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 fentl 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 sejjmp and longjmp 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)**

* * * * *