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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 at least 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 ln 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)
