



Seventh Semester B.E. Degree Examination, June/July 2024
UNIX System Programming

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. List the differences between ANSI C and K&R(K & R)C. Discuss any two differences in detail. (08 Marks)
- b. What is the necessity of `sysconf()`, `pathconf()` and `fpathconf()` functions? Write a C/C++ programme to illustrate the same. (08 Marks)

OR

- 2 a. What is error status code? List and explain the meaning of any 4 error status codes. (06 Marks)
- b. List the common functions performed by UNIX APIs. (04 Marks)
- c. Write a C program to illustrate the following using C preprocessor symbols.
 - i) to check whether the compiler is ANSI C compliant
 - ii) to get the physical line number of a source file
 - iii) to get file name
 - iv) to get date and time. (06 Marks)

Module-2

- 3 a. With a neat diagram, explain how UNIX Kernel supports for file manipulation. (10 Marks)
- b. Explain the following APIs. i) `lseek` ii) `access`. (06 Marks)

OR

- 4 a. What is the relationship between file stream pointer and file descriptor? Which functions are used to convert them one from each other and mention their prototypes. (06 Marks)
- b. Explain `fcntl` API. Give an example to demonstrate file locking using `fcntl` API. (10 Marks)

Module-3

- 5 a. Explain with a neat diagram how a C-program is started and terminated in various ways. (08 Marks)
- b. Describe the UNIX Kernel support for a process. Show the related data structure. (08 Marks)

OR

- 6 a. Explain the following functions: i) `waitid` ii) `wait3()` iii) `wait4()` (08 Marks)
- b. What is job control? What are the three forms of support from OS required for job control mechanism? Explain with the help of neat diagram. (08 Marks)

Module-4

- 7 a. Define signal. Categorize the ways in which a process can handle the signals. (05 Marks)
- b. Discuss the working of 'sigprocmask' API. Explain all the parameters in detail. (08 Marks)
- c. Mention any 3 Daemon characteristics. (03 Marks)

OR

- 8 a. Write a C program that checks whether SIGINT signal is present in a process signal mask and adds it to the mask if it is not there. It should clear SIGSEGV signal from the process signal mask. (08 Marks)
- b. Discuss how error logging is done by a Daemon process with suitable diagram. (08 Marks)

Module-5

- 9 a. What are pipes? What are its limitations? Write a program to send data from parent to child over a pipe. (08 Marks)
- b. What is FIFO? Explain how it is used in IPC. Discuss with an example, the client server communications using FIFO's. (08 Marks)

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OR

- 10 a. What are message queues? Write the structure of the message queue and explain each member in detail. (08 Marks)
- b. Write short notes on:
- Stream pipes
 - Passing File Descriptors
- (08 Marks)
