USN [| | | | | | | | | |] 10CS62

Sixth Semester B.E. Degree Examination, June/July 2014
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. What are the major differences between ANSI C and K&R C? Explain with examples.
       (08 Marks)
   b. What is POSIX API? Explain the commonly occurring error status codes and their meaning.
       (08 Marks)
   c. Write a C++ program to check and display the POSIX version constant of the system on
       which it is run.   **(04 Marks)**

2 a. Discuss with a neat diagram the different data structures supported by Unix kernel for file
       manipulation.   **(08 Marks)**
   b. List all the attributes of UNIX or POSIX file along with their meaning. Which are the
       attributes that remains unchanged for the entire life of the file and why?   **(08 Marks)**
   c. Differentiate between hard link and symbolic link.   **(04 Marks)**

3 a. Explain the following API's along with their prototype definition and possible cause for
       failure:
       (i) open   (ii) write   (iii) fcntl   (iv) stat   **(12 Marks)**
   b. How do you access and modify the time stamps of a file? Explain the prototype used for
       that. Write a program to illustrate the usage of the above prototype.   **(08 Marks)**

4 a. Explain the use of setjmp and longjmp functions, with examples.   **(08 Marks)**
   b. With related data structure, explain the Unix kernel support for a process.   **(08 Marks)**
   c. What are the different ways in which a process can terminate normally?   **(04 Marks)**

PART – B

5 a. List and explain the different forms of exec function with prototype declaration along with
       meaning. Write a program to echo all its command line arguments and environment
       variables.   **(12 Marks)**
   b. What is process accounting? Write a program to illustrate the generation of accounting data.
       (08 Marks)

6 a. What are signals? List any four signals along with brief explanation. Write a program to
       setup signals handler for SIGALRM and SIGINT signals.   **(08 Marks)**
   b. What are daemon processes? Explain the BSD facility adopted by daemon processes for
       error handling.   **(08 Marks)**
   c. Write a C++ program to illustrate the implementation of the Unix Kill command using the
       Kill API.   **(04 Marks)**

7 a. What are pipes? Explain the different ways to view a half duplex pipe. Write a program to create a pipe between a parent and its child and to send data down the pipe. **(10 Marks)**

  b. Discuss with an example, the client-server communication using FIFO. **(06 Marks)**

  c. List along with prototype declaration and meaning, the different types of system calls available to create and manipulate semaphore. **(04 Marks)**

8 a. What is a socket? Describe the socket API. Explain the different API's used for establishing connection between two system using socket? **(10 Marks)**

  b. Write a short notes on the following :
    (i) Race condition   (ii) File and Record locking. **(10 Marks)**

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