CBCS SCHEME

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17CS744

Seventh Semester B.E. Degree Examination, Feb./Mar. 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. What are major differences between ANSI C and K and R C? Explain with examples.
   (08 Marks)

   b. Define features test macros. List all the five POSIX feature test macros along with their meaning.
   (06 Marks)

   c. Write a C/C++ program to check the following limits
      i)   Max number of child processes
      ii) Max number of opened files
      iii) Number of clock ticks per second.
   (06 Marks)

OR

2 a. Explain the ANSI C CPP symbols with a demonstrative program. **(06 Marks)**

   b. What is POSIX? Explain subgroups of POSIX along with their manifested constants.
   (06 Marks)

   c. Explain the API common characteristics. And describe error status code with their meaning.
   (08 Marks)

Module-2

3 a. With a neat diagram, explain how UNIX kernel supports for file manipulation. **(10 Marks)**

   b. Explain the following APIs with their prototypes :
      i) access   ii) fstat   iii) chmod   iv) lseek **(10 Marks)**

OR

4 a. Explain fcntl API with its prototype. Write a demonstrative program for file locking using fcntl API. **(10 Marks)**

   b. Write a C/C++ program to emulate ln command. **(05 Marks)**

   c. Write a C/C++ program to emulate mv command. **(05 Marks)**

Module-3

5 a. Mention the different ways of process termination. And differentiate between exit and - exit functions. **(06 Marks)**

   b. Write a C program to print all its command line arguments. **(04 Marks)**

   c. Explain setjmp and longjmp functions with their prototypes and a demonstrative program.
   (10 Marks)

OR

6 a. Explain fork and vfork functions with their prototypes. And write a demonstrative program for each. **(10 Marks)**

   b. What is job control? Explain job control features with the help of a neat diagram. **(10 Marks)**

Module-4

7 a. Explain sigaction API with its prototype. And also write a demonstrative program.
   (10 Marks)

   b. Write a C/C++ program to implement the kill command using kill API. **(10 Marks)**

OR

8   a.   Write a C/C++ program to show the use of alarm API.   (06 Marks)
    b.   What is daemon process? Discuss the coding rules of a daemon process.   (08 Marks)
    c.   Discuss how error logging is done by a daemon process with a suitable diagram.   (06 Marks)

Module-5

9   a.   What are pipes? Explain different ways to view a half – duplex pipe. Write a program to send data from a present process to client process using pipes.   (10 Marks)
    b.   What is FIFO? Explain how it is used in IPC. And also explain client – server communication using FIFO.   (10 Marks)

OR

10 a.   Explain message queue APIs with their prototypes.   (10 Marks)
    b.   Explain the following semaphore APIs with their prototypes.
         i) semget   ii) semctl   iii) semop.   (10 Marks)

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