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10CS62

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 deamon 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)**

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