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BANGALORE - 560 037

10CS62

Sixth Semester B.E. Degree Examination, June/July 2018
UNIX System Programming

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Write a program to check the following limits using functions defined by POSIX-1.
 - i) Number of clock ticks per second
 - ii) Maximum number of real time signals
 - iii) Maximum number of links a file may have
 - iv) Number of simultaneous asynchronous input/output
 - v) Maximum length in bytes of a pathname. (10 Marks)
- b. What are the features to be implemented on all FIPS – conforming systems? (08 Marks)
- c. What is an API? Why API is more time consuming? (02 Marks)

- 2 a. Consider a process which has file descriptors for abc.txt, its hard link xyz.txt and the copy of it pqr.txt. Then the process creates a child process. Draw the kernel support for files in the scenario and explain the reference count entries. (10 Marks)
- b. Differentiate between C stream pointers and file descriptors. (06 Marks)
- c. What are the different file types available in Unix machines? How are they different? (04 Marks)

- 3 a. Write a C/C++ program to illustrate the use of `fcntl` API for file locking. (08 Marks)
- b. Write a C/C++ program to emulate unix `ls-l` command. (08 Marks)
- c. Explain the following API's with prototypes : i) `read` ii) `lseek`. (04 Marks)

- 4 a. Write a C/C++ program using `sej jmp` and `long jmp` to show their effect on various variables. (10 Marks)
- b. Describe the UNIX kernel support for process considering parent –child process. Show the related data structure. (10 Marks)

PART – B

- 5 a. Explain `fork` and `vfork` with prototypes and example programs. (10 Marks)
- b. Explain the different `exec` functions with prototypes. (06 Marks)
- c. Write a note on network login. (04 Marks)

- 6 a. What is a daemon process? Discuss the coding rules. (08 Marks)
- b. Explain with prototypes for the following API's
 - i) `kill` ii) `alarm` iii) `signal` iv) `sigaction`. (08 Marks)
- c. Explain 3 ways to generate error log messages. (04 Marks)

- 7 a. Explain pipes in detail. (10 Marks)
- b. Write a note on : i) message queues ii) co-processes. (10 Marks)

- 8 a. Explain with diagrams setting up `connld` for unique connections. (10 Marks)
- b. Explain the shared memory in detail maintained by kernel. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.