out /etc/apache2/ssl/apache.cert

[4 marks]

d). Compare and contrast **Self-signed** certificate with CA certificate.

[3 marks]

e). What is a DNS server and its fundamental functionality?

[3 marks]

f). State important configuration files of DNS server.

[3 marks]

g). What is the purpose of zone files in DNS server.

[3 marks]

h). State the different types of DNS servers.

[3 marks]

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