10CS62

Sixth Semester B.E. Degree Examination, June/July 2016
UNIX Systems Programming

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Compare and explain : ANSI C and K and R C with examples.   **(08 Marks)**
   b. List and explain feature test macros in POSIX systems.   **(08 Marks)**
   c. Compare : execution of an API with execution of C library function. Also list any four error status codes with their meaning.   **(04 Marks)**

2 a. What is file? Explain types of files with command examples.   **(06 Marks)**
   b. Explain UNIX Kernel support for files with a neat sketch.   **(08 Marks)**
   c. Write any three differences between :
      i) Hard links and soft links   ii) C steam pointer and file descriptor.   **(06 Marks)**

3 a. Explain file and record locking with C/C++ program.   **(08 Marks)**
   b. Explain the following API's with their prototypes. :
      i) open   ii) read   iii) write   iv) close.   **(08 Marks)**
   c. Write a C/C++ program to rename a file [use mv command /link and unlink APIs].   **(04 Marks)**

4 a. With a neat diagram, explain about termination ways for a process. Also write a C/C++ programs to display :
      i) Command line arguments   ii) Environment variables.   **(10 Marks)**
   b. Explain setjmp and longjmp functions with their prototypes.   **(06 Marks)**
   c. With neat sketch, explain memory structure/ layout of a C/C++ program that is to be executed.   **(04 Marks)**

PART – B

5 a. What is race condition? Mention and explain routines to avoid race condition.   **(06 Marks)**
   b. Explain the following :
      i) orphaned process ii) zombie process iii) terminal login iv) network login.   **(10 Marks)**
   c. Explain : i) process group   ii) session.   **(04 Marks)**

6 a. What is daemon? Explain characteristics and coding rules.   **(10 Marks)**
   b. Write a C/C++ program to show the use of alarm API.   **(06 Marks)**
   c. Define and explain : i) SIGCHLD signal   ii) waitpid function.   **(04 Marks)**

7 a. What is inter-process communication? List any 4 mechanisms (IPC). Also write a C/C++ program that creates a child process to print a message.   **(08 Marks)**
   b. Write a C/C++ program(s) to implement inter-process communication using FIFO file.
                                                                                       (06 Marks)
   c. Explain briefly with examples : i) Message queues   ii) semaphores.   **(06 Marks)**

8 a. Explain shared memory as an inter-process mechanism (IPC).   **(08 Marks)**
   b. What are steam pipes? Explain passing of file descriptors.   **(06 Marks)**
   c. Briefly explain client-server functions.   **(06 Marks)**

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