

Subject: LINUX INTERNALS

Time: 3 Hours

JUNE 2011

Max. Marks: 100

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The full form for LDP is:

- (A) LINUX Document Process
- (B) Linear Decimal Programming
- (C) LINUX Document Project
- (D) Lower Division Process

b. LINUX Kernal is written in which languages?

- (A) C and C++
- (B) C# and C
- (C) Only C
- (D) C and Assembler

c. The system call _____ enables a process to change its executing program

- (A) execve
- (B) nice
- (C) pause
- (D) getuid

d. The expansion for ddr is:

- (A) Digital Double Rate
- (B) Data Double Rate
- (C) Double Data Rate
- (D) None of the above

e. The available methods for connection-oriented data exchange are pipes, named pipes, also known as:

- (A) LILO
- (B) FIFO
- (C) FILO
- (D) LIFO

-
- f. In the Ext2 file system, directories are administered using a _____
- (A) Doubly linked list (B) Singly linked list
(C) Either of the above (D) None of the above
- g. Since DMA controller works independently of the processor, it only recognizes the _____ addresses.
- (A) Physical (B) Logical
(C) Encoded (D) None of the above
- h. The simplest variant of connectionless data exchange are:
- (A) Signals (B) Semaphores
(C) Message Queues (D) None of the above
- i. *gdb* is the name for:
- (A) Garbage Data Base (B) Get data byte
(C) Global data bin (D) Debugger
- j. Full form for SMP is:
- (A) Symmetric Multiprocessing (B) Simultaneous Memory Placements
(C) Simple Memory Processing (D) Several Multiprocessings
-

**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

- Q.2** a. Describe the history of LINUX. (4)
b. What are the strengths and drawbacks of LINUX? (8)
c. State the protocols that can be integrated into local UNIX network. (4)
- Q.3** a. How system calls are implemented under UNIX? (8)
b. Explain the meaning of the system call *pause*. (4)
c. What do you understand by Timer interrupt? (4)
- Q.4** a. Describe how abstract process of virtual memory was introduced during the development of LINUX. (8)
b. How is memory allocated in the kernel segment during booting? (8)
- Q.5** a. Describe shared memory as a form of IPC – with one advantage and one disadvantage. (12)

-
- b. Draw a diagram depicting a deadlock scenario when locking files. (4)
- Q.6** a. Describe the two algorithms used by *Ext2* file system to limit the fragmentation of files? (8)
- b. What entries are kept in the directory cache? Why? (8)
- Q.7** a. What are the advantages of reloading drivers dynamically? (8)
- b. Write a code outline for essential components of a dynamically loading driver. What basic rules must be followed while using a dynamically loading driver? (4+4)
- Q.8** a. Describe the layer model of the network implementation. (8)
- b. What is the general structure of a socket address? (8)
- Q.9** a. List the eight Macros for modules along with their functions. (8)
- b. Explain with the help of a diagram depicting the Daemon for dynamic loading and unloading of modules. (8)