10CS62

Sixth Semester B.E. Degree Examination, June/July 2013
UNIX System Programming

Time: 3 hrs.   Max. Marks:100

Note: *1. Answer FIVE full questions, selecting*
atleast TWO questions from each part.
2. Write comments for all the programs.

PART – A

1 a. What is POSIX standard? Explain the different subsets of POSIX standards. **(05 Marks)**
   b. Write a C/C++ POSIX complaint program to check the following limits :
      i)   Number of clock ticks
      ii) Maximum number of child processes
      iii) Maximum path length
      iv) Maximum characters in a filename
      v)   Maximum number of open files per process. **(10 Marks)**
   c. Explain the common characteristics of API and describe the error status code. **(05 Marks)**

2 a. Explain the different file types available in UNIX or POSIX systems. **(10 Marks)**
   b. Describe the UNIX kernel support for files. **(06 Marks)**
   c. Differentiate between hard links and symbolic links. **(04 Marks)**

3 a. Explain the importance of file and record locking in UNIX. Show how "fcntl" API can be used for file and record locking. **(10 Marks)**
   b. Write a C/C++ program to emulate *l*n command in UNIX. **(05 Marks)**
   c. Write a C/C++ program to emulate mv command in UNIX. **(05 Marks)**

4 a. Explain with a neat block diagram. the memory layout of a C program. **(05 Marks)**
   b. For the following given C program, identify the various segments when the program is executed :
      ```
      # include <stdio.h>
      int a = 5;
      int b;
      int data [10];
      const int i = 5;
      int main( )
      {
      int X;
      char * ptr = malloc(50);
      return 0;
      }
      ```
      (05 Marks)
   c. Explain the setjmp( ) and longjmp( ) functions with an example C/C++ program illustrating their usage. **(10 Marks)**

PART – B

5 a. What do you mean by fork( ) and vfork( ) functions? Explain both functions with example programs (write-separate programs). **(10 Marks)**

   b. What is job control? Summarize the job control features with the help of neat diagram. **(10 Marks)**

6 a. Explain the sigaction( ) function by giving the prototype and discuss its features. **(08 Marks)**

   b. Briefly explain the kill( ) API and the alarm( ) API. **(06 Marks)**

   c. What is a daemon process? Discuss its characteristics. **(06 Marks)**

7 a. What is FIFO? Explain how it is used in IPC. Discuss with an example C/C++ program the client –server communication using FIFO's. **(10 Marks)**

   b. Write short notes on the following :
      i) Message queues
      ii) Semaphores. **(10 Marks)**

8 a. Explain the concept of shared memory with an example C/C++ program. **(10 Marks)**

   b. What do you mean by passing file descriptors between processes? Explain. **(10 Marks)**

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