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06CS62

**Sixth Semester B.E. Degree Examination, June/July 2015**  
**Unix System Programming**

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART - A**

- 1 a. Explain POSIX standards. Write a program in C to check whether cc compiler is POSIX complaint or not. (06 Marks)  
b. Explain POSIX feature test macros. Write a program to check if these constants are defined on OS. (06 Marks)  
c. Explain sysconf and pathconf functions. Write a program to query the number of links that can be created on a file and the number of clock ticks per second on your OS. (08 Marks)
- 2 a. Explain UNIX kernel support for files with all the kernel data structures used. (08 Marks)  
b. Explain the hard links and symbolic links with example. Give differences between them. (06 Marks)  
c. Explain the stream pointers and file descriptors usage in application programming. (06 Marks)
- 3 a. Explain the following system calls with example code.  
i) open ( ) ii) stat ( ) iii) fcntl ( ) iv) fseek ( ) (10 Marks)  
b. Write a program in C to display the file type, permission set of all those files passed as command line parameter by using stat ( ) systems call. (10 Marks)
- 4 a. Explain process termination of C program on UNIX OS with block diagram. Write a program to schedule exit handlers. (08 Marks)  
b. Write a program to print the list of environment variables on UNIX OS. Explain the functions used to change the environment of UNIX. (06 Marks)  
c. Explain setrlimit ( ) and getrlimit ( ) with all possible resource parameters. (06 Marks)

**PART - B**

- 5 a. Explain fork ( ) and vfork ( ). With a program explain the use of exit ( ) and \_exit ( ) from a child process. (06 Marks)  
b. Explain different variations of exec system calls. Write a program to execute shell commands given as I/P by using exec system call. (08 Marks)  
c. Explain terminal logins in BSD. Define process group and sessions. (06 Marks)
- 6 a. Explain signal handling on UNIX OS. Write a program to ignore SIGALARM and SIGINT signals on a process. (05 Marks)  
b. Explain sigprocmask ( ) function along with other functions that support setting the marking value. Write a program to mask SIGINT signal if it is not currently masked. (10 Marks)  
c. Explain unreliable signal system with example. (05 Marks)
- 7 a. Explain message queue representation in UNIX kernel with all supporting functions to create a message queue and use it in an application. (10 Marks)

b. Write a program in C to implement a pipe as an IPC between child 1 and child 2 processes which execute a job of the form "command 1 | command 2" where child 1 executes command 1 and o/p of this is used as I/P by child 2 to execute command 2. (10 Marks)

8 Write short notes on :

- a. Race condition.
- b. Directory file API's.
- c. Semaphores.
- d. Socket system calls.

(20 Marks)

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