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Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
UNIX System Programming

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question   from each module.*

Module-1

a. List the differences between ANSI C and KandR(K & R)C. Discuss any two differences in detail. **(08 Marks)**

b. What is the necessity of sysconf( ), pathconf( ) and fpathconf( ) functions? Write a C/C++ programme to illustrate the same. **(08 Marks)**

OR

2 a. What is error status code? List and explain the meaning of any 4 error status codes. **(06 Marks)**

b. List the common functions performed by UNIX APIs. **(04 Marks)**

c. Write a C program to illustrate the following using C preprocessor symbols.
   i)   to check whether the complier is ANSI C complaint
   ii) to get the physical line number of a source file
   iii) to get file name
   iv) to get date and time. **(06 Marks)**

Module-2

3 a. List any four differences between hardlink and soft link (symbolic link). **(04 Marks)**

b. Find the actual file permission if open( ) is called to create a file /usr/names•txt. Assume default file permission is 0666 and umask of the calling process is :
   umask (S_ IWOTHIS – IXOTH IS IWGRP). **(04 Marks)**

c. Discuss the working of ',seek' system call. Explain all the parameters in detail. **(08 Marks)**

OR

4 a. Discuss how 'link' and 'unlink' system calls can be used to implement 'my' command in UNIX. **(06 Marks)**

b. Using suitable diagram show the process's FDT (File Descriptor Table), FT (File Table) IT (Incode Table) contents after the operation : "A process has opened 3 files — `xyz' for read only, `abc' for read write and `abc' again for write only". Discuss the same in detail. **(10 Marks)**

Module-3

5 a. Discuss how a C program is started and terminated in various ways along with suitable diagram. (10 **Marks**)

b. Write a C program to avoid Zombie process by forking twice. **(06 Marks)**

OR

6 a. What is the use of `setjmp' and `Iongjmp' function? Write a C program to illustrate the same. **(08 Marks)**

b. What is Job control? List the 3 forms of support needed for Job control. **(05 Marks)**

c. Compare 'fork' and 'vfork' system call. **(03 Marks)**

<center>Module-4</center>

7 a. Define signal. Categorize the ways in which a process can handle the signals. **(05 Marks)**
   b.   Discuss the working of `sigprocmask' API. Explain all the parameters in detail. **(08 Marks)**
   c.   Mention any 3 Daemon characteristics. **(03 Marks)**

<center>**OR**</center>

8 a. Write a C program that checks whether SIGINT signal is present in a process signal mask and adds it to the mask if it is not there. It should clear SIGSEGV signal from the process signal mask. **(08 Marks)**
  b. Discuss how error logging is done by a Daemon process with suitable diagram. **(08 Marks)**

<center>**Module-5**</center>

9 a. Define IPC. List the 1PC types supported in UNIX system. **(05 Marks)**
  b. How to create a pipe in UNIX programming? List the limitations of pipe. **(04 Marks)**
  c. Develop a code snippet that the parent sends "Hello world" message to the child process through the pipe. The child on receiving this message should display it on standard output. **(07 Marks)**

<center>**OR**</center>

10 a. Illustrate how FIFO is useful in client server communication. **(08 Marks)**
    b. Define message queue. Discuss how it is useful in inter-process communication. **(08 Marks)**