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10CS62

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022
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. Explain the major differences between ANSI 'C' and K and RC with examples. (08 Marks)
b. Write a C/C++ POSIX compliant program that prints the POSIX defined configuration options supported on any given system using feature test macros. (06 Marks)
c. Explain the common characteristics of API and describe the error status codes. (06 Marks)
- 2 a. Explain the UNIX Kernel support for files with a neat diagram. (09 Marks)
b. Explain the different types of files supported by UNIX/POSIX system along with the commands to create those. (06 Marks)
c. Explain the differences between hard link and soft link with examples. (05 Marks)
- 3 a. Explain the following API's with prototypes and arguments.
i) lseek ii) open iii) stat iv) read v) access. (10 Marks)
b. What are the two types of locking? Write a 'C' or 'C++' program to illustrate the use of "fcntl" API for file locking mechanism. (10 Marks)
- 4 a. Explain the various ways for a process to terminate with examples. (08 Marks)
b. Write a C or C++ program to illustrate the use of setjmp and longjmp functions. (06 Marks)
c. Explain memory layout of a 'C' program with neat diagram. (06 Marks)

PART – B

- 5 a. What is meant by race condition? Write C++ program to illustrate race condition. (06 Marks)
b. What is job control? Explain about the features of job control, with a neat diagram. (08 Marks)
c. Write the prototypes of six different forms of exec API and explain how they differ from each other. (06 Marks)
- 6 a. Write a C program that illustrates how to set up a real time clock interval timer using 'alarm' API. (07 Marks)
b. What is signal? List and describe some signals supported by UNIX system. (05 Marks)
c. What is daemon process? Explain the daemon characteristics and coding rules? (08 Marks)
- 7 a. What is meant by pipe? Write a C++ program to send data from parent process to child process using pipes. (05 Marks)
b. What is IPC? With a neat diagram, explain the client server communication using FIFO's. (07 Marks)
c. Write short notes on the following: i) Message Queues ii) Semaphores. (08 Marks)
- 8 a. Explain the concept of shared memory with an example C (or) C++ program. (08 Marks)
b. Explain briefly about stream – pipes. (05 Marks)
c. Explain briefly about the process of passing an open file between processes with neat diagram. (07 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.