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Sixth Semester B.E. Degree Examination, June/July 2011
Unix Systems Programming

Time: 3 hrs.

Max. Marks:100

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

PART - A

- 1 a. What are the major differences between ANSI "C" and K and R "C"? Explain with examples. (08 Marks)
- b. What do you understand by the term feature test macros? List all the five features test macros along with their meanings. (06 Marks)
- c. Write a C++ program to list the actual values of the following system configuration limits on a given unix OS.
 - i) Maximum number of child process that can be created.
 - ii) Minimum number of files that can be opened simultaneously.
 - iii) Number of clock ticks. (06 Marks)
- 2 a. What are the API common characteristics? List any five values of the global variable errno along with their meanings whenever API's fail. (06 Marks)
- b. List and explain the different file types available in unix. (08 Marks)
- c. Describe the unix kernel support files. (06 Marks)
- 3 a. Explain the following API's with prototypes :
 - i) Open ; ii) Lseek ; iii) Stat ; iv) Read. (08 Marks)
- b. Write a C++ program to implement following unix commands i) ln ; ii) mv (08 Marks)
- c. Bring out the differences between hardlink and symbolic link. (04 Marks)
- 4 a. What are the different ways for a process to terminate? Explain exit, -exit, atexit functions with its prototypes. (08 Marks)
- b. Explain the memory layout of a C program with a neat diagram. (06 Marks)
- c. Explain getrlimit and setrlimit functions with prototype. Mention the three rules to change the resource limits. Give four resource values. (06 Marks)

PART - B

- 5 a. What is fork and vfork? Explain with an example program for each. (08 Marks)
- b. What is zombic process? Write a C program to avoid zombic process by forking twice. (06 Marks)
- c. List the six different forms of exec API's. Write a program that exec's a program echoall to display all the command line and environment variables. (06 Marks)
- 6 a. What is a signal? Mention the different sources of signals. Discuss any four POSIX defined signals. Write a program to setup signal handler for SIGINT and SIGALARM. (08 Marks)
- b. What is Daemon? Discuss the basic coding rules. (08 Marks)
- c. What is job control? What are three forms of support from the OS required for job control? (04 Marks)
- 7 a. What are pipes? What are their limitations? Write a program to send data from parent to child over a pipe. (06 Marks)
- b. What is FIFO? Explain how FIFO can be used to implement client server communication model with an example. (06 Marks)
- c. What are the different system calls available to create and manipulate semaphores? Explain. (08 Marks)
- 8 a. What is socket? Discuss how to create and destroy a socket. (08 Marks)
- b. Write short notes on: i) Race condition ; ii) Network login ; iii) Message queues. (12 Marks)

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Important Note : 1. On completing your answers, carefully draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.