CBCS SCHEME

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17CS744

Seventh Semester B.E. Degree Examination, July/August 2022
UNIX System Programming

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Discuss in detail the differences between ANSI C and K and R C standards. **(08 Marks)**

b. Write a program [C/C++ program] to check if it is ANSI C compliant and to demonstrate the usage of CPP symbols. **(04 Marks)**

c. Write a C/C++ program to check for the following lim ts :
i) Number of clock ticks
ii) Maximum number of child processes
iii) Maximum path length
iv) Maximum number of characters in a filename
v) Maximum number of opened files/processes. **(08 Marks)**

OR

2 a. Explain the POSIX Feature Test Macros. **(05 Marks)**

b. List the common functions performed by UNIX API. **(05 Marks)**

c. Explain the sysconf( ), pathconf( ) and fpathconf( ) functions with their prototypes and arguments. **(06 Marks)**

d. Write a C/C++ program to illustrate the checking and displaying the _POSIX_VERSION constant of the system. **(04 Marks)**

Module-2

3 a. With a neat diagram describe the Unix Kernel support for files. **(10 Marks)**

b. Explain the following API's with their prototypes :
i) open ii) lseek iii) stat iv) access v) link. **(10 Marks)**

OR

4 a. Discuss the relationship between stream pointers and file descriptors along with the appropriate functions. **(06 Marks)**

b. Differentiate between Hard link and symbolic links. **(04 Marks)**

c. Explain the fchtl API for file locking. Write a program to demonstrate file locking using fcntl API. **(10 Marks)**

Module-3

5 a. Explain the fork( ) and vfork( ) functions along with programming examples. **(10 Marks)**

b. Explain the Wait( ) and Waitpid( ) API's along with the differences between them. Write a C/C++ program to avoid a Zombie process by calling fork( ) twice. **(10 Marks)**

OR

6 a. What is a Race Condition? Write a C/C++ program to avoid race condition. **(08 Marks)**

b. Explain the setjmp and longjmp functions with their prototypes. **(04 Marks)**

c. Write short notes on : i) Terminal login ii) Sessions. **(08 Marks)**

Module-4

7 a. Discuss the working of sigprocmask API. Write the prototype with all the arguments. Write a program to check whether the SIGINT signal is present in a process signal mask, add it to the mask if it is not there. The program should also clear the SIGSEGV signal from the process signal Mask. **(10 Marks)**

b. Explain in detail the 5 Daemon Coding Rules. **(10 Marks)**

OR

8 a. With a neat diagram, explain the BSD Syslog Error Logging Facility. **(10 Marks)**

b. Explain the kill API in detail. Write a program to illustrate the implementation of UNIX kill command using kill API. **(10 Marks)**

Module-5

9 a. What are Pipes? Explain the 2 ways to view a Half Duplex Pipe. Write a program to create a pipe between a parent and its child and to send data down the Pipe. **(08 Marks)**

b. Discuss Message Queues in detail along with the functions associated with it. **(08 Marks)**

c. Explain the popen( ) and pclose( ) functions. **(04 Marks)**

OR

10 a. Explain the FIFO or named pipes in detail along with their functions. Discuss the client server communication using FIFO. **(10 Marks)**

b. Discuss the semaphores in detail along with their associated functions. **(10 Marks)**

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