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10CS62

Sixth Semester B.E. Degree Examination, June/July 2015

Unix System Programming

Time: 3 hrs. Max. Marks: 100

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

PART – A

1 a. All posix confirming system are not unix system (True/False). **(01 Marks)**

b. What are the restrictions specified to POSIX.1 by FIPS standard? **(07 Marks)**

c. Define different C preprocessor symbols defined by ANSI C. **(06 Marks)**

d. What is errno variable? Write a C/C++ program to print error diagnostic message of API executions (using this variable). **(06 Marks)**

2 a. With a neat structure, explain how Kernel supports for files (file operation open, read/write, fseek). **(10 Marks)**

b. What is the relationship between file stream pointer and file descriptor? What functions to be used to convert them one from each other. **(06 Marks)**

c. Give any four differences between hard link and symbolic link files. **(04 Marks)**

3 a. What is umask value? What is the actual permission set for newly created file, if umask value is 0002 and permission specified in open call is 0664? Define how umask value can be changed by calling process to remove write permission of group members and read, write permission for other members? **(05 Marks)**

b. Write C/C++ command line program to implement Unix mv command. **(05 Marks)**

c. What access permission is set for a process created while executing excutable file, if set UID and set GID flags are ON? **(05 Marks)**

d. Define structure flock. Create a write lock for a region behind 5 bytes from current file offset position to the end of the file. Consider file size is 100 bytes and current file offset is at 10 bytes. **(05 Marks)**

4 a. Illustrate with simple program how atexit function is used to register exit handler function. **(07 Marks)**

b. What alloca function? Indicate any one advantage and disadvantage of this function. **(03 Marks)**

c. What is the use of setjmp and longjmp functions? Illustrate them with simple program. **(10 Marks)**

PART – B

5 a. What is the effect when following happens in the system?

i) Parent terminates before child.

ii) Child terminates before parent and parent not waited for child termination status.

iii) Any of the Init child process terminates. **(06 Marks)**

b. Explain wait and waitpid functions. What are the macros defined by POSIX.1 to check how process is terminated? **(08 Marks)**

c. What is exec function? Describe different exec functions with their prototypes. **(06 Marks)**

6 a. Explain characteristics of sessions and process groups with a neat diagram. (08 Marks)
b. Explain with a neat diagram how Kernel supports for signals. (06 Marks)
c. Explain sigaction API with its prototype. (06 Marks)

7 a. What are pipes? With a simple diagram show how parent and child communicate using pipes. Write a program to send data from parent to child over a pipe. (12 Marks)
b. What is FIFO? With a neat figure show FIFO's are used for client server communication. (08 Marks)

8 a. What is message queue? Write functions to use message queue for sending and receiving data. (10 Marks)
b. Write short notes on any two :
i) popen and pclose functions.
ii) Semaphores
iii) Characteristics of Daemon process. (10 Marks)