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Sixth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Unix System Programming

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

PART – A

- 1 a. List and explain about major differences between ANSI 'C' and K & R 'C'. Explain with an example. (10 Marks)
- b. Write a program in C/C++ to list the limit values of feature test macros.
 - i) Maximum number of child process
 - ii) Maximum number of files opened
 - iii) Maximum number of clock ticks. (05 Marks)
- c. What are POSIX APIS? Explain API common error status codes with an example. (05 Marks)
- 2 a. Discuss with a neat diagram UNIX kernel support for files. (10 Marks)
- b. List and explain different types of UNIX files with an example. (05 Marks)
- c. Differentiate between hard link and symbolic link files. (05 Marks)
- 3 a. Define and explain the following APIs with an example:
i) open ii) write iii) fcntl iv) stat. (10 Marks)
- b. What are symbolic link APIs? Write a program to emulate the UNIX ln command. (06 Marks)
- c. Give the hierarchy structure of file classes. (04 Marks)
- 4 a. Explain the use of setjmp and longjmp functions with an example. (08 Marks)
- b. Explain how a C program is started and terminated with an example. (06 Marks)
- c. With a neat sketch, explain the memory layout of the C program. (06 Marks)

PART – B

- 5 a. Discuss about fork() and vfork() functions with an example. (08 Marks)
- b. What is race condition? Write a C/C++ program to demonstrate race condition. (06 Marks)
- c. What is Zombie process? Write a C/C++ program to avoid the Zombie process by forking twice. (06 Marks)
- 6 a. What is signal? Explain how signals can be handled with a suitable example. (08 Marks)
- b. Illustrate with an example waitpid and SIGCHLD signal along with a program. (07 Marks)
- c. What are daemon process? Discuss about its characteristics with an example. (05 Marks)
- 7 a. With a help of neat diagram, explain job control operation. (06 Marks)
- b. Explain popen() and pclose() functions, with an example. (08 Marks)
- c. Discuss about client-server communication using FIFO. (06 Marks)
- 8 Write a short note on:
 - a. Shared memory
 - b. Message queues
 - c. sigaction() function
 - d. Process accounting. (20 Marks)

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.