CS61

NEW SCHEME

Reg. No. ☐☐☐☐☐☐☐☐☐☐

Sixth Semester B.E. Degree Examination, January / February 2006

Computer Science and Engineering/Information Science & Engineering

Unix Systems Programming

Time: 3 hrs.)   (Max.Marks : 100

Note: *Answer any FIVE full questions.*

1. (a) What is POSIX standard ? Explain different subsets of POSIX standard. Write the structure of the program to filterout non-POSIX compliant codes from a user program. **(6 Marks)**

   (b) Write a C/C^{++} $POSIX$ compliant 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 file name
   - v) Maximum number of open files per process   **(8 Marks)**

   (c) Explain the common characteristics of API and describe the error status codes. **(6 Marks)**

2. (a) Explain the different file types available in UNIX or POSIX systems. **(8 Marks)**

   (b) Describe the UNIX Kernel support for files. **(8 Marks)**

   (c) Write the code segment in C that reads utmost 100 bytes into a variable but from standard input. **(4 Marks)**

3. (a) List and explain the access mode flags and access modifier flags. Also explain how the permission value specified in an 'open' call is modified by its calling process 'umask' value. **(8 Marks)**

   (b) Explain how fentl API can be used for file and record locking. **(8 Marks)**

   (c) Give the hierarchy structure of the file classes. **(4 Marks)**

4. (a) What is fork and vfork ? Explain with an example program for each. **(8 Marks)**

   (b) Describe the UNIX kernel support for a process. Show the related data structures. **(8 Marks)**

   (c) Write a program in C/C^{++} to obtain process attributes. **(4 Marks)**

5. (a) What is job control ? Summarize the job control features with the help of a figure. **(10 Marks)**

   (b) Explain the different exec functions ? Describe how their functioning differ from each other. **(10 Marks)**

6. (a) What is a signal ? Discuss any five POSIX - defined signals. Explain how to setup a signal handler. **(10 Marks)**

   (b) What is a daemon ? Give its basic coding rules. **(10 Marks)**

7. (a) What are pipes ? Explain their limitations. Explain how pipes are created and used in IPC with an example. **(10 Marks)**

(b) Explain the UNIX kernel support for messages. Show the related data structures. **(10 Marks)**

8. Write short notes on any FOUR.

(a) Race condition

(b) Zombie process

(c) Network Login

(d) Co process **(5 × 4=20 Marks)**

(e) Interval timers

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