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10CS62

Sixth Semester B.E. Degree Examination, June/July 2019

Unix System Programming

Time: 3 hrs.

Max. Marks: 100

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

PART - A

- 1 a. Bring out the major differences between ANSIC and K and R'C'. Explain each with examples. (08 Marks)
- b. Write a C/C++ program to check the following units :
 - (i) Clock ticks.
 - (ii) Maximum number of child process
 - (iii) Maximum path length.
 - (iv) Maximum file name.
 - (v) Maximum number of files can be opened. (08 Marks)
- c. Write any 4 error status codes and their meanings. (04 Marks)
- 2 a. Explain the different file types available in Unix or Posix systems. (10 Marks)
- b. Discuss with a neat diagram the different data structures supported by Unix Kernel for the file manipulation. (06 Marks)
- c. What are the differences between Handlink and Softlink with examples? (04 Marks)
- 3 a. Explain the following API's with their prototype definitions and return values:
 - (i) lseek (ii) fstat (iii) link (iv)fcntl (v) access. (10 Marks)
- b. What are symbolic link file API's? Write a C/C++ program to emulate the unix in command. (10 Marks)
- 4 a. Explain briefly memory layout of C program. (08 Marks)
- b. Write a C/C++ program to demonstrate the use of `-atexit()`. (08 Marks)
- c. Explain `setrlimit` and `getrlimit` with their prototypes. (04 Marks)

PART - B

- 5 a. What is zombic process? Write a C/C++ program to avoid zombic process by forking twice. (10 Marks)
- b. What is controlling terminal? Explain its characteristics and relation to session and process groups. (10 Marks)
- 6 a. What is signal? Explain with a program how to setup a signal handler. (08 Marks)
- b. Explain with suitable example kill function. (06 Marks)
- c. Discuss the daemon characteristics and coding rules. (06 Marks)
- 7 a. What do you mean by pipes? List out their limitations. Write a C/C++ program to send data from parent to child over pipe. (10 Marks)
- b. What is FIFO? Explain how it is used in IPC? Discuss with an example, the client server communication, using FIFO's. (10 Marks)
- 8 Write a short notes on:
 - a. Race conditions.
 - b. Semaphores
 - c. Message queues.
 - d. Alarm and Pause functions. (20 Marks)

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Important Note : 1. On completing your answers, compulsorily 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.