MCA43

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RAMAIAH
Institute of Technology

(Autonomous Institute, Affiliated to VTU)
(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with 'A' Grade

SUPPLEMENTARY SEMESTER EXAMINATIONS – JULY/AUGUST 2018

Course & Branch : **Master of Computer Applications**
Subject : **Unit System Programming**
Subject Code : **MCA43**

Semester : IV
Max. Marks : 100
Duration : 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations.

UNIT- I

1.	a)	What is POSIX standard? Explain different subsets of POSIX standard. Write the structure of program to filter out non POSIX compliant codes from a user program.	CO1	(08)
	b)	List and explain different file types supported on UNIX and POSIX.	CO1	(08)
	c)	Write a note on POSIX.1 FIPS standard.	CO1	(04)
2.	a)	Discuss the differences between ANSI C and K & R C.	CO1	(08)
	b)	What are inodes? Discuss its importance in UNIX file systems.	CO1	(06)
	c)	Compare 'C' stream pointers with file descriptors.	CO1	(06)

UNIT – II

3.	a)	Give the prototype of open API by listing out the required access mode flags and access modifier flags. Illustrate the same with a simple program.	CO2	(10)
	b)	Explain file and record locking with the prototype of the API used for the same.	CO2	(06)
	c)	Differentiate between Hard link & Symbolic Link.	CO2	(04)
4.	a)	Explain following API's with prototypes: (i) Read (ii) lseek (iii) chmod (iv) Access.	CO2	(12)
	b)	Discuss FIFO files. Explain mkfifo() API and its use.	CO2	(08)

UNIT- III

5.	a)	With a neat figure explain how a C program starts and terminates. Explain exit(), _exit() and atexit() functions. Write a simple program to demonstrate exit handlers.	CO3	(10)
	b)	Compare wait and waitpid functions.	CO3	(06)
	c)	Mention the rules to change the resource limits.	CO3	(04)
6.	a)	Explain different ways of process termination, in detail.	CO3	(06)
	b)	Give reasons as to why shared libraries are better, with an example.	CO3	(06)
	c)	What is fork and vfork? With a code snippet illustrate the working of fork().	CO3	(08)

UNIT- IV

7.	a)	With prototypes explain the functions tcgetpgrp, tcsetpgrp, and tcgetsid.	CO4	(06)
	b)	Discuss the characteristics of sessions and process groups.	CO4	(08)
	c)	Discuss different events that may occur when a SIGCHLD signal is generated.	CO4	(06)

8.	a)	Write a note on: (i) Network Login (ii) Orphaned process groups.	CO4	(10)
	b)	What is a signal? Discuss any five POSIX defined signals. Explain how to set up a signal handler.	CO4	(10)

UNIT- V

9.	a)	What are daemons? Discuss daemon coding rules.	CO5	(10)
	b)	What are pipes? What are their limitations? Develop a C++ program that sends "Hello World" message to the child process through pipe.	CO5	(10)
10.	a)	Write short notes on: i) popen() and pclose() functions ii) Coprocesses.	CO5	(10)
	b)	What are FIFOs? What is the difference between pipe and FIFO? Explain client-server communication using FiFos.	CO5	(10)

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Accredited by NBA & NAAC with 'A' Grade

MAKEUP EXAMINATIONS – JUNE/JULY 2018

Course & Branch : Master of Computer Applications
Subject : UniXSystems Programming
Subject Code : MCA43

Semester : IV
Max. Marks : 100
Duration : 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations.

UNIT- I

1.	a)	Explain the differences between ANSI C and K&R C with examples.	CO1	(10)
	b)	Develop a C/C++ POSIX compliant program to check the following limits: • Maximum number of child process • Maximum path length • Maximum character in a file name • Maximum number of open files per process.	CO1	(10)
2.	a)	What is the difference between hard link and symbolic link.	CO1	(05)
	b)	Develop a C/C++ code that prints the POSIX defined configuration options supported on any given system using feature test macro.	CO1	(10)
	c)	Explain different subsets of POSIX standard.	CO1	(05)

UNIT – II

3.	a)	Explain following API's with prototypes: (i) write (ii) access.	CO2	(06)
	b)	What are device files? Discuss API's which are used for working with devices.	CO2	(08)
	c)	What is the importance of locking files? What are mandatory and advisory locks? Why is advisory lock considered safe? What are the drawbacks of advisory locks? Explain.	CO2	(06)
4.	a)	Discuss link and unlink API. Write a program to implement mv command using link and unlink API.	CO2	(08)
	b)	Explain any four directory related API's.	CO2	(12)

UNIT- III

5.	a)	With a neat diagram explain the memory layout of a C program.	CO3	(10)
	b)	Explain different forms of exec functions along with its prototypes and the diagram that shows the relationships among them.	CO3	(10)
6.	a)	Give the prototype of getrlimit and setrlimit functions. Explain any 5 resource limits and briefly explain the limits that they put on the process.	CO3	(10)
	b)	What is race condition? Write a program for generating race condition and avoiding race condition.	CO3	(10)

UNIT- IV

7.	a)	Explain the functions tcgetpgrp, tcsetpgrp, tcgetsid.	CO4	(10)
	b)	Write short notes on the following: (i) Job Control ii) Orphaned Process Groups.	CO4	(10)
8.	a)	What are signals? Explain signal() function.	CO4	(06)
	b)	Describe Unix kernel support for signals.	CO4	(05)
	c)	Explain the following functions with prototypes: i) sigsetjmp ii) kill iii) alarm.	CO4	(09)

UNIT- V

9.	a)	Discuss the characteristics of daemon processes.	CO5	(06)
	b)	Explain popen and pclose functions.	CO5	(06)
	c)	What are semaphores? Explain the API's used to create and control semaphores.	CO5	(08)
10.	a)	Define daemon process? Discuss the basic coding rules.	CO5	(10)
	b)	What are pipes? Write a c/c++ program to send data from parent to child over a pipe.	CO5	(10)

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RAMAIAH INSTITUTE OF TECHNOLOGY

(Autonomous Institute, Affiliated to VTU)
Bangalore – 560 054

SUPPLEMENTARY SEMESTER EXAMINATIONS – AUGUST 2017

Course & Branch : Master of Computer Applications
Subject : Unix System Programming
Subject Code : MCA43

Semester : IV
Max. Marks : 100
Duration : 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations.

UNIT - I

1.	a)	Discuss the differences between ANSI C and K & R C.	CO1	(08)
	b)	Develop program that prints POSIX defined configuration options supported on any given system.	CO1	(04)
	c)	List and explain different file types supported on UNIX and POSIX.	CO2	(08)
2.	a)	What is POSIX standard? Explain its subgroups.	CO1	(06)
	b)	Explain POSIX.1 FIPS standard.	CO1	(06)
	c)	With a neat figure explain the process of opening a file by kernel in UNIX system.	CO2	(08)

UNIT – II

3.	a)	Give the prototype of "open" API by listing out the required access mode flags and access modifier flags. Illustrate the same with a simple program.	CO3	(10)
	b)	With a neat figure explain the memory layout of a C program.	CO4	(06)
	c)	What are environment variables? Explain its significance.	CO4	(04)
4.	a)	Give the prototype for chown, fchown, and lchown. Discuss the need for each of them.	CO3	(04)
	b)	Explain file and record locking with the prototype of the API used for the same.	CO3	(06)
	c)	With a neat figure explain how a C program starts and terminates. Explain exit(), _exit() and atexit() functions. Demonstrate exit handlers with a simple program.	CO4	(10)

UNIT – III

5.	a)	Explain the difference between wait and waitpid functions with the help of a demo program.	CO4	(10)
	b)	Write short notes on: i) Job Control ii) Orphaned Process Groups.	CO4	(10)
6.	a)	Explain the function times() to measure different times of a process. Also demonstrate the usage of times() function with a program.	CO4	(12)
	b)	Explain the functions tcgetpgrp, tcsetpgrp, tcgetsid	CO4	(08)

UNIT – IV

7.	a)	What are daemons? Discuss daemon coding rules.	CO6	(10)
	b)	What are signals? Explain signal function.	CO5	(06)
	c)	What are unreliable signals?	CO5	(04)
8.	a)	Explain the following functions with prototypes: i) sigaction ii) alarm iii) kill iv) sigpending.	CO5	(10)
	b)	Explain the daemon error handling mechanism.	CO6	(10)

UNIT - V

9.	a)	Write short notes on: i) popen() and pclose() functions ii) Coprocesses.	CO7	(10)
	b)	Explain the socket descriptors in detail.	CO8	(10)
10.	a)	What is a pipe? Explain pipe functions. Show the code snippet to send data from parent to child over a pipe.	CO7	(12)
	b)	Explain Non blocking and Asynchronous I/O.	CO8	(08)

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(Autonomous Institute, Affiliated to VTU)
Bangalore – 560 054

MAKEUP EXAMINATIONS – MAY/JUNE 2017

Course & Branch : **Master of Computer Applications** | **Semester** : **IV**
Subject : **Unix System Programming** | **Max. Marks** : **100**
Subject Code : **MCA43** | **Duration** : **3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations

UNIT - I

1.	a)	Explain the differences between ANSI C and K&R C with examples.	CO1	(10)
	b)	Describe different file types available in UNIX/POSIX systems.	CO2	(05)
	c)	What is the difference between hard link and symbolic link?	CO2	(05)
2.	a)	Explain the Unix Kernel support for files.	CO2	(07)
	b)	Develop a C/C++ code that prints the POSIX defined configuration options supported on any given system using feature test macro.	CO1	(07)
	c)	Explain sysconf, pathconf, fpathconf with prototypes.	CO1	(06)

UNIT – II

3.	a)	Explain the following functions with prototypes: i) access ii) chown iii) chmod iv) umask.	CO3	(10)
	b)	Develop a C/C++ program to display the file attributes (file name, file size, file id, no. of hard links, access permissions) using stat() function.	CO3	(10)
4.	a)	Explain the following: i) Shared libraries ii) quick-fit iii) setjmp function iv) getrlimit function.	CO4	(10)
	b)	Explain the concept of file and record locking.	CO3	(10)

UNIT – III

5.	a)	With a code snippet, illustrate the working of fork().	CO4	(06)
	b)	List out different exec functions and explain any 2 of them with prototype.	CO4	(06)
	c)	With a neat figure explain job control and its features.	CO4	(08)
6.	a)	What is race condition? Explain with a code snippet.	CO4	(06)
	b)	Compare wait and waitpid functions.	CO4	(06)
	c)	Explain: (i) Process groups, (ii) Sessions.	CO4	(08)

UNIT – IV

7.	a)	What is a signal? Explain signal function with API. How signals are handled.	CO5	(06)
	b)	Describe sigaction() function.	CO5	(06)
	c)	Explain daemon characteristics and coding rules.	CO6	(08)

8.	a)	What is a signal mask? Explain how signal mask is implemented with API's.	CO5	(06)
	b)	With prototype and a code snippet explain kill() API.	CO5	(08)
	c)	What is error logging? Explain different ways to generate log messages.	CO6	(06)

UNIT - V

9.	a)	What are FIFOs? Explain the client server communications using FIFOs with a neat diagram.	CO7	(10)
	b)	Explain the connection establishment in network IPC.	CO8	(10)
10.	a)	Explain socket descriptors in detail.	CO8	(08)
	b)	Explain popen() and pclose() functions.	CO7	(08)
	c)	What do you mean by Out-of-Band data?	CO8	(04)

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SUPPLEMENTARY SEMESTER EXAMINATIONS – AUGUST 2017

Course & Branch	: Master of Computer Applications	Semester	: IV
Subject	: Unix System Programming	Max. Marks	: 100
Subject Code	: MCA43	Duration	: 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations.

UNIT - I

1.	a)	Discuss the differences between ANSI C and K & R C.	CO1	(08)
	b)	Develop program that prints POSIX defined configuration options supported on any given system.	CO1	(04)
	c)	List and explain different file types supported on UNIX and POSIX.	CO2	(08)
2.	a)	What is POSIX standard? Explain its subgroups.	CO1	(06)
	b)	Explain POSIX.1 FIPS standard.	CO1	(06)
	c)	With a neat figure explain the process of opening a file by kernel in UNIX system.	CO2	(08)

UNIT – II

3.	a)	Give the prototype of "open" API by listing out the required access mode flags and access modifier flags. Illustrate the same with a simple program.	CO3	(10)
	b)	With a neat figure explain the memory layout of a C program.	CO4	(06)
	c)	What are environment variables? Explain its significance.	CO4	(04)
4.	a)	Give the prototype for chown, fchown, and lchown. Discuss the need for each of them.	CO3	(04)
	b)	Explain file and record locking with the prototype of the API used for the same.	CO3	(06)
	c)	With a neat figure explain how a C program starts and terminates. Explain exit(), _exit() and atexit() functions. Demonstrate exit handlers with a simple program.	CO4	(10)

UNIT – III

5.	a)	Explain the difference between wait and waitpid functions with the help of a demo program.	CO4	(10)
	b)	Write short notes on: i) Job Control ii) Orphaned Process Groups.	CO4	(10)
6.	a)	Explain the function times() to measure different times of a process. Also demonstrate the usage of times() function with a program.	CO4	(12)
	b)	Explain the functions tcgetpgrp, tcsetpgrp, tcgetsid	CO4	(08)

UNIT – IV

7.	a)	What are daemons? Discuss daemon coding rules.	CO6	(10)
	b)	What are signals? Explain signal function.	CO5	(06)
	c)	What are unreliable signals?	CO5	(04)
8.	a)	Explain the following functions with prototypes: i) sigaction ii) alarm iii) kill iv) sigpending.	CO5	(10)
	b)	Explain the daemon error handling mechanism.	CO6	(10)

UNIT - V

9.	a)	Write short notes on: i) popen() and pclose() functions ii) Coprocesses.	CO7	(10)
	b)	Explain the socket descriptors in detail.	CO8	(10)
10.	a)	What is a pipe? Explain pipe functions. Show the code snippet to send data from parent to child over a pipe.	CO7	(12)
	b)	Explain Non blocking and Asynchronous I/O.	CO8	(08)

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SEMESTER END EXAMINATIONS – MAY/JUNE 2017

Course & Branch : Master of Computer Applications
Subject : Unix System Programming
Subject Code : MCA43

Semester : IV
Max. Marks : 100
Duration : 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations

UNIT - I

1.	a)	What is POSIX standard? Explain different subsets of POSIX standard.	CO1	(06)
	b)	Why calling an API is more time consuming than calling a user function.	CO1	(05)
	c)	Describe UNIX kernel support for files.	CO2	(09)
2.	a)	Describe the values that the following error status codes/variables contain: i) errno ii) EACCESS iii) EPERM iv) EIO v) BADF.	CO3	(05)
	b)	Describe the different file types available in Unix system.	CO2	(05)
	c)	Develop a C/C++ POSIX complaint program to check the following limits: • Maximum number of child process • Maximum path length • Maximum character in a file name • Maximum number of open files per process.	CO1	(10)

UNIT – II

3.	a)	Explain file and recor d locking using fcntl API.	CO3	(10)
	b)	Explain the following: i) Process termination ii) Command line arguments iii) Memory layout a C program.	CO4	(10)
4.	a)	Implement a C/C++ program to create a regular file for Student data (sname, usn, marks in 3 subjects as a structure) and retrieve the data from the file using file APIs and display in a proper format.	CO3	(10)
	b)	Explain the following functions with its proto types: i) setjmp ii) longjmp iii) getrlimit iv) setrlimit.	CO4	(10)

UNIT - III

5.	a)	What is race condition? Demonstrate race condition with a program.	CO4	(10)
	b)	What are sessions? Explain the arrangement of process into process groups and sessions with a diagram.	CO4	(10)
6.	a)	Explain different exec() functions. Describe how they differ from each other.	CO4	(10)
	b)	Explain terminal controlling with a neat diagram.	CO4	(10)

UNIT – IV

7.	a)	What is single instance daemon? Explain with an example.	CO6	(10)
	b)	How does a daemon handle error messages? Explain.	CO6	(10)

8.		Explain the following functions with prototypes: i) sigsetjmp ii) siglongjmp iii) kill iv) alarm v) sigpending vi) setitimer vii) getitimer viii) sleep.	CO5	(20)

UNIT - V

9.	a)	Describe coprocesses with an example.	CO7	(06)
	b)	Differentiate between pipes and named pipes.	CO7	(06)
	c)	What is a socket? Explain socket function. Discuss different socket types.	CO8	(08)
10.	a)	Explain popen and pclose functions with an example.	CO7	(06)
	b)	Explain the API's used for connection establishment using sockets.	CO8	(06)
	c)	With reference to network IPC explain: (i) Data transfer (ii) out-of-band data, (iii) Nonblocking I/O	CO8	(08)

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SEMESTER END EXAMINATIONS – MAY/JUNE 2018

Course & Branch	: **Master of Computer Applications**	**Semester**	: **IV**
Subject	: **Unit Systems Programming**	**Max. Marks**	: **100**
Subject Code	: **MCA43**	**Duration**	: **3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Non-Programmable calculators are allowed for calculations

UNIT- I

1.	a)	What is POSIX standard? Explain its subgroups.	CO1	(06)
	b)	With a neat figure explain the process of opening a file by kernel in UNIX system.	CO1	(08)
	c)	Write a note on different test macros defined by POSIX.1	CO1	(06)
2.	a)	What is an API. How is it different from C library function? Why calling an API is more time consuming than calling a user function.	CO1	(06)
	b)	With prototype discuss sysconf, pathconf functions.	CO1	(06)
	c)	Discuss different UNIX and POSIX file attributes.	CO1	(08)

UNIT – II

3.	a)	Explain the following functions with prototypes: i) fcntl ii) access iii) open iv) lseek	CO2	(10)
	b)	Develop a C/C++ program to display the file attributes (file name, file size, file id, no. of hard links, access permissions) using fstat() function.	CO2	(10)
4.	a)	Explain the following functions with prototypes: i) mkdir ii) mkfifo iii) symlink iv) readlink	CO2	(10)
	b)	Explain the concept of file and record locking.	CO2	(10)

UNIT- III

5.	a)	How do you create a new process? Explain with example.	CO3	(07)
	b)	Explain the data sharing between parent and child processes with example.	CO3	(07)
	c)	Write short notes on process termination.	CO3	(06)
6.	a)	What are process identifiers? List and describe various functions to get process identifiers.	CO3	(10)
	b)	Explain the function times() to measure different times of a process. Also demonstrate the usage of times() function with a program.	CO3	(10)

UNIT- IV

7.	a)	With a neat figure, explain the terminal login process in BSD UNIX.	CO4	(06)
	b)	Explain how Unix operating system keeps process accounting?	CO4	(06)
	c)	What are signals? Mention different sources of signals. What are the three dispositions the process has when signal occurs? List and explain any four signals.	CO4	(08)
8.	a)	What is a session? Explain with a neat figure of arrangement of processes in processes groups and sessions.	CO4	(08)
	b)	What is job control? What are the three forms of support from the OS required for job control?	CO4	(06)
	c)	What is a signal mask? Explain with prototype and example.	CO4	(06)

UNIT- V

9.	a)	What are daemon processes? Discuss the basic coding rules for daemon processes.	CO5	(10)
	b)	With reference to IPC discuss: (i) Message Queues (ii) Shared memory.	CO5	(10)
10.	a)	What is error logging in daemon processes? Explain different ways to generate log messages.	CO5	(06)
	b)	What are FIFO's? With a neat diagram explain client server communication using FIFO.	CO5	(10)
	c)	Write a note on coprocesses.	CO5	(04)

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