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10CS62

Sixth Semester B.E. Degree Examination, July/August 2021
UNIX System Programming

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. What are the major differences between ANSI 'C' and K and R C? Explain with examples. **(08 Marks)**

b. List atleast four POSIX.1 feature test macro's with their meanings. Write a C/C++ program to demonstrate the same. **(08 Marks)**

c. Explain the meaning of following global error status codes defined in <error.h>:
(i) EINTR (ii) ENOMEM (iii) CHILD (iv) EFAULT **(04 Marks)**

2 a. Discuss different file types available in UNIX or POSIX system with commands that can be used to create file types. **(10 Marks)**

b. Explain Unix Kernel support for file manipulation which involves opening and closing of files. **(10 Marks)**

3 a. Assume a file file1 t×t of size 100 bytes exists in the system in the dir path/usr/work. Write a C/C++ program to read last 20 bytes from the file and display it to the standard console . **(06 Marks)**

b. Write a C/C++ program to ln-command. **(04 Marks)**

c. Discuss how file and record locking can be achieved with the help of fcntl API. **(10 Marks)**

4 a. Write a C/C++ program to demonstrate the use of atexit function. **(06 Marks)**

b. Explain environment variables with an example program. **(07 Marks)**

c. Explain the memory layout of a C-program. **(07 Marks)**

5 a. What is fork and Vfork? Explain with an example program for each with appropriate comments wherever possible. **(10 Marks)**

b. Describe with a neat diagram, the sequence of processes involved in executing TELNET server. **(06 Marks)**

c. What is a session? Explain what happens if the calling process that creates a new session is not a process group leader. **(04 Marks)**

6 a. What are signals? List atleast four signals with their action. Demonstrate a signal handler with an example program. **(07 Marks)**

b. What are daemon processes? Discuss daemon characteristics and coding rules. **(08 Marks)**

c. Explain the Kill and alarm APIs. **(05 Marks)**

7 a. What are pipes? Write a C/C++ program to create a pipe from parent to child and send the data down the pipe. **(07 Marks)**

b. What are FIFOs? Explain with a neat diagram, the client-server communication using FIFOS. **(07 Marks)**

c. Explain the following message queue functions :
(i) msgget (ii) msgsnd **(06 Marks)**

8 a. Explain the socket programming functions with their prototypes:
(i) Socket (ii) Connect (iii) Listen (iv) Accept. **(10 Marks)**

b. Explain passing of file descriptors between processes with a neat diagram. **(10 Marks)**

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