QUESTION BANK

SUBJECT: - ADVANCED OPERATING SYSTEMS (CS-109)

Section I – Multiple Choice Questions

1) ... is a program that acts as an intermediary between a user of a computer and the computer hardware

(a) System Manager (b) Application program

(c) Operating system (d) Source code

2) The goal of an operating system is to...

(a) Execute user programs and make solving user problems easier

(b) Make the computer system convenient to use

(c) Use the computer hardware in an efficient manner

(d) All of them

3) ... controls and coordinates use of hardware among various applications and users

(a) System Manager (b) Operating system

(c) Application program (d) Source code

4) If processes don't fit in memory, moves them in and out to run

(a) Context switching (b) Buffering

(c) Swapping (d) Caching

5) An operating system may be interrupted by...

(a) Hardware interrupts

(b) Software interrupts

(c) Both hardware interrupts as well as software interrupts

(d) Neither hardware interrupts nor software interrupts

6) ... changes the system from user mode to kernel mode & vice versa

(a) Operating System (b) Interrupt

(c) System Call (d) Hardware Manager

7) Communications between processes may be via

(a) Shared memory

(b) Message passing

(c) Both shared memory as well as message passing

(d) Neither shared memory nor message passing

8) ... is a program in execution that forms basis of all computation

(a) Software   (b) Thread   (c) Process   (d) Interrupt

9) ... section of a process contains memory dynamically allocated during run time

(a) Stack   (b) Data   (c) Heap   (d) Text

10) ... contains information associated with each process like its state, number, register values

(a) Program control block

(b) Task control block

(c) Program control block or task control block

(d) Neither program control block nor task control block

11) PCB for a process usually contains

(a) CPU scheduling information   (b) I/O status information

(c) Memory management information   (d) All of these

12) Process ... selects among available processes for next execution on CPU

(a) selector   (b) dispatcher   (c) manager   (d) scheduler

13) ... queue maintains a set of all processes in the system

(a) Job   (b) Ready   (c) Device   (d) I/O

14) A process moves to a ready queue only when it acquires

(a) I/O   (b) file   (c) memory   (d) all of these

15) ... is the mechanism of removing process from memory, storing on disk, bringing back in from disk to continue execution

(a) Scheduling   (b) Synchronizing   (c) Swapping   (d) Dispatching

16) When CPU switches to another process, the system must save the state of the old process and load the saved state for the new process via...

(a) system call　　　　　　　　　　(b) interrupt

(c) context switch　　　　　　　　　(d) application program interface

17) Generally, a process is identified and managed via a

(a) PCB　　　　　　(b) PPID　　　　　　(c) PID　　　　　　(d) PC

18) In UNIX ... system call creates new process

(a) exit()　　　　　　(b) wait()　　　　　　(c) fork()　　　　　　(d) exec()

19) If no parent is waiting for a process, then it is said to be ... and if parent terminated without invoking wait, the process is said to be...

(a) cascaded, ascended　　　　　　(b) orphan, zombie

(c) zombie, orphan　　　　　　　　(d) ascended, cascaded

20) ... process can affect or be affected by other processes, including sharing data

(a) Cooperating　　　　　　　　　(b) Dependent

(c) Cooperating or dependent　　　(d) None of the above

21) Process execution consists of a cycle of

(a) CPU execution and interrupt handling

(b) CPU execution and memory swapping

(c) CPU execution and I/O wait

(d) CPU execution and file handling

22) CPU scheduling decisions may take place when a process

(a) switches from running to waiting state

(b) switches from running to ready state

(c) switches from waiting to ready state

(d) all of these

23) The mechanism of scheduling short process behind long process is called as...

    (a) Convoy effect

    (b) Little's formula

    (c) Belady's anomaly

    (d) Peterson's solution

24) Theoretically, scheduling algorithm is optimal.

    (a) SJF   (b) SRTF   (c) RR   (d) FCFS

25) Preemptive version of SJF is also known as...

    (a) SRTF   (b) RR   (c) FCFS   (d) LRTF

26) Semaphore is ... variable

    (a) integer   (b) character   (c) boolean   (d) float

27) Semaphore can be accessed via two operations namely ... operations

    (a) wait() and signal()

    (b) P() and V()

    (c) proberen() and verhogen()

    (d) all of these

28) In ... semaphore, the integer value can range over an unrestricted domain

    (a) counting   (b) binary   (c) bounded   (d) unbounded

29) ... semaphore is almost same as mutex lock

    (a) counting   (b) binary   (c) bounded   (d) unbounded

30) ... is the condition in which two or more processes are waiting indefinitely for an event that can be caused by only one of the waiting processes

    (a) Starvation

    (b) Deadlock

    (c) Livelock

    (d) Indefinite Blocking

31) ... is a classical problem of synchronization.

    (a) Bounded-Buffer Problem

    (b) Readers and Writers Problem

    (c) Dining-Philosophers Problem

    (d) All of these

32) Deadlock can arise if following condition/s hold simultaneously

    (a) Mutual Exclusion

    (b) Mutual Exclusion, Hold and wait

(c) Mutual Exclusion, Hold and wait, No preemption

(d) Mutual Exclusion, Hold and wait, No preemption, Circular wait

33) ... means only one process at a time can use a resource

(a) Hold and wait (b) Mutual Exclusion

(c) No preemption (d) Circular wait

34) ... means process acquiring at least one resource is waiting to acquire additional resources held by other processes

(a) Hold and wait (b) Mutual Exclusion

(c) No preemption (d) Circular wait

35) ... means a resource can be released only voluntarily by the process holding it, after that process has completed its task

(a) Hold and wait (b) Mutual Exclusion

(c) No preemption (d) Circular wait

36) Logical address is generated by the...

(a) memory manager (b) CPU

(c) memory controller (d) memory unit

37) System maintains a ... queue of ready-to-run processes which have memory images on disk

(a) job (b) device (c) input (d) ready

38) Paging sets up a ... table to translate logical to physical addresses

(a) segment (b) mapping (c) logical (d) page

39) Address generated by CPU is divided into

(a) page number (b) page offset

(c) page frame (d) page number and page offset

40) If there is a reference to a page, first reference to that page will trap to operating system and known as...

(a) page vault (b) page access (c) page reference (d) page fault

41) What is the use of following commands / system calls in UNIX?

1. Fork

2. Exec

3. Wait

4. Exit

5. Sleep

6. Open

7. Read

8. Write

9. Remove

10. Rename

11. Lseek

12. Dup

13. Close

14. Pipe

15. Creat

16. Sync

17. Fsync

18. Fdatasync

19. Fcntl

20. Stat

21. Fstat

22. Lstat

23. Umask

24. Chmod

25. Fchmod

26. Chown

27. Lchown

28. Fchown

29. Utime

30. Mkdir

31. Rmdir

32. Chdir

33. Fchdir

34. Getcwd

35. Setjmp

36. Longjmp

37. Getrlimit

38. Setrlimit

39. Waitpid

40. Waitid

41. Vfork

42. Signal

42) Define interprocess communication.

43) What is file sharing in UNIX?

44) What are atomic operations in UNIX?

45) What is a sticky bit?

46) What is I/O scheduler?

47) How can you copy & move files in UNIX?

48) What are various process states in UNIX?

49) What is the context of a process?

50) What is UNIX shell?

51) What is process scheduling?

52) What are process identifiers?

53) What is a race condition?

54) What are daemons?

55) What is process affinity?

56) What is swapping?

57) What is demand paging?

58) What is process address space?

59) What is swap space?

60) What is RAID?

61) What is a signal?

62) What is signal function?

63) What are unreliable & reliable signal?

64) What is signal set?

65) What is a thread?

66) What is thread scheduling?

67) Define Context Switching.

68) What is a library in Android OS?

69) What is Android Runtime?

70) What is application framework?

Section III – Short Answer Type Questions

71) What are various types of Kernels?

72) What are various applications of Android OS?

73) What are various thread data structures?

74) What are various kernel variables?

75) What are various thread states?

76) What are various libraries in Android OS?

77) What are various disk performance issues?

78) What is the need for buffer cache in UNIX?

79) Explain the concept of UNIX inode.

80) State and explain the structure of a regular file.

81) Explain the layout of system memory.

82) Explain the system startup procedure in UNIX.

83) Explain various time system calls in UNIX.

84) How driver interfaces work in UNIX?

85) How disk interfaces work in UNIX?

Section IV – Long Answer Type Questions

86) How can you explain file subsystem overview in UNIX?

87) Draw and explain Process State Transition Diagram in UNIX.

88) Explain the structure of buffer header in detail.

89) State and explain various advantages and disadvantages of UNIX OS.

90) Explain various building block primitives in UNIX operating system.

91) Explain with proper diagram, architecture of UNIX OS in detail.

92) Explain the structure of buffer pool in detail.

93) State and explain various Buffer Retrieval Scenarios in UNIX.

94) How can you allocate a buffer for a block in UNIX operating system?

95) How can you release a buffer of a block in UNIX operating system?

96) How can you read a disk block in UNIX operating system?

97) State and explain an algorithm for block read ahead.

98) How can you write a disk block contents in UNIX operating system?

99) How UNIX operating system releases an inode?

100) How can you convert a path name to an inode?

101) How can you assign an inode to a new file?

102) State and explain an algorithm for freeing an inode.

103) How can you allocate a disk block to a file?

104) Illustrate open system call for UNIX files.

105) Illustrate read system call for UNIX files.

106) Illustrate write system call for UNIX files.

107) Illustrate create system call for UNIX files.

108) Illustrate close system call for UNIX files.

109) How can you create special files in UNIX?

110) State and explain an algorithm for changing current directory.

111) How can you create unnamed pipes in UNIX?

112) How can you mount files in UNIX?

113) How can you unmount files in UNIX?

114) How can you link files in UNIX?

115) How can you unlink files in UNIX?

116) State and explain process state transition diagram in detail.

117) How can you save the context of a process in UNIX?

118) How can you invoke a system call in UNIX?

119) How can you allocate a region data structure in UNIX?

120) How can you attach a region to a process in UNIX?

121) How can you change the size of a region in UNIX?

122) How can you load a portion of a file into a region in UNIX?

123) How can you free an allocated region in UNIX?

124) How can you detach a region from a process in UNIX?

125) How can you duplicate an existing region in UNIX?

126) Explain an algorithm for allocating and initializing text region.

127) How can you change the size of a process in UNIX?

128) State and explain an algorithm for init process.

129) How a process scheduling takes place in UNIX?

130) State & explain various applications of Android OS.

Section V – Short Note Type Questions

131) Write a short note on UNIX Files & Directories.

132) Write a short note on Super Block.

133) Write a short note on UNIX file subsystem.

134) Write a short note on UNIX interrupts and exceptions.

135) Write a short note on UNIX processees.

136) Write a short note on context of a process.

137) Write a short note on manipulation of process address space.

138) Write a short note on sleep algorithm.

139) Write a short note on wakeup algorithm.

140) Write a short note on signals in UNIX.

141) Write a short note on the userid of a process.

142) Write a short note on UNIX shell.

143) Write a short note on process scheduling in UNIX.

144) Write a short note on UNIX inodes.

145) Write a short note on UNIX File Management.

146) Write a short note on UNIX Process Management.

147) Write a short note on UNIX Memory Management.

148) Write a short note on UNIX Disk Management.

149) Write a short note on UNIX Signal Management.

150) Write a short note on UNIX Thread Management.