

**Q1.** Which of the following is single user, single tasking Operating System.

- a) Linux
- b) DOS
- c) Windows Xp
- d) Windows 98

**Correct answer is b)**

**Q2.** Linux Operating System was written by

- a) Linux Trovald
- b) Bill Gates
- c) Dennis Ritchie
- d) Bill Joy

**Correct answer is a)**

**Q3.** Main advantage of Multiprocessor system is

- a) Increase throughput
- b) Economy of scale
- c) Increase reliability
- d) All the above

**Correct answer is b)**

**Q4.** \_\_\_\_\_ guarantees that critical task be completed on time.

- a) Hard real time
- b) Soft real time
- c) Both a, b
- d) None of them

**Correct answer is c)**

**Q5.** UNIX OS supports

- a) User Level Thread
- b) Kernel Level Thread
- c) Both
- d) None

**Correct answer is c)**

**Q6.** Short term scheduling refers to

- a) Job scheduling
- b) CPU scheduling
- c) Disk scheduling
- d) None of the above

**Correct answer is b)**

Q7. The process of CPU switching to other process is called as \_\_\_\_\_ switching

- a) Context
- b) Process
- c) Scheduler
- d) Thread

**Correct answer is a)**

Q8. Which of the scheduling algorithms have best response time?

- a) First come first serve
- b) Time sharing
- c) Shortest job first
- d) Priority Algorithm

**Correct answer is b)**

Q9. The solution to Critical Section problem must satisfy

- a) Mutual Exclusion
- b) Progress
- c) Bounded wait
- d) All the above

**Correct answer is d)**

Q10. Which of them is not necessary condition for deadlock?

- a) Mutual Exclusion
- b) Preemption
- c) Hold and wait
- d) Circular wait

**Correct answer is b)**

Q11. The address generated by CPU is commonly referred as \_\_\_\_\_ address

- a) Physical
- b) Logical
- c) Relocatable
- d) Absolute

**Correct answer is b)**

**It is also known as ‘virtual’ address**

Q12. Compaction is the solution to \_\_\_\_\_

- a) Internal Fragmentation

- b) External Fragmentation
- c) Segmentation
- d) Paging

**Correct answer is b)**

Q13. Virtual memory is separation of user \_\_\_\_\_ memory from \_\_\_\_\_ memory.

- a) Program, Data
- b) Physical, Local
- c) Static, Dynamic
- d) Physical, Logical

**Refer first two pages of “virtual memory” chapter (galvin)**

Q14. High Paging activity is called \_\_\_\_\_.

- a) Framing
- b) Thrashing
- c) Buffering
- d) Mapping

**Correct answer is b)**

Q15. Cycle Stealing can \_\_\_\_\_ CPU computation.

- a) Increase
- b) Decrease
- c) Will not effect
- d) Depends upon degree of programming

**Correct answer is a)**

Q16. The first block on the disk is

- a) Super Block
- b) Boot Block
- c) Data Block
- d) Free Block

**Correct answer is b)**

Q17. \_\_\_\_\_ system call is used to create a file in LINUX

- a) create
- b) open
- c) make
- d) cat

**Correct answer is a)**

Q18. RAID level 3 is also called as \_\_\_\_\_

- a) Memory style correction code organization
- b) Bit-interleaved parity organization
- c) Block-interleaved parity organization
- d) Block-interleaved distributed parity

Q19. On DOS when you club all the commands into one file, than the file is called as

- a) Batch
- b) Executable
- c) Com
- d) Text

**Correct answer is a)**

Q20. Echo is a

- a) External command
- b) Internal command
- c) Shell command
- d) None of the above

**Correct answer is b)**

Q21. \_\_\_\_\_ shell script is always executed when the user log in

- a) .bashrc
- b) .bashprofile
- c) .bashhistroy
- d) .gconf

**Correct answer is a)**

Q22. GRUB is a

- a) Operating system
- b) Shell script
- c) Library routine
- d) Boot Loader

**Correct answer is d)**

Q23. For a shell script \_\_\_\_ gives the number of parameter passed.

- a) \$#
- b) \$\$
- c) \$\*
- d) \$@

**Correct answer is a)**

Q24. \_\_\_\_\_ used to evaluate an arithmetic expression is shell script.

- a) Expr
- b) Export
- c) Eval
- d) Set

**Correct answer is a)**

Q25. \_\_\_\_\_ command is used to pass control information to device drivers

- a) Open
- b) Close
- c) Read
- d) Ioctl

**Correct answer is d)**

Q26. The size of /dev/null file is always

- a) Zero
- b) 1 Block size
- c) Infinite
- d) 8 Byte

Q27. By default LINUX always opens \_\_\_\_\_ file

- a) stdin
- b) stdout
- c) stderr
- d) All the above

**Correct answer is d)**

Q28. ls -l commands give \_\_\_ column

- a) 6
- b) 7
- c) 8
- d) 9

Q29. For debugging a C file in gdb. The C file must be compiled with \_\_\_\_\_ option.

- a) c
- b) d
- c) g
- d) b

**Correct answer is c)**

Q30. \_\_\_\_\_ is used to create a child process

- a) Fork
- b) Exec
- c) Create
- d) Open

**Correct answer is a)**

Q31. File with permission -r-xr-xr-x can never be

- a) Executed
- b) Read
- c) Write
- d) Appended

**Correct answer is c)**

Q32. Which one is invalid

- a) x=`expr \$x + 1`
- b) x=`expr \$x - 1`
- c) x=`expr \$x \* 1`
- d) x=`expr \$x / 1`

**all are valid**

Q33 . \_\_\_\_\_ is used to make a line comment line in shell script

- a) #
- b) ;
- c) //
- d) /\* Comment \*/

**Correct answer is a)**

Q34. On a 32 bit machine size of Integer in C is

- a) 2 Byte
- b) 4 Byte
- c) 6 Byte
- d) 8 Byte

**Correct answer is b)**

Q46. The command to copy 5 lines in vi editor is \_\_\_\_\_-

- a) 5dd
- b) 5cc
- c) 5yy
- d) None of the above.

**Correct answer is c)**

Q47. Variables defined in parent shell are accessible in child shell if they are

- a) Imported
- b) Exported
- c) Forked
- d) Global

**Correct answer is b)**

Q48. The file descriptor associated with stdin is

- a) 0
- b) 1
- c) 2
- d) 3

**Correct answer is a)**

Q49. To run the job in background on a Linux system we use

- a) \$
- b) ..
- c) ~
- d) &

**Correct answer is d)**

Q50. Which of the environment variable stores the LINUX prompt.

- a) HOME
- b) LOGNAME
- c) PS1
- d) PS2

**Correct answer is c)**

1) Instructions of a program are executed when it is in the \_\_\_\_\_ state.

- 1) wait
- 2) new
- 3) ready
- 4) all of the above
- 5) none of the above

**Answer 5**

2) The FCFS CPU scheduling policy can be conveniently implemented using the following data structure:

- 1) LIFO-stack
- 2) Binary tree

- 3) Directed acyclic graph
- 4) Queue
- 5) None of the above

**Answer** 4

3) LINUX uses \_\_\_\_\_ mechanism.

- 1) Deadlock prevention by providing process termination
- 2) Banker's algorithm for deadlock avoidance
- 3) Deadlock prevention by providing resource pre-emption
- 4) All of the above
- 5) None of the above

**Answer** 5

4) The memory management scheme used by 8085 microprocessor is \_\_\_\_\_.

- 1) Paging (using the higher order address bus lines A9 to A16)
- 2) Segmentation (using B-C and H-L register pairs to hold information related to number of segments and base address of each segment)
- 3) Both paging as well as segmentation
- 4) None of the above

**Answer** 4

5) \_\_\_\_\_ is the time for the disk arm to move the heads to the cylinder containing the desired sector.

- 1) Turn-around time
- 2) Rotational latency
- 3) Seek time
- 4) None of the above

**Answer** 3

6) FAT in the context of file systems expands to \_\_\_\_\_.

- 1) File Access Tree
- 2) File Access Table
- 3) File Allocation Table
- 4) None of the above

**Answer** 3

7) Linux uses \_\_\_\_\_ type of directory structures.

- 1) single level
- 2) two level

- 3) tree structured
- 4) all of the above
- 5) none of the above

**Answer** 3

8) Which of the following statements are TRUE with respect to DMA (Direct Memory Access)?

- a) Requires a DMA Controller (hardware device)
- b) Requires a DMA Controller (simulated by system software)
- c) Used to avoid Programmed I/O for large data movement
- d) Bypasses CPU to transfer data directly between I/O device and memory
  - 1) a) and b)
  - 2) a), c) and d)
  - 3) a), b) and d)
  - 4) all are true
  - 5) all are un-true

**Answer** 2

9) “Programs, users and systems should be given just enough privileges to perform their tasks”. This principle is more popularly known as \_\_\_\_\_.

- 1) Principle of least privilege
- 2) Banker’s principle for allocation of permissions
- 3) Belady’s algorithm for granting permissions
- 4) None of the above

**Answer** 1

10) The Segment-Table-Length-Register (STLR) specifies \_\_\_\_\_.

- 1) Size of a segment in memory
- 2) Base address of a segment in memory
- 3) Size of a segment in the virtual address space
- 4) Base address of a segment in the virtual address space
- 5) None of the above

**Answer** 5

11) Potential security violation is known as \_\_\_\_\_.

- 1) Attack
- 2) Virus
- 3) Threat
- 4) Theft

- 5) None of the above  
**Answer** 3

12) EIDE, ATA, SATA, USB, Fibre Channel, SCSI are \_\_\_\_\_.

- 1) Memory buses
- 2) I/O buses
- 3) Host controllers
- 4) Disk drivers
- 5) All of the above

**Answer** 2

13) One of the main objectives of Disk Scheduling is to \_\_\_\_\_.

- 1) Minimize seek time
- 2) Minimize turn around time
- 3) Maximize through-put
- 4) Maximize rotational latency
- 5) All of the above

**Answer** 1

14) Which of the following statements are TRUE with respect to an I/O request that is issued by a process?

- a) Whether the operation is input or output
  - b) What the disk address for the transfer is
  - c) What the memory address for the transfer is
  - d) What the number of sectors to be transferred is
- 
- 1. a) and b)
  - 2. a), c) and d)
  - 3. a), b) and d)
  - 4. all are true
  - 5. all are un-true

**Answer** 4

15) The Elevator Algorithm for disk scheduling is based on \_\_\_\_\_.

- 1) SSTF (Shortest Seek Time First)
- 2) SCAN
- 3) First Come First Serve (FCFS)
- 4) LOOK

**Answer** 2

16) The ability of an Operating System to execute different parts of a program simultaneously is known as \_\_\_\_\_.

- 1) Multi-tasking
- 2) Multi-programming
- 3) Multi-threading
- 4) Multi-scheduling

**Answer** 3

17) Maximize CPU utilization, maximize system throughput, minimize turnaround time and minimize waiting time are the main objectives of \_\_\_\_\_.

- 1) Paging
- 2) Segmentation
- 3) Both paging as well as segmentation
- 4) None of the above

**Answer** 4

18) Pre-emptive type of Shortest-Job-First (SJF) scheduling is also known as \_\_\_\_\_.

- 1) Shortest Remaining Time First
- 2) First Come First Serve
- 3) Priority Scheduling
- 4) Quantum based scheduling

**Answer** 1

19) In case of race conditions, the outcome of the execution depends on \_\_\_\_\_.

- 1) the critical section
- 2) the sequence in which the access takes place
- 3) CPU Scheduling
- 4) proper synchronization mechanisms
- 5) None of the above

**Answer** 2

20) The four conditions for deadlocks to occur are given by \_\_\_\_\_.

- 1) mutual exclusion ; hold and wait ;  
pre-emption ; circular wait
- 2) mutual exclusion ; hold and wait ;  
no pre-emption ; circular wait
- 3) mutual exclusion ; hold and release ;  
pre-emption ; circular wait
- 4) mutual exclusion ; hold and release ;

no pre-emption ; circular wait

**Answer 1**

21) A pair of base and limit registers define the \_\_\_\_\_.

- 1) logical address space
- 2) physical address space
- 3) both logical as well as physical address space
- 4) None of the above

**Answer 1**

22) First-fit and best-fit algorithms for dynamic memory allocation are \_\_\_\_\_ than worst-fit in terms of storage utilization and speed.

- 1) worst
- 2) better
- 3) neither worst nor best
- 4) below average level

**Answer 2**

23) A vi editor can be stored as \_\_\_\_\_.

- 1) shared pages
- 2) segmented pages
- 3) both shared pages as well as segmented pages
- 4) all of the above

**Answer 4**

24) The LRU (Least Recently Used) algorithm for page replacement can be implemented using \_\_\_\_\_.

- 1) clocks and counters
- 2) FIFO queue
- 3) De-queue
- 4) None of the above

**Answer 1**

25) The objectives of Demand Paging are \_\_\_\_\_.

- 1) less I/O is needed
- 2) less memory is needed
- 3) faster response
- 4) more users
- 5) all of the above

**Answer 5**

**Fill in the blanks:**

- 1) A situation where several processes access and manipulate the same data concurrently is known as \_\_\_\_\_.

**Correct answer is** RACE CONDITION

- 2) If a shell script called **run** is executed as:

**./run a b 1 2 c d 3 4 e f**  
then, **echo \$10** in the shell script will print \_\_\_\_\_.

**Correct answer is** a0

- 3) The **L1 cache** is present in the \_\_\_\_\_.

**Correct answer is** CPU/PROCESSOR/MICRO-PROCESSOR

- 4) Auto-completion of Linux commands can be achieved by hitting the \_\_\_\_\_ key.

**Correct answer is** TAB

- 5) The **Segment-Table-Length-Register** (STLR) specifies \_\_\_\_\_.

**Correct answer is** NUMBER OF SEGMENTS USED BY A PROGRAM/PROCESS

- 6) A pipe in a shell is similar to a \_\_\_\_\_ amplifier in electronics.

**Correct answer is** CASCADE

- 7) The page-replacement policy used by **Windows** O.S. is \_\_\_\_\_.

**Correct answer is** LRU [LEAST RECENTLY USED]

- 8) **REWIND, RESET, READ, TAR, LOCATE**, are operations usually carried out on \_\_\_\_\_.

**Correct answer is** TAPE DRIVES

- 9) **HOME, UID, PATH, DISPLAY**, are \_\_\_\_\_ variables.

**Correct answer is** ENVIRONMENT

- 10) \_\_\_\_\_ Operating Systems are used in Air Traffic Control.

**Correct answer is** REAL TIME

- 11) Processes on the same computer system can communicate with each other using \_\_\_\_\_ memory.

**Correct answer is** SHARED

- 12) Run-time allocation of memory for a program is done from the \_\_\_\_\_.

**Correct answer is** HEAP

**State whether the following statements are true or false:**

- 1) Multiprogramming decreases CPU utilization. FALSE

- 2) One of the objectives of CPU scheduling is to maximize the turnaround time. FALSE
- 3) Threads do not share the Instruction Pointer register. TRUE
- 4) A non-preemptive scheduler runs when the process blocks because of an I/O operation. TRUE
- 5) **Shortest-remaining-time-first** is also known as non-preemptive type of SJF policy. FALSE
- 6) The shell scripting language **DOES NOT** type-cast its variables. TRUE
- 7) The **DOWN** operation of a semaphore is implemented as follows:  
`P(S) { while S <= 0; // no-op  
S++; }`  
 FALSE
- 8) The **init** process will always have a process id of 1. TRUE
- 9) The **P** and **V** operations related to semaphores need not be indivisible. FALSE
- 10) The logical address is the one that is loaded into the memory address register of the memory. FALSE
- 11) The **worst-fit** algorithm is better in terms of speed and storage utilization as compared to **first-fit** technique. FALSE
- 12) Compared to a disk, a tape is less expensive and holds more data, but random access is much slower. TRUE
- 13) Using **FTP**, one can even access e-mail. TRUE
- 14) **WINE (WINdows Emulator)** program in Linux is used to integrate Windows and Linux/UNIX. FALSE
- 15) **vi** editor commands are case insensitive. FALSE
- 16) **init-login-getty-shell** is the sequence of execution of processes in a typical UNIX system. FALSE
- 17) All user jobs by default are started in the background. FALSE

**Pick up the correct alternative(s) for each of the following questions:**

- 1) The **FCFS** scheduling policy can be conveniently implemented using the following data structure:  
 a) LIFO-stack  
 b) Binary tree  
 c) Directed acyclic graph  
 d) Circular queue  
 e) **None of the above**
- 3) UNIX uses \_\_\_\_\_ mechanism.  
 a) Deadlock prevention  
 b) Deadlock avoidance  
 c) Deadlock detection and recovery  
 d) All of the above  
 e) **None of the above**
- 4) Access mode 644 specifies \_\_\_\_\_.  
 a) `rw-r----`  
 b) **`rw-r--r--`**  
 c) `rw----r--`

- d) none of the above
- 5) \_\_\_\_\_ is the time for the disk arm to move the heads to the cylinder containing the desired sector.
- a) Turn-around time  
b) Rotational latency  
**c) Seek time**  
d) None of the above
- 6) The two options provided by **BASH** for debugging are \_\_\_\_\_.
- a) -g and -x  
b) -g and -v  
**c) -v and -x**  
d) -o and -g

**What Linux commands are used to achieve the following:**

1. Change the priority of a process  
nice/renice
2. Search for a particular pattern in a set of files  
grep
3. Display lines at the top of a file  
head
4. Display information on file contents  
file
5. Display the hostname  
hostname  
echo \$HOSTNAME
6. Broadcast a common message to a set of users  
wall

**What do the following acronyms stand for?**

- |         |                             |
|---------|-----------------------------|
| 1. FAT  | FILE ALLOCATION TABLE       |
| 2. DNS  | DOMAIN NAME SERVICE         |
| 3. AFS  | ANDREW FILE SYSTEM          |
| 4. CIFS | COMMON INTERNET FILE SYSTEM |
| 5. ACL  | ACCESS CONTROL LIST         |
| 6. USB  | UNIVERSAL SERIAL BUS        |

#### **Q.1 Fill in the blanks:**

1. Single system image is obtained in case of \_\_\_\_\_  
Multiprocessor Operating System or Cluster Operating System
2. Turnaround Time refers to \_\_\_\_\_.  
The time measured when a process enters a system and completes its execution, i.e. the time when a process is created and when it is terminated. For example, if a process is created at time t1, and it completes its execution at time t9, then the turnaround time is t9 – t1.  
(you can also refer to chapter 3 for the exact definition).
3. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.  
Short term scheduler (also known as CPU scheduler)
4. Banker's algorithm is an example of \_\_\_\_\_ avoidance.  
Deadlock avoidance.
5. \_\_\_\_\_ is an example of Distributed operating system.  
There are many examples here: linux, solaris, AIX, HP-UX, windows, IRIX, etc.  
(you can also check chapter 1).
6. \_\_\_\_\_ is an example of timesharing scheduling policy.  
Round robin.
7. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for non shareable resource.  
Read-only file is a example of shareable resource and printer is an example for non-shareable resource.
8. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.  
FIFO and LRU.  
Optimal page replacement policy is never used in practice.
9. \_\_\_\_\_ is to NT , where as \_\_\_\_\_ is to DOS and \_\_\_\_\_ is to UNIX.  
Ambiguous question ☺
10. Give the expansion of the following with reference to the operating systems concepts: FCB is \_\_\_\_\_  
IOCS is \_\_\_\_\_  
FCB is File Control Block  
IOCS → ?  
It could be "Input Output Control System", but I am not very sure. You can check the index page (towards the end) of Galvin.
11. Throughput in case of multiprogramming is \_\_\_\_\_.  
High.
12. \_\_\_\_\_ is process of modifying the addresses used in the address sensitive instructions of a program such that the program can execute correctly from the designated area of memory.  
The correct answer could be "binding" or "address translation"
13. A program is a \_\_\_\_\_ entity , whereas a process is a \_\_\_\_\_ entity.  
Program is a passive entity, process is an active entity.
14. Mutex is a \_\_\_\_\_ Semaphore.  
Binary.
15. \_\_\_\_\_ is the coincidence of high paging traffic and low CPU utilization.  
Thrashing.
16. FCFS stands for \_\_\_\_\_.  
First Come First Serve.
17. The Scheduling policy in case of a batch processing system is \_\_\_\_\_.

FCFS.

18. Multiprogramming degenerates to \_\_\_\_\_ system if there is no proper mix of CPU and I/O bound jobs.

The correct answer could be "idle", but this question is quite ambiguous. You could check chapter 1 of galvin.

19. DMA stands for \_\_\_\_\_  
Direct Memory Access.

20. Protection of memory is ensured using \_\_\_\_\_ and \_\_\_\_\_.  
Base (relocation) and limit registers.

21. \_\_\_\_\_ is forceful deallocation of a resource.  
Preemption.

22. SPOOLING stands for \_\_\_\_\_  
Simultaneous Peripheral Input Output.

23. A \_\_\_\_\_ operating system is an operating system which requires a timely response from a computer system.  
Real-time.

24. \_\_\_\_\_ is a program in execution.  
Process.

25. DOS is an example of \_\_\_\_\_ user system.  
Single-user.

26. Unix is an example of \_\_\_\_\_ user system.  
Multi-user.

27. Unix uses \_\_\_\_\_ scheduling policy .  
Priority based time sharing. (at least Linux uses this policy).

28. \_\_\_\_\_ and \_\_\_\_\_ are the goals of an operating system.  
Operating system goals:

Execute user programs and make solving user problems easier.  
Make the computer system convenient to use.

29. \_\_\_\_\_ is a distributed operating system.  
UNIX, HP-UX, Solaris, Linux, Windows.

30. The \_\_\_\_\_ determines which process is to be executed next.  
Short term scheduler or CPU scheduler.

31. PSW stands for \_\_\_\_\_.  
Process Status Word or Program Status Word. It is basically a **FLAG** register.

32. Mutex is an acronym for \_\_\_\_\_.  
Mutual Exclusion.

33. A tape is a \_\_\_\_\_ device.  
Sequential/Serial access device. It is also a tertiary device.

34. Single system image is obtained in case of \_\_\_\_\_.  
Multiprocessor Operating System or Cluster Operating System

35. Turnaround Time refers to \_\_\_\_\_.

The time measured when a process enters a system and completes its execution, i.e. the time when a process is created and when it is terminated. For example, if a process is created at time t1, and it completes its execution at time t9, then the turnaround time is t9 – t1.

(u can also refer to chapter 3 for the exact definition).

36. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.  
CPU Scheduler or short term scheduler.

37. Banker's algorithm is an example of \_\_\_\_\_ avoidance.  
Deadlock.

38. \_\_\_\_\_ is an example of Distributed operating system.  
Windows, Linux, Solaris, HP-UX, AIX, etc.

39. \_\_\_\_\_ is an example of timesharing scheduling policy.  
Round robin.

40. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for nonshareable resource.  
Read-only file is a example of shareable resource and printer is an example for non-shareable resource.

41. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.  
(refer above)

42. Unix is a \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ operating system.  
Multi-tasking, multi-user, and multi-programming. Also time-sharing.

43. Single system image is obtained in case of \_\_\_\_\_  
(refer above)

44. Turn around Time refers to \_\_\_\_\_.  
(refer above)

45. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.  
(refer above)

46. Banker's algorithm is an example of \_\_\_\_\_ avoidance.  
(refer above)

47. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.  
(refer above)

48. An OS is the interface between \_\_\_\_\_ & \_\_\_\_\_.  
User and hardware OR user and resources.

49. A file is anything held on \_\_\_\_\_ storage.  
Secondary or tertiary storage.

50. Compaction is done when you have \_\_\_\_\_ fragmentation.  
External.

51. \_\_\_\_\_ is when more time is spent in paging than in actually running programs.  
Thrashing.

52. A thread is a \_\_\_\_\_ process.  
Light weight process.

53. The process of loading the OS into main memory is done by the \_\_\_\_\_.  
Bootstrap loader.

54. The motivations behind networks are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_.  
Sharing of data (files), sharing of resources (like network printer, etc.), communication, etc.

55. NRU stands for \_\_\_\_\_ and LRU stands for \_\_\_\_\_.  
LRU is least recently used. NRU could be Not Recently Used. I am not sure about NRU. You could check the index page of Galvin.

56. SPOOLING stands for \_\_\_\_\_  
(refer above)

57. \_\_\_\_\_ is the coincidence of high paging traffic and low CPU utilization.  
(refer above)

58. \_\_\_\_\_ is a path under execution.  
Program.  
(question is wrong).

59. The OS maintains information about each process in a record called \_\_\_\_\_.  
PCB (Process Control Block).

60. \_\_\_\_\_ is a relation between number of page faults and number of page frames allocated to a process.

61. \_\_\_\_\_ is the implementation method in case of MS-DOS for non-contiguous allocation.

62. \_\_\_\_\_ is a mechanism whereby the output of one process is directed into input of another process.  
I/O redirection

63. The time elapsed for position of Read/Write head under the desired sector is called \_\_\_\_\_.  
Seek time.

64. \_\_\_\_\_ , \_\_\_\_\_ are the two ways to achieve relocation and address translation.  
Paging and Segmentation.

65. The CPU utilization is low when the system is \_\_\_\_\_.  
Thrashing or doing excessive I/O.

66. A space allocated in units of fixed size is called \_\_\_\_\_.  
Either it could be a **page** or it could be a **block**. It could also be a **sector**.

67. A modified page is also called as \_\_\_\_\_ page.  
**Dirty page**, but I am not very sure. Please refer to galvin under (dirty bit : chapter related to Paging).

68. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for non-shareable  
resource.  
(refer above)

69. \_\_\_\_\_ is forceful deallocation of a resource.  
(refer above)

70. Unix is an example of \_\_\_\_\_ user system.  
Multi-user.

71. The \_\_\_\_\_ determines which process is to be executed next.  
CPU scheduler or short-term scheduler.

72. FAT stands for \_\_\_\_\_.  
File Allocation Table.

**Q.2 What do the following Abbreviations stand for? (1 mark each)**

1. LWP            LIGHT WEIGHT PROCESS
2. HRQ
3. DMA            DIRECT MEMORY ACCESS
4. PCB            PROCESS CONTROL BLOCK
5. FAT            FILE ALLOCATION TABLE

**Q.3 Multiple Answer Type Questions: (1 marks each)**

1. Which of the following is a non-preemptive O.S.?  
a) UNIX  
b) Windows 95

c) Windows NT

d) None

**correct answer is given under “preemptive and non preemptive kernels : handling ‘critical section’ in operating systems” chapter 7 of galvin)**

2. The CPU utilization is low when the system is \_\_\_\_\_.

a) Timesharing

b) Thrashing

c) Multiprocessing

d) None of the above.

**correct answer is thrashing.**

3. The following iss not a form of IPC

a. Semaphore

b. Pipe

c. Shared memory

d. Buffering

**Correct answer is “buffering”**

4. The fol. is a part of FAT

a. Sector info

b. Disk type

c. Modified info

d. Date info

**Correct answer is “Sector info”**

5. Device files in UNIX are

a. Device drivers

b. Special files

c. Pipes

d. Unstructured files

**correct answer is “special files”**

6. The time of admission of a job to ready queue to completion is :

a. Turnaround time

b. Burst time

c. Response time

**correct answer is turnaround time.**

7. The fol. Signal is sent by the DMA controller :

a. HREQ

b. HLDA

c. DRQ

**According to me it is all of the above, but you can also refer chapter 1 of galvin (under DMA) for the correct answer.**

8. The main purpose(s) of an Operating System is/are:

a. convenience for the user

b. efficient operation of the computer system

c. optimal use of computing resources

d. All of the above

**correct answer is “all of the above”**

9. The signal the keyboard sends to the computer is a special kind of message called \_\_\_\_.

a. keyboard request

b. keyboard controller

c. interrupt controller

d. interrupt request

**the correct answer is “interrupt request”**

10. The available routing schemes are :

a. fixed routing

- b. virtual routing
- c. dynamic routing
- all of the above.**

11. The interval from the time of submission of a process to the time of completion is \_\_\_\_\_.

- a. Turnaround time
- b. Waiting time
- c. Response time
- turnaround time**

12. The I/O subsystem consist of:

- a. A memory management component including buffering, caching, and spooling
- b. A general device-driver interface
- c. Drivers for specific hardware devices
- d. All of the above

**all of the above**

13. Which of the following CPU scheduling algorithms will prevent starvation problem?

- a. Shortest-job-first
- b. Priority-scheduling
- c. Priority-scheduling with aging mechanism
- d. None of the above

**Priority-scheduling with aging mechanism is the correct answer.**

14. Which of the following statements is true for a deadlock state

- e. The system cannot run any process
- f. The system can run processes barring those involved in the deadlock
- g. A running process cannot request any new resource
- h. All processes in the ready queue enter the wait queue

**the following statements are true:**

**The system cannot run any process**

**A running process cannot request any new resource**

15. The problem of thrashing may be reduced by

- a. Using prepaging mechanism
- b. Writing well structured programs
- c. Both 1 and 2
- d. Neither 1 nor 2

**correct answer is neither 1 nor 2.**

16. Which of the following statements is not true?

- a. A directory is a special type of file
- b. A directory is used to store file attributes
- c. A directory is used to store file data
- d. A directory is used to store file access information

**all the statements are true.**

17. Biometric devices are used for user authentication in

- a. Proof by knowledge method
- b. Challenge response method
- c. Proof by possession method
- d. Proof by property method

**(no idea. Can check the index page of galvin)**

18. A file system uses the contiguous space allocation mechanism for disk space allocation. For better utilization of disk space, this file system must use

- a. A garbage collection mechanism
- b. A disk compaction mechanism
- c. A linked-block allocation mechanism
- d. An indexed-block allocation mechanism

**correct answer is d) or c)**

19. Which of the following statements is true?

- a. A computer virus is a complete program that makes active attacks
- b. A computer virus is a program segment that makes passive attacks
- c. A logic bomb is a program segment that makes passive attacks
- d. A logic bomb is a program that makes active attacks

**search for this answer in the chapter of galvin.**

20. The purpose of virtual memory system is to

- a. Allow multiprocessing
- b. Allow multiprogramming
- c. Allow batch processing
- d. Allow execution of a program that requires larger memory than the size of the physical main memory  
**correct answer is d).**

21. The context of a process is the union of it's \_\_\_\_\_ .

- a. region tables, u area, system level context
- b. register context, preigion tables, user level context
- c. system-level context, register context, user-level context
- d. process table, user-level context, register context

22. Which of the following is NOT a part of a process control block :

- a. Values of CPU registers
- b. CPU scheduling information
- c. Memory limits of the process
- d. List of files accessible to the process.

**Correct answer is b)**

23. Suppose the architecture of a computer system is layered into the following four layers -

- 1) Operating systems software
- 2) users' applications software
- 3) hardware
- 4) programming environment software

Which of the following is a logical sequence of the four layers from bottom to top?

- a. 1, 2, 3, 4
- b. 1, 3, 4, 2
- c. 3, 1, 4, 2
- d. 3, 4, 1, 2

**correct answer is 3,1,4,2**

24. A Job Control Language is used for

- a. telling the system about a job's resource requirements
- b. telling the system administrator / operator about job's resource requirements.
- c. telling the programmer how to program the resource requirements of a job.
- d. none of the above

**my guess is d), but I am not very sure.**

25. Which was the first processor to introduce protected mode?

- a) 8086
- b) 80286
- c) 80386
- d) 80486

**the correct answer is 80286.**

26. The protected mode is necessary for -

- a) multi-tasking system
- b) multi-user system
- c) both a and b
- d) 16 bit programming

**correct answer is c)**

27. The segmented memory is provided mainly ...

- a) for higher speeds
  - b) to maintain compatibility with old processors
  - c) for ease of application programming
  - d) simple hardware
- correct answer is c)**

28. Which of the following features is NOT found in RISC architectures ?

- a) A limited instruction set
- b) A large number of registers
- c) Virtual memory
- d) A large number of execution modes

29. The first CPU with P6 architecture was -

- a) Pentium
- b) Pentium Pro
- c) Pentium II
- d) Pentium III

**Pentium pro**

30. The fastest storage element is -

- a) CD-ROM
- b) DRAM
- c) EDO-DRAM
- d) SDRAM

**SDRAM**

31. Which peripheral requires the highest data transfer rate?

- a) Sound Card
- b) Network card
- c) Hard disk
- d) Graphics Adapter

**graphics adapter**

32. A virtual memory is required for -

- a) increasing the speed
- b) increasing the addressing modes
- c) overcoming the size limitation of main memory
- d) overcoming the size limitation of cache memory

**correct answer is c)**

33. When fork( ) is given

- a) It creates a child process
- b) Allocates slot in process table
- c) Returns 0 to parent & ID to child
- d) All of the above

**correct answer is d)**

34. A TSR is a program which will

- a) Be resident in the memory after termination of program
- b) Be called as and when the program is executed
- c) Terminate and Soon Remove the program from the memory
- d) All of the above

**correct answer is a)**

35. CPU performance is based on

- a) ALU width
- b) Clock speed
- c) Number of instructions executed per second
- d) How well CPU interacts with the rest of the system
- e) Both a and b
- f) None of the above

**too many options are correct.**

36. 80286 the addressing scheme is \_\_\_\_\_ addressing

- a) 8 bit
- b) 16 bit
- c) 24 bit
- d) 28 bit
- e) 32 bit

**correct answer is 16 bit.**

37. Shell executes \$0 and returns the

- a) Parameters entered in the command line
- b) Program name
- c) All of the above

**correct answer is b)**

38. .profile file is present in

- a) /usr
- b) /usr/user1
- c) /etc/admin
- d) None of the above

**correct answer is d)**

39. Which of the following CPU scheduling algorithms will prevent starvation problem?

- a. Shortest-job-first
- b. Priority-scheduling
- c. Priority-scheduling with aging mechanism
- d. None of the above

**correct answer is c)**

40. Which of the following statements is true for a deadlock state

- a. The system cannot run any process
- b. The system can run processes barring those involved in the deadlock
- c. A running process cannot request any new resource
- d. All processes in the ready queue enter the wait queue

**(already solved above)**

41. The problem of thrashing may be reduced by

- a. Using prepaging mechanism
- b. Writing well structured programs
- c. Both 1 and 2
- d. Neither 1 nor 2

**(already solved above)**

42. Which of the following statements is not true?

- a. A directory is a special type of file
- b. A directory is used to store file attributes
- c. A directory is used to store file data
- d. A directory is used to store file access information

**(already solved above)**

43. Biometric devices are used for user authentication in

- a. Proof by knowledge method
- b. Challenge response method
- c. Proof by possession method
- d. Proof by property method

44. A file system uses the contiguous space allocation mechanism for disk space allocation. For better utilization of disk space, this file system must use

- a. A garbage collection mechanism
- b. A disk compaction mechanism
- c. A linked-block allocation mechanism
- d. An indexed-block allocation mechanism

**(already solved above)**

45. Peak Bandwidth of a 64-bit, 33 MHz based PCI bus would be:

- a. 133 MB/s
- b. 266 MB/s
- c. 512 MB/s
- d. 33 MB/s

**correct answer is d)**

46. Main advantage of EISA bus over micro-channel bus was:

- a. It offered more bandwidth over micro-channel
- b. It had software configurable devices
- c. It was backward compatible with ISA
- d. It made the existing peripherals run faster.

**(out of syllabus)**

47. Which of the following devices is asynchronous ?

- a. SSRAM
- b. EPROM
- c. Disk controllers
- d. All of the above.

**Correct answer is disk controllers.**

48. Which of the following operating systems is available for non-intel platforms ?

- a. Windows-NT
- b. Solaris
- c. linux
- d. all of the above.

**Correct answer is 'all of the above'**

49. In the systems which do not have multiple CPUs, is the 'cache coherency' an issue while design?

- a. Yes
- b. No

**correct answer can be found in chapter 1 of galvin.**

#### **Q.4 SELECT TRUE OR FALSE: (1 mark each)**

- 1. It is possible to have a deadlock involving only a single process. **FALSE**
- 2. Unix is a network operating system. **TRUE**
- 3. All entries in FAT correspond to clusters. **TRUE**
- 4. A Device controller is a piece of hardware. **TRUE**
- 5. Round Robin understands priority. **FALSE**
- 6. SJF is the best scheduling policy. **TRUE**
- 7. Paging allows protection. **TRUE**
- 8. Circuit switching has two variants – connection oriented and connectionless. **FALSE**
- 9. LANs cover a radius of upto 10km. **TRUE**
- 10. Cipher text is decrypted text.
- 11. During system startup, program execution begins at addr FFF0H.
- 12. A virus is a type of worm. **TRUE**
- 13. Spooling uses the disk as a huge buffer, for reading as far ahead as possible on input devices and for storing output files until the output devices are able to accept them. **TRUE**
- 14. Ready queue in CPU scheduler is always a first-in, first-out (FIFO) queue. **FALSE**

**PLEASE NOTE: DESCRIPTIVE ANSWERS ARE NOT ASKED DURING DAC EXAMS. HENCE, I HAVE NOT SOLVED THE BELOW QUESTIONS. ALSO, THE ABOVE ANSWERS ARE AS PER MY KNOWLEDGE AND UNDERSTANDING ☺☺☺**

#### **Q.5 Short Answer Questions: (3 mark each)**

- 1. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.
- 2. Differentiate between the CPU bound process and I/O bound process.
- 3. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.
- 4. What do you mean by locality of reference?
- 5. What is a dirty bit? Why is it used?
- 6. What is the difference between circuit switching and packet switching?

7. Justify the statement :

"It is possible to support multiprogramming without using timesharing. However it is impractical to support timesharing without using multiprogramming"

8. Justify the statement :

"Swapping improves/degrades the efficiency of system utilization".

9. Describe the cause of READY → RUNNING transition.

10. What do you mean by "protection" incase of operating systems? How is it implemented?

11. What is Access Control List? Where is it used?

12. What is a deadlock? How does it occur?

13. What do you mean by scalability?

14. What is a capability list? Where is it used?

15. Comment on the statement:

"Interactive processes should have low/high priority"

16. Name secondary storage devices and explain where they are typically used.

17. Which type of scheduler controls the degree of multiprogramming?

18. What is a race condition?

19. Which condition(s) is/are very necessary for a deadlock. Justify your answer.

20. What do you mean by a "kernel"?

21. What do you mean by the "context" of a process?

22. Give one difference between a .COM file and .EXE file in DOS.

23. Name the necessary conditions for a deadlock.

24. What is a critical section?

25. What is IOCS? What are its functions?

26. Explain advantages of distributed operating systems:

27. Name different scheduling policies and explain.

28. Differentiate between the logical address space and physical address space.

29. Explain in brief what you mean by:

1. Multiprogramming

2. Multiprocessing.

30. Name the five typical file operations.

31. Draw a block diagram showing the process transitions.

32. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.

33. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.

34. How many different types of files are possible on UNIX operating system ?

Name them.

35. What is demand paging?

36. Explain Distributed processing with the help of examples.

37. Differentiate between contiguous and non-contiguous memory allocation.

38. What is deadlock? Give an example.

39. Explain the following: (3 marks each)

a) Semaphores

b) Disk caching

c) Working set

d) Locality of reference

e) DMA

f) Non-preemptive OS

#### **Q.6 Long answer Questions: (4 mark each)**

1. Consider a memory with 4 page frames, assuming that pages of a process are referenced in the following order:

4,3, 2,1,4,3,5,4,3,2,1,5,2.

1. Show, which would be better FIFO or LRU.

2. Considering the above reference string show how Belady's anomaly occurs in case of FIFO.

3. How is memory re-used?

4. With the help of an example show the mapping from virtual address space to physical address space in case of virtual memory.

5. List the fields of the FCB and explain their use.

6. What is the difference between thread, process and Task?

7. What is the critical section problem? How is it handled?

8. Which condition(s) is/are very necessary for a deadlock? Justify your answer.

9. Discuss the use of Active file tables.
10. What constitutes the environment of a process?
11. What do you mean by "static and dynamic binding"?
12. What do you mean by an Inode? Where is it used?
13. How can a deadlock be avoided? Explain.
14. Write in detail the methods of LRU implementation.
15. Explain State Transition Diagram.
16. What is Inter-process communication?
17. Define the terms: Thread; process; Context of a process.
18. Describe the PC architecture with a block diagram
19. Discuss the various issues involved in Process Management

# Operating Systems

**IMPORTANT NOTE:** This document contains stuff that has been picked up from the Internet.

<http://www.techinterviews.com/?p=170>  
<http://www.indiastudycenter.com/studyguides/cs/objtest/os1.asp>  
<http://www.indiastudycenter.com/studyguides/cs/objtest/os2.asp>  
<http://rc.usf.edu/tutorials/classes/tutorial/quizes/?quiz=linuxc4>  
<http://rc.usf.edu/tutorials/classes/tutorial/quizes/?quiz=linuxc3>

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1. The operating system for a computer does the following:

- 
- 
- 
- all of the above**
- 

2. Spooling helps because \_\_\_\_\_.

- 
- 
- the computer is released to do other things while still printing**
- 

3. A proprietary operating system is \_\_\_\_\_.

- unique to a manufacturer**
- 
- 
- 

4. A computer's BIOS will \_\_\_\_\_

- 
- 
- be loaded first when the computer is powered on**
- 

5. Windows versions before Windows 95 \_\_\_\_\_

- 
- 
- 
- 
- 
- f. both b and c**
-

6. A backup program \_\_\_\_\_.  
 makes a copy of files you select.  
 returns you to the previous program  
 undoes the last change you made  
 none of the above

7. The autoexec.bat file can tell the computer where to look first for executable files. This set of locations is called \_\_\_\_\_.  
 the path  
 the command directory  
 home  
 the system directory

8. When a computer is "swapping", it is \_\_\_\_\_.  
 moving data from the hard drive to the floppy drive  
 moving data from memory to the swap file on the hard drive  
 moving data between registers in memory  
 none of the above

9. A computer virus can be \_\_\_\_\_.  
 annoying only  
 damaging to your data  
 copied without your knowledge onto floppies used in the infected computer  
 all of the above

10. A foreground task has more \_\_\_\_ than a background task.  
 buffers  
 microseconds  
 registers  
 time slices

---

8) "Programs, users and systems should be given just enough privileges to perform their tasks". This principle is more popularly known as \_\_\_\_\_.  
1) Principle of least privilege  
2) Banker's principle for allocation of permissions  
3) Belady's algorithm for granting permissions  
4) None of the above

---

15) Maximize CPU utilization, maximize system throughput, minimize turnaround time and minimize waiting time are the main objectives of \_\_\_\_\_.

- 1) Paging
- 2) Segmentation
- 3) Both paging as well as segmentation
- 4) None of the above**

NOTE: These are the objectives of CPU scheduling

16) Pre-emptive type of Shortest-Job-First (SJF) scheduling is also known as \_\_\_\_\_.

- 1) Shortest Remaining Time First**
- 2) First Come First Serve
- 3) Priority Scheduling
- 4) Quantum based scheduling

17) Incase of race conditions, the outcome of the execution depends on \_\_\_\_\_.

- 1) the critical section
- 2) the sequence in which the access takes place**
- 3) CPU Scheduling
- 4) proper synchronization mechanisms
- 5) None of the above

21) The LRU (Least Recently Used) algorithm for page replacement can be implemented using \_\_\_\_\_.

- 1) clocks and counters**
- 2) FIFO queue
- 3) De-queue
- 4) None of the above

26) What is stored on a PCB of a process:

- a. Program counter
- b. Memory limits
- c. Amount of CPU time used
- d. All of the above**

27) A currently running process can be put on a ready queue or one of the I/O queues by each of the following except:

- a. The process did an illegal memory access.**
- b. The process issued an I/O request
- c. There was an interrupt
- d. The process issued a system call

28) Multiprogramming systems

- Are easier to develop than single programming systems
- Execute each job faster
- Execute more jobs in the same time period**
- Are used only one large mainframe computers.

29) \_\_\_\_\_ is used in operating system to separate mechanism from policy

- Single level implementation
  - Two level implementation**
  - Multi level implementation
  - None
- 

1. The operating system creates \_\_\_\_\_ from the physical computer

- Virtual space
- Virtual computers
- Virtual device
- None

**Ans : 2**

2. Swapping

- Works best with many small partitions
- Allows many programs to use memory simultaneously
- Allows each program in turn to use the memory
- Does not work with overlaying

**Ans : 3**

3. Which of the following Operating systems does not implement multitasking truly

- Windows 98
- Windows NT
- Windows XP
- MS DOS

**Ans : 4**

4. When a computer is first turned on or restarted, a special type of absolute loader called \_\_\_\_\_ is executed

- Compile and Go loader
- Boot loader
- Bootstrap loader
- Relating loader

**Ans : 3**

5. Poor response times are usually caused by

- Process busy
- High I/O rates
- High paging rates
- Any of the above

**Ans : 4**

6. Which of the following program is not a utility?

- Debugger
- Editor
- Spooler
- All of the above

**Ans : 3**

7. A co-processor

- Is relatively easy to support in software
- Causes all processors to function equally
- Works with any application
- Is quite common in modern computers

**Ans : 1**

8. Which of the following Operating systems do you choose to implement a Client-Server network

- MS DOS
- Windows 95
- Windows 98
- Windows 2000

**Ans : 4**

9. Page stealing

- Is a sign of an efficient system
- Is taking page frames from other working sets
- Should be the tuning goal
- Is taking larger disk spaces for pages paged out

**Ans : 2**

10. The operating system manages

- Memory
- Processes

- Disks and I/O devices
- All of the above

**Ans : 4**

---

### Operating system questions:

1. **What are the basic functions of an operating system?** - Operating system controls and coordinates the use of the hardware among the various applications programs for various uses. Operating system acts as resource allocator and manager. Since there are many possibly conflicting requests for resources the operating system must decide which requests are allocated resources to operating the computer system efficiently and fairly. Also operating system is control program which controls the user programs to prevent errors and improper use of the computer. It is especially concerned with the operation and control of I/O devices.
2. **Why paging is used?** - Paging is solution to external fragmentation problem which is to permit the logical address space of a process to be noncontiguous, thus allowing a process to be allocating physical memory wherever the latter is available.
3. **While running DOS on a PC, which command would be used to duplicate the entire diskette?** diskcopy
4. **What resources are used when a thread created? How do they differ from those when a process is created?** - When a thread is created the threads does not require any new resources to execute the thread shares the resources like memory of the process to which they belong to. The benefit of code sharing is that it allows an application to have several different threads of activity all within the same address space. Whereas if a new process creation is very heavyweight because it always requires new address space to be created and even if they share the memory then the inter process communication is expensive when compared to the communication between the threads.
5. **What is virtual memory?** - Virtual memory is hardware technique where the system appears to have more memory than it actually does. This is done by time-sharing, the physical memory and storage parts of the memory one disk when they are not actively being used.
6. **What is Throughput, Turnaround time, waiting time and Response time?** - Throughput – number of processes that complete their execution per time unit. Turnaround time – amount of time to execute a particular process. Waiting time – amount of time a process has been waiting in the ready queue. Response time – amount of time it takes from when a request was submitted until the first response is produced, not output (for time-sharing environment).
7. **What is the state of the processor, when a process is waiting for some event to occur?** - Waiting state
8. **What is the important aspect of a real-time system or Mission Critical Systems?** - A real time operating system has well defined fixed time constraints. Process must be done within the defined constraints or the system will fail. An

- example is the operating system for a flight control computer or an advanced jet airplane. Often used as a control device in a dedicated application such as controlling scientific experiments, medical imaging systems, industrial control systems, and some display systems. Real-Time systems may be either hard or soft real-time. **Hard real-time:** Secondary storage limited or absent, data stored in short term memory, or read-only memory (ROM), Conflicts with time-sharing systems, not supported by general-purpose operating systems. **Soft real-time:** Limited utility in industrial control of robotics, Useful in applications (multimedia, virtual reality) requiring advanced operating-system features.
9. **What is the difference between Hard and Soft real-time systems?** - A hard real-time system guarantees that critical tasks complete on time. This goal requires that all delays in the system be bounded from the retrieval of the stored data to the time that it takes the operating system to finish any request made of it. A soft real time system where a critical real-time task gets priority over other tasks and retains that priority until it completes. As in hard real time systems kernel delays need to be bounded
  10. **What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem?** - Thrashing is caused by under allocation of the minimum number of pages required by a process, forcing it to continuously page fault. The system can detect thrashing by evaluating the level of CPU utilization as compared to the level of multiprogramming. It can be eliminated by reducing the level of multiprogramming.
  11. **What is multi tasking, multi programming, multi threading?** - **Multi programming:** Multiprogramming is the technique of running several programs at a time using timesharing. It allows a computer to do several things at the same time. Multiprogramming creates logical parallelism. The concept of multiprogramming is that the operating system keeps several jobs in memory simultaneously. The operating system selects a job from the job pool and starts executing a job, when that job needs to wait for any i/o operations the CPU is switched to another job. So the main idea here is that the CPU is never idle. **Multi tasking:** Multitasking is the logical extension of multiprogramming .The concept of multitasking is quite similar to multiprogramming but difference is that the switching between jobs occurs so frequently that the users can interact with each program while it is running. This concept is also known as time-sharing systems. A time-shared operating system uses CPU scheduling and multiprogramming to provide each user with a small portion of time-shared system. **Multi threading:** An application typically is implemented as a separate process with several threads of control. In some situations a single application may be required to perform several similar tasks for example a web server accepts client requests for web pages, images, sound, and so forth. A busy web server may have several of clients concurrently accessing it. If the web server ran as a traditional single-threaded process, it would be able to service only one client at a time. The amount of time that a client might have to wait for its request to be serviced could be enormous. So it is efficient to have one process that contains multiple threads to serve the same purpose. This approach would multithread the web-server process, the

- server would create a separate thread that would listen for client requests when a request was made rather than creating another process it would create another thread to service the request. To get the advantages like responsiveness, Resource sharing economy and utilization of multiprocessor architectures multithreading concept can be used.
12. **What is hard disk and what is its purpose?** - Hard disk is the secondary storage device, which holds the data in bulk, and it holds the data on the magnetic medium of the disk. Hard disks have a hard platter that holds the magnetic medium, the magnetic medium can be easily erased and rewritten, and a typical desktop machine will have a hard disk with a capacity of between 10 and 40 gigabytes. Data is stored onto the disk in the form of files.
  13. **What is fragmentation? Different types of fragmentation?** - Fragmentation occurs in a dynamic memory allocation system when many of the free blocks are too small to satisfy any request. **External Fragmentation:** External Fragmentation happens when a dynamic memory allocation algorithm allocates some memory and a small piece is left over that cannot be effectively used. If too much external fragmentation occurs, the amount of usable memory is drastically reduced. Total memory space exists to satisfy a request, but it is not contiguous. **Internal Fragmentation:** Internal fragmentation is the space wasted inside of allocated memory blocks because of restriction on the allowed sizes of allocated blocks. Allocated memory may be slightly larger than requested memory; this size difference is memory internal to a partition, but not being used
  14. **What is DRAM? In which form does it store data?** - DRAM is not the best, but it's cheap, does the job, and is available almost everywhere you look. DRAM data resides in a cell made of a capacitor and a transistor. The capacitor tends to lose data unless it's recharged every couple of milliseconds, and this recharging tends to slow down the performance of DRAM compared to speedier RAM types.
  15. **What is Dispatcher?** - Dispatcher module gives control of the CPU to the process selected by the short-term scheduler; this involves: Switching context, Switching to user mode, Jumping to the proper location in the user program to restart that program, dispatch latency – time it takes for the dispatcher to stop one process and start another running.
  16. **What is CPU Scheduler?** - Selects from among the processes in memory that are ready to execute, and allocates the CPU to one of them. CPU scheduling decisions may take place when a process:  
1.Switches from running to waiting state.  
2.Switches from running to ready state.  
3.Switches from waiting to ready.  
4.Terminates. Scheduling under 1 and 4 is non-preemptive. All other scheduling is preemptive.
  17. **What is Context Switch?** - Switching the CPU to another process requires saving the state of the old process and loading the saved state for the new process. This task is known as a context switch. Context-switch time is pure overhead, because the system does no useful work while switching. Its speed varies from machine to machine, depending on the memory speed, the number of registers which must be copied, the existence of special instructions(such as a single instruction to load or store all registers).

18. **What is cache memory?** - Cache memory is random access memory (RAM) that a computer microprocessor can access more quickly than it can access regular RAM. As the microprocessor processes data, it looks first in the cache memory and if it finds the data there (from a previous reading of data), it does not have to do the more time-consuming reading of data from larger memory.
19. **What is a Safe State and what is its use in deadlock avoidance?** - When a process requests an available resource, system must decide if immediate allocation leaves the system in a safe state. System is in safe state if there exists a safe sequence of all processes. Deadlock Avoidance: ensure that a system will never enter an unsafe state.
20. **What is a Real-Time System?** - A real time process is a process that must respond to the events within a certain time period. A real time operating system is an operating system that can run real time processes successfully.

- 
1. This is what starts up the computer and functions as the principal coordinator of all hardware components and applications software programs.
- A. system hardware
  - B. system server
  - C. system software**
  - D. system operator
2. When you turn on the computer, the boot routine will perform this test.
- A. power-on self-test**
  - B. RAM test
  - C. disk drive test
  - D. memory test
3. This part of the operating system manages the essential peripherals, such as the keyboard, screen, disk drives, and parallel and serial ports.
- A. basic input/output system
  - B. secondary input/output system
  - C. peripheral input/output system**
  - D. marginal input/output system
4. Which of the following functions is not controlled by the operating system?
- A. managing memory
  - B. managing programs and data
  - C. managing input and output
  - D. All of the above are controlled by the operating system.**
5. Executing more than one program concurrently by one user on one computer is known as
- A. multiprogramming.
  - B. time-sharing.

**C. multitasking.**

D. multiprocessing.

6. The simultaneous processing of two or more programs by multiple processors is

- A. multitasking.
- B. multiprogramming.
- C. time-sharing.
- D. multiprocessing.**

7. This occurs when several full-fledged processors work together on the same tasks, sharing memory.

- A. multitasking
- B. multiprogramming
- C. parallel processing**
- D. serial processing

8. This comprises the detailed machine language necessary to control a specific device and is controlled by the operating system.

- A. driver**
- B. utility program
- C. virtual memory
- D. peripheral device

9. After a user has saved and deleted many files, many scattered areas of stored data remain that are too small to be used efficiently, causing

- A. disarray.
- B. fragmentation.**
- C. turmoil.
- D. disorder.

10. Which of the following controls the manner of interaction between the user and the operating system?

- A. language translator
- B. platform
- C. user interface**
- D. None of the above is correct.

11. Which of the following is generally a hardware device or a microcomputer hooked up to the network?

- A. client**
- B. motherboard
- C. expansion card
- D. user interface

12. Which of the following is a computer with large amounts of storage used by many clients that still performs certain functions independently?

- A. client
  - B. motherboard
  - C. server**
  - D. user interface
13. Which of the following allows people to create graphical onscreen documents for the Internet that can easily be linked by words and pictures to other documents?
- A. Netscape Navigator
  - B. HTML**
  - C. OS
  - D. applets
14. The operating system commands the driver, which in turns commands the peripheral device.
- A. True**
  - B. False
15. \_\_\_\_\_ remove redundant elements, gaps, and unnecessary data from a computer's storage space so that fewer bits are required to store or transmit data.

**ANSWER: Data compression utilities**

---

---

1. What command displays the contents of a file to stdout?
  - A. echo
  - B. print
  - C. cat**
  - D. display
2. What is the correct command to store the output from ls -al into a file called listing.txt?
  - A. ls -al > listing.txt**
  - B. ls -al < listing.txt
  - C. ls -al < listing.txt >
  - D. ls -al > listing.txt <
3. Which symbol represents a pipe?
  - A. %
  - B. |**
  - C. !
  - D. -
4. Which program searches given input for a pattern?
  - A. sort
  - B. grep**
  - C. search
  - D. find

- 
1. What is the command to get into edit mode in vi?
    - e
    - i**
    - ESC
    - Ctrl-i
  2. True or False: The 'o' command in vi inserts a new line below the current line and puts the user into edit mode.  
**A. True**  
B. False
  3. Which command in vi saves a buffer to the filename names.txt?
    - :s names.txt
    - :w names.txt**
    - :r names.txt
    - :f names.txt
  4. Which command in vi quits the editor?  
**A. :q**  
B. :e  
C. :c  
D. :z
  5. True or False: In vi, entering the command 5dd will delete the 5 lines, starting with the current line.  
**A. True**  
B. False
- 
1. Which account is the super-user account that can modify any file?
    - bin
    - root**
    - sys
    - admin
  2. What command can you do to view the contents to the \$path variable?  
**A. echo \$path**  
B. print \$path  
C. set \$path  
D. show \$path
  3. Which argument to the command ls will display all the files in a directory, including hidden files?

- A. -h
- B. -l
- C. -a**
- D. -s

4. True or False: Creating a file beginning with a '.' will make the file hidden.

- A. True**  
B. False
- 

1. The pwd command...

- A. Changes your password.
- B. Prints the current directory.**
- C. Prints a file.
- D. None of the above.

2. True or False: The tilde, ~, can be used to represent the current user's home directory.

- A. True**  
B. False

3. Which command will delete a directory?

- A. del -d dirname
- B. rm -d dirname
- C. del -r dirname
- D. rm -r dirname**

4. True or False: cp -d source target will copy a directory named source to target.

- A. True  
**B. False**

5. True or False: A symbolic link has the same permissions as the original file.

- A. True  
**B. False**
- 

1. The CPU utilization is low when the system is \_\_\_\_\_.

- a) Timesharing
- b) Thrashing**
- c) Multiprocessing
- d) None of the above.

12. The I/O subsystem consist of:

- a. A memory management component including buffering, caching, and spooling
- b. A general device-driver interface
- c. Drivers for specific hardware devices
- d. All of the above**

23. Suppose the architecture of a computer system is layered into the following four layers -

- 1) Operating systems software
- 2) users' applications software
- 3) hardware
- 4) programming environment software

Which of the following is a logical sequence of the four layers from bottom to top?

- a. 1, 2, 3, 4
- b. 1, 3, 4, 2
- c. **3, 1, 4, 2**
- d. 3, 4, 1, 2



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## Hi DAC You have scored : 0

QuestionID : 11056      Subject Name Operating Systems  
Concepts

Q1. The cpu utilization is low when the system is

1. executing
2. thrasing
3. waiting
4. all of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11063      Subject Name Operating Systems  
Concepts

Q2. Tape is magnetic device.

**Correct Answer : T**

Your Answer :

QuestionID : 11071      Subject Name Operating Systems  
Concepts

Q3. ----- scheduler selects the process that is ready to execute to CPU.

1. long-term scheduler
2. short-term scheduler
3. medium-term scheduler
4. None of these

**Correct Answer : 2**

Your Answer :

QuestionID : 11079      Subject Name Operating Systems  
Concepts

Q4. Mutex is Mutual Exclusion semaphore.

**Correct Answer : T**

Your Answer :

QuestionID : 11082      Subject Name Operating Systems  
Concepts

Q5. paging allows protection

**Correct Answer : F**

Your Answer :

QuestionID : 11085      Subject Name Operating Systems  
Concepts

Q6. Ready Queue in CPU scheduling is always in FIFO order

**Correct Answer : T**

Your Answer :

QuestionID : 11093      Subject Name Operating Systems  
Concepts

Q7. SPOOLING stands for simultaneous peripheral operation online.

**Correct Answer : T**

Your Answer :

QuestionID : 11095      Subject Name Operating Systems  
Concepts

Q8. Page fault rate is a relation between number of page faults & number of the page frames allocated to the process.

**Correct Answer : T**

Your Answer :

QuestionID : 11100      Subject Name Operating Systems  
Concepts

Q9. Distributed systems should

1. meet prescribed time constraints

- 2. aim better resource sharing
- 3. aim better system utilization
- 4. aim low system overload

**Correct Answer : 2**

Your Answer :

QuestionID : 11107      Subject Name Operating Systems  
Concepts

Q10. \_\_\_\_\_ is a significant factor in maintaining fragmentation within usable limits

- 1. External Fragmentation
- 2. Paging
- 3. Coalescing of holes
- 4. Both 2 and 3

**Correct Answer : 4**

Your Answer :

QuestionID : 11111      Subject Name Operating Systems  
Concepts

Q11. Time elapsed for position of Read / Write head under the desired sector is called?

- 1. Seek Time
- 2. Latency Time
- 3. Turnaround Time
- 4. None of above

**Correct Answer : 2**

Your Answer :

QuestionID : 11112      Subject Name Operating Systems  
Concepts

Q12. When fork() is given-

- 1. it creates a child process
- 2. allocates slot in process table
- 3. returns 0 to parent & ID to child
- 4. All of the above.

**Correct Answer : 1**

Your Answer :

QuestionID : 11120      Subject Name Operating Systems  
Concepts

Q13. The main function of shared memory is to

- 1. use primary memory efficiently
- 2. do intra process communication
- 3. do inter process communication
- 4. non of the above

**Correct Answer : 3**

Your Answer :

QuestionID : 11123      Subject Name Operating Systems  
Concepts

Q14. The point when the processor is spending most of its time swapping pages is known as

- 1. segmentation
- 2. thrashing
- 3. bootstrapping
- 4. process loading

**Correct Answer : 2**

Your Answer :

QuestionID : 11125      Subject Name Operating Systems  
Concepts

Q15. \_\_\_\_\_ is an example of sharable resource and \_\_\_\_\_ is an example of non Sharable resource.

- 1. Memory,Terminal
- 2. Mouse,Keyboard
- 3. Monitor,CPTI

4. None of above.

**Correct Answer : 1**

Your Answer :

QuestionID : 11138      Subject Name Operating Systems  
Concepts

Q16. Which of the following cpu scheduling algorithms will prevent starvation?

1. shortest-job-first
2. priority scheduling algorithm
3. priority scheduling with aging mechanism
4. none

**Correct Answer : 3**

Your Answer :

QuestionID : 11139      Subject Name Operating Systems  
Concepts

Q17. When an interrupt occurs, an operating system

1. ignores the interrupt
2. always changes the state of the interrupted process after processing the interrupt.
3. always resumes execution of the interrupted process after processing the interrupt.
4. may change the state of the interrupted process to "Blocked" and schedule another process

**Correct Answer : 4**

Your Answer :

QuestionID : 11144      Subject Name Operating Systems  
Concepts

Q18. The time of admission of job to ready queue to completion is \_\_\_\_\_

1. Turnaround time
2. Burst time
3. Response time
4. None of the above.

**Correct Answer : 1**

Your Answer :

QuestionID : 11145      Subject Name Operating Systems  
Concepts

Q19. A file system uses the contiguous space allocation mechanism for disk allocation. For better utilization of disk space, this file system must use

1. A garbage collection mechanism
2. A disk compaction mechanism
3. A linked-block allocation mechanism
4. An indexed-block allocation mechanism

**Correct Answer : 4**

Your Answer :

QuestionID : 11152      Subject Name Operating Systems  
Concepts

Q20. Kernel is

1. considered as critical part of operating system.
2. software which monitors operating system.
3. set of primitive functions upon which rest of operating system functions are built up.
4. none of the above.

**Correct Answer : 3**

Your Answer :

QuestionID : 11153      Subject Name Operating Systems  
Concepts

Q21. A purpose of virtual memory system is to

1. Allow multiprocessing
2. Allow multiprogramming

3. Allow batch processing
4. Allow execution of program that larger memory than the size of the physical main memory.

**Correct Answer : 4**

Your Answer :

QuestionID : 11164      Subject Name Operating Systems  
Concepts

**Q22. The only state transition that is initiated by user process itself is**

1. Block
2. Dispatch
3. wake-up
4. None of above

**Correct Answer : 1**

Your Answer :

QuestionID : 11166      Subject Name Operating Systems  
Concepts

**Q23. cipher text is decrypted text.**

**Correct Answer : T**

Your Answer :

QuestionID : 11168      Subject Name Operating Systems  
Concepts

**Q24. Which of the following are single user Operating Systems.**

1. MS-DOS Only
2. Unix
3. MS-DOS,Xenix
4. OS/2.

**Correct Answer : 3**

Your Answer :

QuestionID : 11172      Subject Name Operating Systems  
Concepts

**Q25. Andrew and Sprite are examples of Distributed operating system.**

**Correct Answer : T**

Your Answer :

QuestionID : 11175      Subject Name Operating Systems  
Concepts

**Q26. CPU performance is based on:-**

1. ALU width.
2. Clock speed .
3. Number of instructions executed per second.
4. both a and b.

**Correct Answer : 3**

Your Answer :

QuestionID : 11184      Subject Name Operating Systems  
Concepts

**Q27. Intime sharing operating system ,  
when time slot given to a process is completed ,  
the process goes from RUNNING state to the**

1. BLOCKED state
2. Ready State
3. SUSPENDED state
4. TERMINATED state

**Correct Answer : 2**

Your Answer :

QuestionID : 11186      Subject Name Operating Systems  
Concepts

**Q28. The size of virtual memory depends on the size of the**

1. data bus
2. main memory
3. address bus

4. none

**Correct Answer : 3**

Your Answer :

QuestionID : 11200      Subject Name Operating Systems  
Concepts

**Q29.** RAID level 3 is also known as

1. memory-style error-correcting code.
2. Block-interleaved parity organization.
3. Bit-interleaved parity organization.
4. All of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11203      Subject Name Operating Systems  
Concepts

**Q30.** The protected mode is necessary for :-

1. Multitasking system.
2. Multiuser System.
3. both 1 & 2
4. 16 bit programming.

**Correct Answer : 1**

Your Answer :

QuestionID : 11209      Subject Name Operating Systems  
Concepts

**Q31.** FIFO and LRU are the popular page replacement algorithms.

**Correct Answer : T**

Your Answer :

QuestionID : 11218      Subject Name Operating Systems  
Concepts

**Q32.** In partitioned memory allocation scheme the \_\_\_\_\_

1. Best fit Algorithm is always better than the first fit algorithm.
2. First fit Algorithm is always better than the Best fit algorithm.
3. Superiority of the first fit & best fit depends on the sequence of memory request .
4. none of the above.

**Correct Answer : 3**

Your Answer :

QuestionID : 11241      Subject Name Operating Systems  
Concepts

**Q33.** Which of the following is true about deadlock state?

1. The system cannot run any process
2. The system can run process barring those involved in the deadlock
3. A running process cannot request any new resource
4. All process in the ready queue enter the wait queue

**Correct Answer : 2**

Your Answer :

QuestionID : 11244      Subject Name Operating Systems  
Concepts

**Q34.** Round Robin is an example of timesharing scheduling policy.

**Correct Answer : T**

Your Answer :

QuestionID : 11247      Subject Name Operating Systems  
Concepts

**Q35.** Unix is an example of multiuser system.

**Correct Answer : T**

Your Answer :

QuestionID : 11250      Subject Name Operating Systems  
Concepts

**Q36.** single system image is obtained in case of Distributed system

**Correct Answer : T**

Your Answer :

QuestionID : 11252      Subject Name Operating Systems  
Concepts

**Q37. Device Controller is a Hardware**

**Correct Answer : F**

Your Answer :

QuestionID : 11254      Subject Name Operating Systems  
Concepts

**Q38. A Program is a ----- entity whereas a Process is a---- entity**

1. Passive ,Active
2. Active ,passive
3. Active,Active
4. passive,passive

**Correct Answer : 1**

Your Answer :

QuestionID : 11256      Subject Name Operating Systems  
Concepts

**Q39. The context of a process is the union of its**

1. region table,uarea,system level context & user level context
2. register context,preigion table,user level context
3. System level context,register context,user level context
4. process table,user level context,register context

**Correct Answer : 1**

Your Answer :

QuestionID : 11259      Subject Name Operating Systems  
Concepts

**Q40. Program in execution is called Process.**

**Correct Answer : T**

Your Answer :

QuestionID : 11275      Subject Name Operating Systems  
Concepts

**Q41. a demand paging system with page table held in registers takes 5 milli sec to service a page fault, if an empty page is available,**

**or if page to be replaced is not dirty. It takes 50 milli sec if the replaced page is dirty. memory access time is 1 micro sec, assume we want an effective access time of 2 micro sec and that page to be replaced is dirty 60% of time, what is the approximate maximum acceptable page fault rate to meet this access time requirement**

1. 0.1%
2. 1.0%
3. 2.5%
4. 0.01%

**Correct Answer : 4**

Your Answer :

QuestionID : 11277      Subject Name Operating Systems  
Concepts

**Q42. Which of the Following operating Systems are not available for**

**non-intel platforms**

1. Windows NT
2. Solaris
3. Linux
4. All of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11283      Subject Name Operating Systems  
Concepts

**Q43. In the systems which do not have multiple CPUS is the cache coharenency is an issue while design.**

**Correct Answer : F**

Your Answer :

QuestionID : 11297      Subject Name Operating Systems  
Concepts

**Q44. the fol is a part of FAT**

1. sector info
2. disk type
3. date info
4. none

**Correct Answer : 1**

Your Answer :

QuestionID : 11298      Subject Name Operating Systems  
Concepts

**Q45. The available routing schemes are:**

1. fixed routing
2. virtual routing
3. dynamic routing
4. all of the above

**Correct Answer : 4**

Your Answer :

QuestionID : 11299      Subject Name Operating Systems  
Concepts

**Q46. \_\_\_\_\_ is the coincidence of high paging traffic and low CPU utilization**

1. Thrashing
2. spoolinh
3. swapping
4. All

**Correct Answer : 1**

Your Answer :

QuestionID : 11301      Subject Name Operating Systems  
Concepts

**Q47. peak bandwidth of a 64 bit, 33 MHz based PCI bus would be...**

1. 133MB/s
2. 266 MB/s
3. 512 MB/s
4. 33 MB/s

**Correct Answer : 3**

Your Answer :

QuestionID : 11307      Subject Name Operating Systems  
Concepts

**Q48. An ordinary user can modify the contents of the file "/usr/lib/cron/at.deny"?**

**Correct Answer : F**

Your Answer :

QuestionID : 11310      Subject Name Operating Systems  
Concepts

**Q49. Circuit switching has two variants -connection oriented and connectionless**

**Correct Answer : F**

Your Answer :

QuestionID : 11624      Subject Name Operating Systems  
Concepts

**Q50. Unix is a network operating system**

**Correct Answer : T**

Your Answer :



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## Hi DAC You have scored : 0

QuestionID : 11056      Subject Name Operating Systems  
Concepts

Q1. The cpu utilization is low when the system is

- 1. executing
- 2. thrasing
- 3. waiting
- 4. all of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11061      Subject Name Operating Systems  
Concepts

Q2. Unix is a network operating system?

**Correct Answer : T**

Your Answer :

QuestionID : 11083      Subject Name Operating Systems  
Concepts

Q3. A process refers to 5 pages, A,B,C,D & E in the order - A; B;  
C; D; A; B;  
E; A; B; C; D; E. If the page replacement algorithm is FIFO, the  
number

of pages which transfer with an emty internal store of 3 frames is

- 1. 8
- 2. 10
- 3. 9
- 4. 7

**Correct Answer : 3**

Your Answer :

QuestionID : 11084      Subject Name Operating Systems  
Concepts

Q4. If the scheduling policy is FCFS the average waiting time will  
be?

- 1. 12.8 ms
- 2. 8 ms
- 3. 16 ms
- 4. none of the above

**Correct Answer : 1**

Your Answer :

QuestionID : 11086      Subject Name Operating Systems  
Concepts

Q5. Page Fault occurs when

- 1. the page is corrupted by application software
- 2. the page is in main memory
- 3. the page is not in main memory
- 4. one tries to divide a number by 0

**Correct Answer : 3**

Your Answer :

QuestionID : 11087      Subject Name Operating Systems  
Concepts

Q6. FCFS stands for -----

- 1. Fast Come First Serve.
- 2. First Come First Serve.
- 3. Both are true.
- 4. Both are False.

**Correct Answer : 2**

Your Answer :

QuestionID : 11088      Subject Name Operating Systems  
Concepts

Q7. Disk request come to a disk driver for cylinders in the order 10,22,20,2,40,6 and 38, at time when the disk drive is reading from cylinder 20.

The seek time is 6 ms per cylinder. the total seek time, if the disk arm scheduling algorithm is first come first served is

1. 360 ms
2. 850 ms
3. 900 ms
4. none of above

**Correct Answer : 4**

Your Answer :

QuestionID : 11089      Subject Name Operating Systems  
Concepts

Q8. Semaphores are used to solve the problem of

1. Race condition
2. process synchronization
3. mutual exclusion
4. both b&c

**Correct Answer : 4**

Your Answer :

QuestionID : 11093      Subject Name Operating Systems  
Concepts

Q9. SPOOLING stands for simultaneous peripheral operation online.

**Correct Answer : T**

Your Answer :

QuestionID : 11094      Subject Name Operating Systems  
Concepts

Q10. SPOOLING stands for \_\_\_\_\_

1. Simultaneous Peripheral Operations OnLine
2. Spontaneous Peripheral Operations OnLine
3. Serial

Peripheral Operations OnLine

4. None of the above

**Correct Answer : 1**

Your Answer :

QuestionID : 11099      Subject Name Operating Systems  
Concepts

Q11. With a single resource deadlock occurs

1. if there are more than two processes computing for that resource
2. if there are only than two processes computing for that resource
3. if there are a single process computing for that resource
4. None of the above

**Correct Answer : 4**

Your Answer :

QuestionID : 11106      Subject Name Operating Systems  
Concepts

Q12. NRU stands for NOT RECENTLY USED & LRU stands for LEAST RECENTLY USED

**Correct Answer : T**

Your Answer :

QuestionID : 11107      Subject Name Operating Systems  
Concepts

Q13. \_\_\_\_\_ is a significant factor in maintaining fragmentation within usable limits

1. External Fragmentation
2. Paging

- 3. Coalescing of holes
- 4. Both 2 and 3

**Correct Answer : 4**

Your Answer :

QuestionID : 11119      Subject Name Operating Systems  
Concepts

**Q14. Which of the following is true?**

- a) Overlays are used to increase the size of physical memory
- b) Overlays are used to increase the logical address space
- c) when overlays are used the size of project is not limited to the size of physical memory
- d) Overlays are used whenever the physical address space is smaller than the logical address space

- 1. a and b
- 2. only c
- 3. only a
- 4. none of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11120      Subject Name Operating Systems  
Concepts

**Q15. The main function of shared memory is to**

- 1. use primary memory efficiently
- 2. do intra process communication
- 3. do inter process communication
- 4. none of the above

**Correct Answer : 3**

Your Answer :

QuestionID : 11121      Subject Name Operating Systems  
Concepts

**Q16. which of the following is an example of SPOOLED device**

- 1. The terminal used to enter the input data for a program being executed.
- 2. The secondary memory device in a virtual memory system.
- 3. A line printer used to print the output of a number of jobs.
- 4. none of the above.

**Correct Answer : 3**

Your Answer :

QuestionID : 11126      Subject Name Operating Systems  
Concepts

**Q17. Round-Robin understands priority?**

**Correct Answer : F**

Your Answer :

QuestionID : 11137      Subject Name Operating Systems  
Concepts

**Q18. When fork() is given-**

- 1. it creates a child process.
- 2. Allocates slot in process table.
- 3. returns 0 to parent and ID to child.
- 4. all of the above.

**Correct Answer : 4**

Your Answer :

QuestionID : 11139      Subject Name Operating Systems  
Concepts

**Q19. When an interrupt occurs, an operating system**

- 1. ignores the interrupt
- 2. always changes the state of the interrupted process after processing the interrupt .
- 3. always resumes execution of the interrupted process after processing the interrupt .

4. may change the state of the interrupted process to "Blocked" and schedule another process

**Correct Answer : 4**

Your Answer :

QuestionID : 11142      Subject Name Operating Systems  
Concepts

Q20. The signal of the keyboard sends to the computer a special kind of message called

1. keyboard request
2. keyboard controller
3. interrupt controller
4. interrupt request

**Correct Answer : 4**

Your Answer :

QuestionID : 11146      Subject Name Operating Systems  
Concepts

Q21. Disk scheduling involves deciding

1. which disk should be accessed next  
2. the order in which disk access request must be serviced  
3. the physical location where files should be accessed in the disk

4. none of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11151      Subject Name Operating Systems  
Concepts

Q22. Which of the following CPU scheduling algorithm will prevent starvation problem.

1. shortest-job-first
2. priority scheduling
3. priority scheduling with aging mechanism
4. None of the above

**Correct Answer : 3**

Your Answer :

QuestionID : 11161      Subject Name Operating Systems  
Concepts

Q23. The main purpose(s) of an operating system is/are \_\_\_\_\_

1. Convenience for the user.
2. Efficient operation of the Computer system.
3. Optimal use of Computer resources.
4. All of the above

**Correct Answer : 4**

Your Answer :

QuestionID : 11180      Subject Name Operating Systems  
Concepts

Q24. During system startup, program execution begins at address FFFFOH

**Correct Answer : T**

Your Answer :

QuestionID : 11194      Subject Name Operating Systems  
Concepts

Q25. following is a path under execution

1. directory
2. file
3. thread
4. all

**Correct Answer : 3**

Your Answer :

QuestionID : 11196      Subject Name Operating Systems  
Concepts

**Concepts**

Q26. In a multi-user OS, 20 requests are made to a particular resource per hour, on an average. The probability that no requests are made in 45 minutes is

1. (e)-15
2. (e)-5
3. 1-(e)-5
4. 1-(e)-10

**Correct Answer : 4**

Your Answer :

QuestionID : 11207      Subject Name Operating Systems

**Concepts**

Q27. A process is Thrashing if it spends more time on execution than paging

1. True
2. False
3. None of the above.
4. Partially True

**Correct Answer : 2**

Your Answer :

QuestionID : 11220      Subject Name Operating Systems

**Concepts**

Q28. Fragmentation is

1. dividing the secondary memory into equal sized fragments.
2. dividing the main memory into equal sized fragments.
3. fragments of memory words unused in a page.
4. fragments of memory words used in a page .

**Correct Answer : 3**

Your Answer :

QuestionID : 11224      Subject Name Operating Systems

**Concepts**

Q29. Which of the following are RTOS ?

1. An on-line railway reservation system
2. A process control system.
3. Aircraft control system.
4. Payroll processing system.

**Correct Answer : 3**

Your Answer :

QuestionID : 11230      Subject Name Operating Systems

**Concepts**

Q30. A virtual memory is required for

1. Increasing the speed
2. Increasing the addressing modes
3. Overcoming size limitation of main memory
4. Overcoming size limitation of cache memory

**Correct Answer : 3**

Your Answer :

QuestionID : 11233      Subject Name Operating Systems

**Concepts**

Q31. Which of the following statement is true for dead lock?

1. The system can not run any process.
2. The system can not run any process barring all those involved in the deadlock?
3. A running process can not request any new resource.
4. All processes in the ready queue enter the wait.

**Correct Answer : 1**

Your Answer :

QuestionID : 11236      Subject Name Operating Systems

**Concepts**

Q32. Which of the following is a non-preemptive O.S?

1. Unix
2. Windows95

- 3. Windows NT
- 4. None of the above

**Correct Answer : 4**

Your Answer :

QuestionID : 11237      Subject Name Operating Systems  
Concepts

**Q33. The main purpose of an Operating system is/are ...**

- 1. convenience for the user
- 2. efficient operation of the computer system.
- 3. optimal use of the computer resources.
- 4. All of the above.

**Correct Answer : 4**

Your Answer :

QuestionID : 11244      Subject Name Operating Systems  
Concepts

**Q34. Round Robin is an example of timesharing scheduling policy.**

**Correct Answer : T**

Your Answer :

QuestionID : 11250      Subject Name Operating Systems  
Concepts

**Q35. single system image is obtained in case of Distributed system**

**Correct Answer : T**

Your Answer :

QuestionID : 11252      Subject Name Operating Systems  
Concepts

**Q36. Device Controller is a Hardware**

**Correct Answer : F**

Your Answer :

QuestionID : 11253      Subject Name Operating Systems  
Concepts

**Q37. Device files in UNIX are**

- 1. Device drivers
- 2. Special Files
- 3. Pipes
- 4. Unstructured files

**Correct Answer : 2**

Your Answer :

QuestionID : 11258      Subject Name Operating Systems  
Concepts

**Q38. Consider a computer with 8 Mbytes of the main memory & 128 K cache. The cache block size is 4K . It**

**uses a direct mapping scheme for the cache management. how many different main memory blocks can map on to a given physical cache block**

- 1. 2048
- 2. 256
- 3. 64
- 4. none

**Correct Answer : 3**

Your Answer :

QuestionID : 11273      Subject Name Operating Systems  
Concepts

**Q39. In which of the following directory systems, is it possible to have**

**multiple complete paths for a file, starting from the root directory ?**

- 1. Single level directory
- 2. Two level directory
- 3. Tree structured directory
- 4. Acyclic graph directory

**Correct Answer : 4**

Your Answer :

QuestionID : 11277      Subject Name Operating Systems  
Concepts

Q40. Which of the Following operating Systems are not available for non-intel platforms

1. Windows NT
2. Solaris
3. Linux
4. All of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11281      Subject Name Operating Systems  
Concepts

Q41. SS402>myfile would redirect the standard output and standard error to the myfile.

**Correct Answer : F**

Your Answer :

QuestionID : 11283      Subject Name Operating Systems  
Concepts

Q42. In the systems which do not have multiple CPUS is the cache coahrency is an issue while design.

**Correct Answer : F**

Your Answer :

QuestionID : 11292      Subject Name Operating Systems  
Concepts

Q43. Suppose the following files are present in the current directory:

ashish arctan dac.doc dim.dwg document  
fag fibonacci finder fog folder  
sam si.c tarun zenith zombie

Which files would be listed by the following command?

Is [!fd]

1. None
2. zenith zombie
3. [!fd] not found
4. fag fibonacci finder fog folder

**Correct Answer : 3**

Your Answer :

QuestionID : 11297      Subject Name Operating Systems  
Concepts

Q44. the fol is a part of FAT

1. sector info
2. disk type
3. date info
4. none

**Correct Answer : 1**

Your Answer :

QuestionID : 11298      Subject Name Operating Systems  
Concepts

Q45. The available routing schemes are:

1. fixed routing
2. virtual routing
3. dynamic routing
4. all of the avobe

**Correct Answer : 4**

Your Answer :

QuestionID : 11301      Subject Name Operating Systems  
Concepts

Q46. peak bandwidth of a 64 bit, 33 MHz based PCI bus would be...

1. 133MB/s
2. 266 MB/s

- 3. 512 MB/s
- 4. 33 MB/s

**Correct Answer : 3**

Your Answer :

QuestionID : 11303      Subject Name Operating Systems  
Concepts

Q47. b=

[ -n \$b ]

echo \$ ?

[ -z \$b ]

echo \$?

- 1. Will run fine
- 2. test : argument expected
- 3. error
- 4. none

**Correct Answer : 2**

Your Answer :

QuestionID : 11305      Subject Name Operating Systems  
Concepts

Q48. point out error

a=12 b=12.52

if [ a=b ] then echo " \n a and b are equal "

fi

- 1. [ a=b ]
- 2. fi
- 3. both
- 4. none

**Correct Answer : 1**

Your Answer :

QuestionID : 11310      Subject Name Operating Systems  
Concepts

Q49. Circuit switching has two variants -connection oriented and connectionless

**Correct Answer : F**

Your Answer :

QuestionID : 11628      Subject Name Operating Systems  
Concepts

Q50. linked list is not suitable for which of following data structure

- 1. binary search
- 2. Insertion sort
- 3. radix sort
- 4. polynomial manipulation

**Correct Answer : 1**

Your Answer :





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## Hi DAC You have scored : 0

QuestionID : 11059      Subject Name Operating Systems  
Concepts

Q1. The CPU utilization is low when the system is

1. Time sharing
2. Thrashing
3. Multiprocessing
4. None of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11060      Subject Name Operating Systems  
Concepts

Q2. Modified page is also called Dirty Page.

**Correct Answer : T**

Your Answer :

QuestionID : 11070      Subject Name Operating Systems  
Concepts

Q3. During the process of loading the program, a \_\_\_\_\_ modifies the actual

instruction so that the effect of load address is taken into account

1. resource locator
2. loader
3. relocating loader
4. relocation register

**Correct Answer : 4**

Your Answer :

QuestionID : 11071      Subject Name Operating Systems  
Concepts

Q4. ----- scheduler selects the process that is ready to execute to CPU.

1. long-term scheduler
2. short-term scheduler
3. medium-term scheduler
4. None of these

**Correct Answer : 2**

Your Answer :

QuestionID : 11072      Subject Name Operating Systems  
Concepts

Q5. Relocation and address translation can be achieved with the help of paging

**Correct Answer : T**

Your Answer :

QuestionID : 11079      Subject Name Operating Systems  
Concepts

Q6. Mutex is Mutual Exclusion semaphore.

**Correct Answer : T**

Your Answer :

QuestionID : 11085      Subject Name Operating Systems  
Concepts

Q7. Ready Queue in CPU scheduling is always in FIFO order

**Correct Answer : T**

Your Answer :

QuestionID : 11093      Subject Name Operating Systems  
Concepts

Q8. SPOOLING stands for simultaneous peripheral operation online.

**Correct Answer : T**

Your Answer :

QuestionID : 11098      Subject Name Operating Systems  
Concepts

**Q9. A virtual memory is required for-**

1. increasing the speed
2. increasing the addressing modes
3. overcoming the size limitation of main memory
4. overcoming the size limitation of cache memory

**Correct Answer : 3**

Your Answer :

QuestionID : 11100      Subject Name Operating Systems  
Concepts

**Q10. Distributed systems should**

1. meet prescribed time constraints
2. aim better resource sharing
3. aim better system utilization
4. aim low system overload

**Correct Answer : 2**

Your Answer :

QuestionID : 11102      Subject Name Operating Systems  
Concepts

**Q11. Disk request come to a disk driver for cylinders in the order 10,22,20,2,40,6 and 38, at time when the disk drive is reading from cylinder 20.**

The seek time is 6 ms per cylinder. the total seek time, if the disk arm scheduling algorithm is closest cylinder next is

1. 360 ms
2. 876 ms
3. 850 ms
4. 900 ms

**Correct Answer : 1**

Your Answer :

QuestionID : 11111      Subject Name Operating Systems  
Concepts

**Q12. Time elapsed for position of Read / Write head under the desired sector is called?**

1. Seek Time
2. Latency Time
3. Turnaround Time
4. None of above

**Correct Answer : 2**

Your Answer :

QuestionID : 11126      Subject Name Operating Systems  
Concepts

**Q13. Round-Robin understands priority?**

**Correct Answer : F**

Your Answer :

QuestionID : 11133      Subject Name Operating Systems  
Concepts

**Q14. Pipe is the mechanism whereby the output of one process is directed into input of another process**

**Correct Answer : T**

Your Answer :

QuestionID : 11136      Subject Name Operating Systems  
Concepts

**Q15. Efficient operation of computer system and Convenience for user**

**are the goals of operating system.**

**Correct Answer : T**

Your Answer :

QuestionID : 11138      Subject Name Operating Systems

QuestionID : 11150      Subject Name Operating Systems  
Concepts

Q16. Which of the following CPU scheduling algorithms will prevent starvation?

1. shortest-job-first
2. priority scheduling algorithm
3. priority scheduling with aging mechanism
4. none

**Correct Answer : 3**

Your Answer :

QuestionID : 11141      Subject Name Operating Systems  
Concepts

Q17. Which of the following statement is true?

1. A computer Virus is complete program that makes active attacks.
2. A computer virus is program segment that makes passive attacks.
3. A logic bomb is program segment that makes passive attacks.
4. A logic bomb is program that makes active attacks.

**Correct Answer : 1**

Your Answer :

QuestionID : 11142      Subject Name Operating Systems  
Concepts

Q18. The signal of the keyboard sends to the computer a special kind of message called

1. keyboard request
2. keyboard controller
3. interrupt controller
4. interrupt request

**Correct Answer : 4**

Your Answer :

QuestionID : 11148      Subject Name Operating Systems  
Concepts

Q19. Which of the following is the most suitable scheduling scheme in real time operating system.

1. round robin
2. first come first served
3. pre-emptive scheduling
4. random scheduling

**Correct Answer : 3**

Your Answer :

QuestionID : 11151      Subject Name Operating Systems  
Concepts

Q20. Which of the following CPU scheduling algorithm will prevent starvation problem.

1. shortest-job-first
2. priority scheduling
3. priority scheduling with aging mechanism
4. None of the above

**Correct Answer : 3**

Your Answer :

QuestionID : 11157      Subject Name Operating Systems  
Concepts

Q21. At a particular time of computation the value of counting semaphore

is 7. Then 20 'p' operation and x 'v' operation were completed on this semaphore.

If the final value of the semaphore is 5, x will be...

- 1. 15
- 2. 22
- 3. 18
- 4. 13

**Correct Answer : 3**

Your Answer :

QuestionID : 11164      Subject Name Operating Systems  
Concepts

Q22. The only state transition that is initiated by user process itself is

- 1. Block
- 2. Dispatch
- 3. wake-up
- 4. None of above

**Correct Answer : 1**

Your Answer :

QuestionID : 11168      Subject Name Operating Systems  
Concepts

Q23. Which of the following are single user Operating Systems.

- 1. MS-DOS Only
- 2. Unix
- 3. MS-DOS,Xenix
- 4. OS/2.

**Correct Answer : 3**

Your Answer :

QuestionID : 11180      Subject Name Operating Systems  
Concepts

Q24. During system startup,program execution begin at address FFFOH

**Correct Answer : T**

Your Answer :

QuestionID : 11188      Subject Name Operating Systems  
Concepts

Q25. the coincidence of high paging traffic and low CPU utilization

- 1. thrashing
- 2. page-fault
- 3. memory crash
- 4. all of the above

**Correct Answer : 1**

Your Answer :

QuestionID : 11191      Subject Name Operating Systems  
Concepts

Q26. Turnaround time refers to-

- 1. interval from time of submission of process to the time of the completion.
- 2. interval from time of completion of process to the time of the submission .
- 3. time at which process is submitted.
- 4. none of the above

**Correct Answer : 1**

Your Answer :

QuestionID : 11192      Subject Name Operating Systems  
Concepts

Q27. Preemptive scheduling is the forceful deallocation of a resource.

**Correct Answer : T**

Your Answer :

QuestionID : 11198      Subject Name Operating Systems  
Concepts

Q28. An o.s. contain 3 user processes each requiring 2 units of resource R

then minimum no. of units of Resource R such that no deadlock

then minimum no. of units of resource R such that no deadlock will occur is

- 1. 3
- 2. 4
- 3. 5
- 4. 6

**Correct Answer : 2**

Your Answer :

QuestionID : 11199      Subject Name Operating Systems  
Concepts

Q29. Which of the following is not a part of a process control block(PCB).

- 1. Values of a CPU registers
- 2. CPU Scheduling information
- 3. Memory limits of the process
- 4. List of files accessible to the process.

**Correct Answer : 4**

Your Answer :

QuestionID : 11215      Subject Name Operating Systems  
Concepts

Q30. A process refers to 5 pages A,B,C,D,E in order -  
A;B;C;D;A;B;E;A;B;C;D;E.

If the page replacement algorithm is FIFO, the number of page transfer with  
an empty internal store of 4 frames is greater than for 3 frames.

**Correct Answer : T**

Your Answer :

QuestionID : 11218      Subject Name Operating Systems  
Concepts

Q31. In partitioned memory allocation scheme the \_\_\_\_\_

- 1. Best fit Algorithm is always better than the first fit algorithm.
- 2. First fit Algorithm is always better than the Best fit algorithm.
- 3. Superiority of the first fit & best fit depends on the sequence of memory request .
- 4. none of the above.

**Correct Answer : 3**

Your Answer :

QuestionID : 11220      Subject Name Operating Systems  
Concepts

Q32. Fragmentation is

- 1. dividing the secondary memory into equal sized fragments.
- 2. dividing the main memory into equal sized fragments.
- 3. fragments of memory words unused in a page.
- 4. fragments of memory words used in a page .

**Correct Answer : 3**

Your Answer :

QuestionID : 11222      Subject Name Operating Systems  
Concepts

Q33. Which of the following scheduling policy is well suited for a time-shared operating system?

- 1. Shortest job first
- 2. Round robin
- 3. First-come-first-serve
- 4. Elevator

**Correct Answer : 2**

Your Answer :

QuestionID : 11224      Subject Name Operating Systems  
Concepts

Q34. Which of the following are RTOS ?

- 1. An on-line railway reservation system
- 2. A process control system.

- 3. Aircraft control system.
- 4. Payroll processing system.

**Correct Answer : 3**

Your Answer :

QuestionID : 11227      Subject Name Operating Systems  
Concepts

**Q35. DOS is an example of ..... user system**

- 1. Multiuser system
- 2. Single user system
- 3. both 1 and 2
- 4. none of the above

**Correct Answer : 2**

Your Answer :

QuestionID : 11237      Subject Name Operating Systems  
Concepts

**Q36. The main purpose of an Operating system is/are ...**

- 1. convenience for the user
- 2. efficient operation of the computer system.
- 3. optimal use of the computer resources.
- 4. All of the above.

**Correct Answer : 4**

Your Answer :

QuestionID : 11241      Subject Name Operating Systems  
Concepts

**Q37. Which of the following is true about deadlock state?**

- 1. The system cannot run any process
- 2. The system can run process barring those involved in the deadlock
- 3. A running process cannot request any new resource
- 4. All process in the ready queue enter the wait queue

**Correct Answer : 2**

Your Answer :

QuestionID : 11243      Subject Name Operating Systems  
Concepts

**Q38. PSW stands for \_\_\_\_\_ .**

- 1. Process Status Word.
- 2. Peripheral Status Word
- 3. Program Status Word
- 4. None of above

**Correct Answer : 3**

Your Answer :

QuestionID : 11244      Subject Name Operating Systems  
Concepts

**Q39. Round Robin is an example of timesharing scheduling policy.**

**Correct Answer : T**

Your Answer :

QuestionID : 11249      Subject Name Operating Systems  
Concepts

**Q40. Which of the following is not features of RISC architecture.**

- 1. A limited instruction set.
- 2. A large number of registers.
- 3. Virtual memory
- 4. The large number of execution modes.

**Correct Answer : 2**

Your Answer :

QuestionID : 11256      Subject Name Operating Systems  
Concepts

**Q41. The context of a process is the union of its**

- 1. region table, urea, system level context & user level context
- 2. register context, region table, user level context
- 3. System level context, register context, user level context

4. process table,user level context,register context

**Correct Answer : 1**

Your Answer :

QuestionID : 11266      Subject Name Operating Systems  
Concepts

**Q42. The problem of thrashing may be reduced by**

1. Using prepaging mechanism
2. writing well structured program.
3. Both 1 & 2
4. Neither 1 & 2

**Correct Answer : 3**

Your Answer :

QuestionID : 11274      Subject Name Operating Systems  
Concepts

**Q43. If filenames are supplied as arguments to a script rm "\$@" would remove all files supplied as arguments.**

**Correct Answer : T**

Your Answer :

QuestionID : 11278      Subject Name Operating Systems  
Concepts

**Q44. Suppose that a process is in BLOCKED state waiting for some**

**I/O service. When the service is completed, it goes to the**

1. Running state
2. Ready state
3. Suspended state
4. Terminated state

**Correct Answer : 2**

Your Answer :

QuestionID : 11280      Subject Name Operating Systems  
Concepts

**Q45. \$? gives the PID of last background process, whereas \$! gives the exit status of the last command executed.**

**Correct Answer : F**

Your Answer :

QuestionID : 11285      Subject Name Operating Systems  
Concepts

**Q46. Locality of reference implies that the page reference being made by a process**

1. will always be to the page used in previous page reference
2. is likely to be one of the pages used in the last few page references
3. will always be one of the pages existing in memory
4. will always lead to a page fault

**Correct Answer : 2**

Your Answer :

QuestionID : 11309      Subject Name Operating Systems  
Concepts

**Q47. Single system image is obtained in case of ----**

1. desktop
2. Distributed
3. network
4. none

**Correct Answer : 2**

Your Answer :

QuestionID : 11310      Subject Name Operating Systems  
Concepts

**Q48. Circuit switching has two variants -connection oriented and connectionless**

**Correct Answer : F**

Your Answer :

QuestionID : 11311      Subject Name Operating Systems

Concepts

Q49. 80826 the addressing schema is \_\_\_\_\_ addressing

- 1. 8 bit
- 2. 16 bit
- 3. 24 bit
- 4. 28 bit

**Correct Answer : 3**

Your Answer :

Concepts

Q50. Banking Algorithm is example of

- 1. Deadlock avoidance
- 2. deadlock detection
- 3. both option 1 and option 2
- 4. deadlock recovery

**Correct Answer : 1**

Your Answer :



## **T.E. (Computer Science and Engg.) (Part -1) OPERATING SYSTEM -1**

### **MCQ/Objective Type Questions**

1. Attempt the following MCQ:

1) Round robin scheduling is essentially the preemptive version of \_\_\_\_\_.

- 1 FIFO
- 2 Shortest job first
- 3 Shortes remaining
- 4 Longest time first

2) A page fault occurs

- 1 when the page is not in the memory
- 2 when the page is in the memory
- 3 when the process enters the blocked state
- 4 when the process is in the ready state

3) Which of the following will determine your choice of systems software for your computer ?

- 1 Is the applications software you want to use compatible with it ?
- 2 Is it expensive ?
- 3 Is it compatible with your hardware ?
- 4 Both 1 and 3

4) Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);--- ;signal(Q);signal(S); respectively. The above situation depicts a \_\_\_\_\_ .

- 1 Semaphore
- 2 Deadlock
- 3 Signal
- 4 Interrupt

5) What is a shell ?

- 1 It is a hardware component
- 2 It is a command interpreter
- 3 It is a part in compiler
- 4 It is a tool in CPU scheduling

6) Routine is not loaded until it is called. All routines are kept on disk in a relocatable load format. The main program is loaded into memory & is executed. This type of loading is called \_\_\_\_\_

- 1 Static loading
- 2 Dynamic loading
- 3 Dynamic linking
- 4 Overlays

7) In the blocked state

- 1 the processes waiting for I/O are found
- 2 the process which is running is found
- 3 the processes waiting for the processor are found
- 4 none of the above

8) What is the memory from 1K - 640K called ?

- 1 Extended Memory
- 2 Normal Memory
- 3 Low Memory
- 4 Conventional Memory

9) Virtual memory is \_\_\_\_\_.

- 1 An extremely large main memory
- 2 An extremely large secondary memory
- 3 An illusion of extremely large main memory
- 4 A type of memory used in super computers.

10) The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by \_\_\_\_\_.

- 1 Editors
- 2 Compilers
- 3 System Call

#### 4 Caching

11) If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98,37,14,124,65,67.

- 1 310
- 2 324
- 3 315
- 4 321

12) Multiprogramming systems \_\_\_\_\_.

- 1 Are easier to develop than single programming systems
- 2 Execute each job faster
- 3 Execute more jobs in the same time
- 4 Are used only on large main frame computers

13) Which is not the state of the process ?

- 1 Blocked
- 2 Running
- 3 Ready
- 4 Privileged

14) The solution to Critical Section Problem is : Mutual Exclusion, Progress and Bounded Waiting.

- 1 The statement is false
- 2 The statement is true.
- 3 The statement is contradictory.
- 4 None of the above

15) The problem of thrashing is effected scientifically by \_\_\_\_\_.

- 1 Program structure
- 2 Program size
- 3 Primary storage size
- 4 none of the above

16) The state of a process after it encounters an I/O instruction is \_\_\_\_\_.

- 1 Ready
- 2 blocked/Waiting
- 3 Idle
- 4 Running

17) The number of processes completed per unit time is known as \_\_\_\_\_.

- 1 Output
- 2 Throughput
- 3 Efficiency
- 4 Capacity

18) \_\_\_\_\_ is the situation in which a process is waiting on another process, which is also waiting on another process ... which is waiting on the first process. None of the processes involved in this circular wait are making progress.

- 1 Deadlock
- 2 Starvation
- 3 Dormant
- 4 None of the above

19) Which of the following file name extension suggests that the file is Backup copy of another file ?

- 1 TXT
- 2 COM
- 3 BAS
- 4 BAK

20) Which technique was introduced because a single job could not keep both the CPU and the I/O devices busy?

- 1 Time-sharing
- 2 SPOOLing
- 3 Preemptive scheduling
- 4 Multiprogramming

## **SECTION-I**

1. a) What is a process? Write and explain a typical 'Process Control Block' (PCB).

Ans :

A process in an operating system is represented by a data structure known as a process control block (PCB) or process descriptor. The PCB contains important information about the specific process including

- The current state of the process i.e., whether it is ready, running, waiting, or whatever.
- Unique identification of the process in order to track "which is which" information.
- A pointer to parent process.
- Similarly, a pointer to child process (if it exists).
- The priority of process (a part of CPU scheduling information).
- Pointers to locate memory of processes.
- A register save area.
- The processor it is running on.

The PCB is a certain store that allows the operating systems to locate key information about a process. Thus, the PCB is the data structure that defines a process to the operating systems.

2. b) Explain in detail the following schedulers:

i) Short-term schedulers

Ans :

The short-term scheduler (also known as the CPU scheduler) decides which of the ready, in-memory processes are to be executed (allocated a CPU) next following a clock interrupt, an IO interrupt, an operating system call or another form of signal. Thus the short-term scheduler makes scheduling decisions much more frequently than the long-term or mid-term schedulers - a scheduling decision will at a minimum have to be made after every time slice, and these are very short. This scheduler can be preemptive, implying that it is capable of forcibly removing processes from a CPU when it decides to allocate that CPU to another

process, or non-preemptive (also known as "voluntary" or "co-operative"), in which case the scheduler is unable to "force" processes off the CPU. [Stallings, 396].

ii) Long-term schedulers

Ans:

The long-term, or admission, scheduler decides which jobs or processes are to be admitted to the ready queue; that is, when an attempt is made to execute a program, its admission to the set of currently executing processes is either authorized or delayed by the long-term scheduler. Thus, this scheduler dictates what processes are to run on a system, and the degree of concurrency to be supported at any one time - ie: whether a high or low amount of processes are to be executed concurrently, and how the split between IO intensive and CPU intensive processes is to be handled. In modern OS's, this is used to make sure that real time processes get enough CPU time to finish their tasks. Without proper real time scheduling, modern GUI interfaces would seem sluggish. [Stallings, 399].

Long-term scheduling is also important in large-scale systems such as batch processing systems, computer clusters, supercomputers and render farms. In these cases, special purpose job scheduler software is typically used to assist these functions, in addition to any underlying admission scheduling support in the operating system.

iii) Medium-term schedulers.

Ans:

The mid-term scheduler temporarily removes processes from main memory and places them on secondary memory (such as a disk drive) or vice versa. This is commonly referred to as "swapping out" or "swapping in" (also incorrectly as "paging out" or "paging in"). The mid-term scheduler may decide to swap out a process which has not been active for some time, or a process which has a low priority, or a process which is page faulting frequently, or a process which is taking up a large amount of memory in order to free up main memory for other processes, swapping the process back in later when more memory is available, or when the process has been unblocked and is no longer waiting for a resource. [Stallings,

396] [Stallings, 370]

In many systems today (those that support mapping virtual address space to secondary storage other than the swap file), the mid-term scheduler may actually perform the role of the long-term scheduler, by treating binaries as "swapped out processes" upon their execution. In this way, when a segment of the binary is required it can be swapped in on demand, or "lazy loaded". [Stallings, 394]

3. a) Explain the working of Multiprogramming OS in detail.

Ans :

**Multiprogramming:** When multitasking is just talking about executing multiple programs concurrently then the term multitasking term is referred as multiprogramming.

In the early days of computing, [CPU time](#) was expensive, and [peripherals](#) were very slow. When the computer ran a program that needed access to a peripheral, the CPU would have to stop executing program instructions while the peripheral processed the data. This was deemed very inefficient. The first computer using a multitasking system was the British [Leo III](#) owned by [J. Lyons and Co.](#). Several different programs in batch were loaded in the computer memory, and the first one began to run. When the first program reached an instruction waiting for a peripheral, the context of this program was stored away, and the second program in memory was given a chance to run. The process continued until all programs finished running.

Multiprogramming doesn't give any guarantee that a program will run in a timely manner. Indeed, the very first program may very well run for hours without needing access to a peripheral. As there were no users waiting at an interactive terminal, this was no problem: users handed on a deck of punched cards to an operator, and came back a few hours later for printed results. Multiprogramming greatly reduced wait times when multiple batches were being processed.

4. Explain distributed systems and its advantages.

Ans :

**Distributed computing** is a field of computer science that studies distributed systems. A **distributed system** consists of multiple autonomous [computers](#) that communicate through a computer network. The computers interact with each other in order to achieve a common goal. A computer program that runs in a distributed system is called a **distributed program**, and **distributed programming** is the process of writing such programs.[\[1\]](#)

Distributed computing also refers to the use of distributed systems to solve computational problems. In distributed computing, a problem is divided into many tasks, each of which is solved by one or more computers.<sup>[2]</sup>

Advantages of Distributed Systems over Centralized ones

1:Incremental growth:Computing power can be added in small increments

2:Reliability:If one machine crashes, the system as a whole can still survive

3:Speed:

A distributed system may have more total computing power than a mainframe

4:Open system:

This is the most important point and the most characteristic point of a distributed system. Since it is an open system it is always ready to communicate with other systems. An open system that scales has an advantage over a perfectly closed and self-contained system.

Economic: AND Microprocessors offer a better price/performance than mainframes

5 Write and explain an algorithm for the reader's writer's problem in

Ans :

In [computer science](#), the **first and second readers-writers problems** are examples of a common computing problem in [concurrency](#). The two problems deal with situations in which many [threads](#) must access the same [shared memory](#) at one time, some reading and some writing, with the natural constraint that no process may access the share for reading or writing while another process is in the act of writing to it. (In particular, it is allowed for two or more readers to access the share at the same time.) A [readers-writer lock](#) is a [data structure](#) that solves one or more of the readers-writers problems.

The **third readers-writers problem** is sometimes proposed, which adds the constraint that *no thread shall be allowed to starve*; that is, the operation of obtaining a lock on the shared data will always terminate in a bounded amount of time.

A solution with fairness for both readers and writers might be as follows:

semaphores: no\_writers, no\_readers, counter\_mutex ( initial value is 1 )

shared variables: nreaders ( initial value is 0 )

local variables: prev, current

WRITER:

```

P( no_writers );
P( no_readers );
V( no_readers );
... write ...
V( no_writers );

```

READER:

```

P( no_writers );
P( counter_mutex );
prev := nreaders;
nreaders := nreaders + 1;
V( counter_mutex );
if prev = 0 then P( no_readers );
V( no_writers );
... read ...
P( counter_mutex );
nreaders := nreaders - 1;
current := nreaders;
V( counter_mutex );
if current = 0 then V( no_readers );

```

Note that sections protected by counter\_mutex could be replaced by a suitable [fetch-and-add](#) atomic instruction, saving two potential context switches in reader's code.

Note also that this solution can only satisfy the condition that "no thread shall be allowed to starve" if and only if semaphores preserve first-in first-out ordering when blocking and releasing threads. Otherwise, a blocked writer, for example, may be continually preempted by newly blocked writers.

Q.2 Write short notes on :

a) Spooling

Ans:

In [computer science](#), **spooling** refers to the process of placing data in a temporary working area for another program to process. The most common use is in writing files on a magnetic tape or disk and entering them in the work queue (possibly just linking it to a designated folder in the file system) for another process. Spooling is useful because devices access data at different rates. Spooling allows one program to assign work to another without directly communicating with it.

The most common spooling application is print spooling: [documents](#) formatted for printing are stored usually into an area on a disk and retrieved and printed by a [printer](#) at its own rate. Printers typically can print only a single document at a time and require seconds or minutes to do so. With spooling, multiple processes can write documents to a [print queue](#) without waiting. As soon as a process has written its document to the spool device, the process can perform other tasks, while a separate printing process operates the printer.

For example, when a city prepares payroll checks, the actual computation may take a matter of minutes or even seconds, but the printing process might take hours. If the program printed

directly, computing resources (CPU, memory, peripherals) would be tied up until the program was able to finish. The same is true of personal computers. Without spooling, a word processor would be unable to continue until printing finished. Without spooling, most programs would be relegated to patterns of fast processing and long waits, an inefficient paradigm.<sup>[1]</sup>

Spooler or print management software may allow priorities to be assigned to jobs, notify users when they have printed, distribute jobs among several printers, allow stationery to be changed or select it automatically, generate [banner pages](#) to identify and separate print jobs, etc.

b) Test and set

Ans :

In [computer science](#), the **test-and-set** instruction is an instruction used to write to a memory location and return its old value as a single [atomic](#) (i.e. non-interruptible) operation. If multiple processes may access the same memory, and if a process is currently performing a test-and-set, no other process may begin another test-and-set until the first process is done. [CPUs](#) may use test-and-set instructions offered by other electronic components, such as [Dual-Port RAM](#); CPUs may also offer a test-and-set instruction themselves.

A lock can be built using an atomic test-and-set instruction as follows:

```
function Lock(boolean *lock) {
    while (test_and_set (lock) == 1)
    ;
}
```

The calling process obtains the lock if the old value was 0. It spins writing 1 to the variable until this occurs.

c) Semaphore.

Ans :

In computer science, a **semaphore** is a protected [variable](#) or [abstract data type](#) that provides a simple but useful abstraction for controlling access by multiple [processes](#) to a common resource in a [parallel programming](#) environment.

A useful way to think of a semaphore is as a record of how many units of a particular resource are available, coupled with operations to *safely* (i.e. without [race conditions](#)) adjust that record as units are required or become free, and if necessary wait until a unit of the resource becomes available. Semaphores are a useful tool in the prevention of race conditions and [deadlocks](#); however, their use is by no means a guarantee that a program is free from these problems. Semaphores which allow an arbitrary resource count are called **counting semaphores**, whilst semaphores which are restricted to the values 0 and 1 (or locked/unlocked, unavailable/available) are called **binary semaphores**.

Q.3 A) What is critical-section problem? How it is solved using semaphores?

Ans :

### **Critical Section**

- set of instructions that must be controlled so as to allow exclusive access to one process
- execution of the critical section by processes is mutually exclusive in time

**Critical Section** (S&G, p. 166) (for example, ``for the process table'')

**repeat**

**entry section**

critical section

**exit section**

remainder section

**until** FALSE

**Solution to the Critical Section Problem** must meet three conditions...

1. **mutual exclusion**: if process  $P_i$  is executing in its critical section, no other process is executing in its critical section
2. **progress**: if no process is executing in its critical section and there exists some processes that wish to enter their critical sections, then only those processes that are not executing in their remainder section can participate in the decision of which will enter its critical section next, and this decision cannot be postponed indefinitely
  - o if no process is in critical section, can decide quickly who enters
  - o only one process can enter the critical section so in practice, others are put on the queue
3. **bounded waiting**: there must exist a bound on the number of times that other processes are allowed to enter their critical sections after a process has made a request to enter its critical section and before that request is granted
  - o The wait is the time from when a process makes a request to enter its critical section until that request is granted
  - o in practice, once a process enters its critical section, it does not get another turn until a waiting process gets a turn (managed as a queue)

### Semaphores

- originally, semaphores were flags for signalling between ships
- a variable used for signalling between processes
  - operations possible on a semaphore:
    - o initialization

- done before individual processes try to operate on the semaphore
- o two main operations:
  - **wait** (or **acquire**)
  - **signal** (or **release**)
- o the **wait** and **signal** operations are atomic operations (e.g., the test-and-set at the top of the loop of **wait** is done before losing the processor)
- o e.g., A resource such as a shared data structure is protected by a semaphore. You must acquire the semaphore before using the resource.

**wait(S):**

```
while S < 0 do no-op;
S := S - 1;
```

**signal(S):**

```
S := S + 1;
```

In either case, the initial value for S:

1. equals 1 if only one process is allowed in the critical section (binary semaphore)
2. equals  $n$  if at most  $n$  processes are allowed in the critical section

#### **Semaphore Solution to the Critical Selection Problem**

**repeat**

```
  wait(mutex);
```

critical section

```
  signal(mutex);
```

remainder section

**until** false;

Process 1
<pre>empty = n S = 1 check S ≤ 0 • S = 1 so do not busy wait</pre>

B) Describe Dinning-Philosophers problem, Specify its solution.

Ans :

The dining philosophers problem is summarized as five silent philosophers sitting at a circular table doing one of two things: eating or thinking. While eating, they are not thinking, and while thinking, they are not eating. A large bowl of Spaghetti is placed in the center, which requires two forks to serve and to eat (the problem is therefore sometimes explained using [rice](#) and [chopsticks](#) rather than spaghetti and forks). A fork is placed in between each pair of adjacent philosophers, and each philosopher may only use the fork to his left and the fork to his right. However, the philosophers do not speak to each other.

## Solutions

### [\[edit\]](#) Conductor solution

A relatively simple solution is achieved by introducing a waiter at the table. Philosophers must ask his permission before taking up any forks. Because the waiter is aware of which forks are in use, he is able to arbitrate and prevent deadlock. When four of the forks are in use, the next philosopher to request one has to wait for the waiter's permission, which is not given until a fork has been released. The logic is kept simple by specifying that philosophers always seek to pick up their left hand fork before their right hand fork (or vice versa).

To illustrate how this works, consider that the philosophers are labelled clockwise from A to E. If A and C are eating, four forks are in use. B sits between A and C so has neither fork available, whereas D and E have one unused fork between them. Suppose D wants to eat. Were he to take up the fifth fork, deadlock becomes likely. If instead he asks the waiter and is told to wait, we can be sure that next time two forks are released there will certainly be at least one philosopher who could successfully request a pair of forks. Therefore deadlock cannot happen.

### [\[edit\]](#) Resource hierarchy solution

Another simple solution is achieved by assigning a [partial order](#) to the resources (the forks, in this case), and establishing the convention that all resources will be requested in order, and released in reverse order, and that no two resources unrelated by order will ever be used by a single unit of work at the same time. Here, the resources (forks) will be numbered 1 through 5, in some order, and each unit of work (philosopher) will always pick up the lower-numbered fork first, and then the higher-numbered fork, from among the two forks he plans to use. Then, he will always put down the higher numbered fork first, followed by the lower numbered fork. In this case, if four of the five philosophers simultaneously pick up their lower-numbered fork, only the

highest numbered fork will remain on the table, so the fifth philosopher will not be able to pick up any fork. Moreover, only one philosopher will have access to that highest-numbered fork, so he will be able to eat using two forks. When he finishes using the forks, he will put down the highest-numbered fork first, followed by the lower-numbered fork, freeing another philosopher to grab the latter and begin eating.

This solution to the problem is the one originally proposed by Dijkstra.

While the resource hierarchy solution avoids deadlocks, it is not always practical, especially when the list of required resources is not completely known in advance. For example, if a unit of work holds resources 3 and 5 and then determines it needs resource 2, it must release 5, then 3 before acquiring 2, and then it must re-acquire 3 and 5 in that order. Computer programs that access large numbers of database records would not run efficiently if they were required to release all higher-numbered records before accessing a new record, making the method impractical for that purpose.

### [\[edit\]](#) Monitor solution

The example below shows a solution where the forks are not represented explicitly. Philosophers can eat if neither of their neighbors are eating. This is comparable to a system where philosophers that cannot get the second fork must put down the first fork before they try again.

In the absence of locks associated with the forks, philosophers must ensure that the decision to begin eating is not based on stale information about the state of the neighbors. E.g. if philosopher B sees that A is not eating, then turns and looks at C, A could begin eating while B looks at C. This solution avoids this problem by using a single mutual exclusion lock. This lock is not associated with the forks but with the decision procedures that can change the states of the philosophers. This is ensured by the [monitor](#). The procedures *test*, *pickup* and *putdown* are local to the monitor and share a mutual exclusion lock. Notice that philosophers wanting to eat do not hold a fork. When the monitor allows a philosopher who wants to eat to continue, the philosopher will reacquire the first fork before picking up the now available second fork. When done eating, the philosopher will signal to the monitor that both forks are now available.

Notice that this example does not tackle the starvation problem. For example, philosopher B can wait forever if the eating periods of philosophers A and C always overlap.

To also guarantee that no philosopher starves, one could keep track of the number of times a hungry philosopher cannot eat when his neighbors put down their forks. If this number exceeds some limit, the state of the philosopher could change to *Starving*, and the decision procedure to pick up forks could be augmented to require that none of the neighbors are starving.

A philosopher that cannot pick up forks because a neighbor is starving, is effectively waiting for the neighbor's neighbor to finish eating. This additional dependency reduces concurrency. Raising the threshold for transition to the *Starving* state reduces this effect.

C) Explain following CPU scheduling algorithms with help of example and Gantt chart.

i) FCFS

Ans :

First-Come-First-Served algorithm is the simplest scheduling algorithm is the simplest scheduling algorithm. Processes are dispatched according to their arrival time on the ready queue. Being a nonpreemptive discipline, once a process has a CPU, it runs to completion. The FCFS scheduling is fair in the formal sense or human sense of fairness but it is unfair in the sense that long jobs make short jobs wait and unimportant jobs make important jobs wait.

FCFS is more predictable than most of other schemes since it offers time. FCFS scheme is not useful in scheduling interactive users because it cannot guarantee good response time. The code for FCFS scheduling is simple to write and understand. One of the major drawback of this scheme is that the average time is often quite long.

The First-Come-First-Served algorithm is rarely used as a master scheme in modern operating systems but it is often embedded within other schemes.

ii) SJF

Ans :

Shortest-Job-First (SJF) is a non-preemptive discipline in which waiting job (or process) with the smallest estimated run-time-to-completion is run next. In other words, when CPU is available, it is assigned to the process that has smallest next CPU burst.

The SJF scheduling is especially appropriate for batch jobs for which the run times are known in advance. Since the SJF scheduling algorithm gives the minimum average time for a given set of processes, it is probably optimal.

The SJF algorithm favors short jobs (or processors) at the expense of longer ones.

The obvious problem with SJF scheme is that it requires precise knowledge of how long a job or process will run, and this information is not usually available.

The best SJF algorithm can do is to rely on user estimates of run times.

In the production environment where the same jobs run regularly, it may be possible to provide reasonable estimate of run time, based on the past performance of the process. But in the development environment users rarely know how their program will execute.

Like FCFS, SJF is non preemptive therefore, it is not useful in timesharing environment in which reasonable response time must be guaranteed.

## SECTION – II

Q.4 a) What is Page fault ? Describe the actions taken by the OS when page fault occurs.

Ans :

A **page fault** is a [trap](#) to the software raised by the hardware when a program accesses a [page](#) that is mapped in the virtual [address space](#), but not loaded in physical memory.

The hardware that detects this situation is the [memory management unit](#) in a processor. The [exception handling](#) software that handles the page fault is generally part of an [operating system](#). The operating system tries to handle the page fault by making the required page accessible at a location in physical memory or kills the program in case it is an illegal access.

**A page fault occurs when an access to a page that has not been brought into main memory takes place. The operating system verifies the memory access, aborting the program if it is invalid. If it is valid, a free frame is located and I/O is requested to read the needed page into the free frame. Upon completion of I/O, the process table and page table are updated and the instruction is restarted.**

---

**when a process is executed with only few pages in memory,& when an instruction is encountered which refers to any instruction or data in some other page,which is not present in the main memory,a page fault occurs.**

b) Given memory partitions of 100 k, 500 k, 200 k, 300 k and 600 k (in order). How would each of the First-fit, Best-fit and Worst-fit algorithms place processes of 212 k, 417 k, 112 k and 426 k (in order) ? Which algorithms makes the most efficient use of memory ?

Q.5 a) Consider a logical address space of eight pages of 1024 words each, mapped onto a physical memory of 32 frames.

- i) How many bits are there in the logical address ?
- ii) How many bits are there in physical address? '

b) Explain Banker's Algorithm for Deadlock Avoidance with example.

Ans :

The **Banker's algorithm** is a [resource allocation](#) & [deadlock](#) avoidance [algorithm](#) developed by [Edsger Dijkstra](#) that tests for safety by simulating the allocation of pre-determined maximum possible amounts of all [resources](#), and then makes a "safe-state" check to test for possible deadlock conditions for all other pending activities, before deciding whether allocation should be allowed to continue.

Assuming that the system distinguishes between four types of resources, (A, B, C and D), the following is an example of how those resources could be distributed. *Note that this example shows the system at an instant before a new request for resources arrives. Also, the types and number of resources are abstracted. Real systems, for example, would deal with much larger quantities of each resource.*

Available system resources are:

A B C D

3 1 1 2

Processes (currently allocated resources):

A B C D

P1 1 2 2 1

P2 1 0 3 3

P3 1 2 1 0

Processes (maximum resources):

A B C D

P1 3 3 2 2

P2 1 2 3 4

P3 1 3 5 0

## Safe and Unsafe States

A state (as in the above example) is considered safe if it is possible for all processes to finish executing (terminate). Since the system cannot know when a process will terminate, or how many resources it will have requested by then, the system assumes that all processes will eventually attempt to acquire their stated maximum resources and terminate soon afterward. This is a reasonable assumption in most cases since the system is not particularly concerned with how long each process runs (at least not from a deadlock avoidance perspective). Also, if a process terminates without acquiring its maximum resources, it only makes it easier on the system.

Given that assumption, the algorithm determines if a state is **safe** by trying to find a hypothetical set of requests by the processes that would allow each to acquire its maximum resources and then terminate (returning its resources to the system). Any state where no such set exists is an **unsafe** state.

### [\[edit\]](#) Example

We can show that the state given in the previous example is a safe state by showing that it is possible for each process to acquire its maximum resources and then terminate.

1. P1 acquires 2 A, 1 B and 1 D more resources, achieving its maximum
  - o The system now still has 1 A, no B, 1 C and 1 D resource available
2. P1 terminates, returning 3 A, 3 B, 2 C and 2 D resources to the system
  - o The system now has 4 A, 3 B, 3 C and 3 D resources available
3. P2 acquires 2 B and 1 D extra resources, then terminates, returning all its resources
  - o The system now has 5 A, 3 B, 6 C and 6 D resources
4. P3 acquires 1 B and 4 C resources and terminates
  - o The system now has all resources: 6 A, 5 B, 7 C and 6 D
5. Because all processes were able to terminate, this state is safe

Note that these requests and acquisitions are *hypothetical*. The algorithm generates them to check the safety of the state, but no resources are actually given and no processes actually terminate. Also note that the order in which these requests are generated – if several can be fulfilled – doesn't matter, because all hypothetical requests let a process terminate, thereby increasing the system's free resources.

For an example of an unsafe state, consider what would happen if process 2 was holding 1 more unit of resource B at the beginning.

Q.6. Write short notes on

- i) Demand paging

Ans :

In [computer operating systems](#), **demand paging** (as opposed to [anticipatory](#) paging) is an application of [virtual memory](#). In a system that uses demand paging, the operating system copies a disk [page](#) into physical memory only if an attempt is made to access it (i.e., if a [page fault](#) occurs). It follows that a [process](#) begins execution with none of its pages in physical memory, and many page faults will occur until most of a process's [working set](#) of pages is located in physical memory. This is an example of [lazy loading](#) techniques.

- ii) Resource allocation Graph algorithm

Ans :

This algorithm is used only if we have one instance of a resource type. In addition to the request

edge and the assignment edge a new edge called claim edge is used.

For eg:- A claim edge  $P_i \Rightarrow R_j$  indicates that process  $P_i$  may request  $R_j$  in future. The claim edge is

represented by a dotted line.

- When a process  $P_i$  requests the resource  $R_j$ , the claim edge is converted to a request edge.
- When resource  $R_j$  is released by process  $P_i$ , the assignment edge  $R_j \Rightarrow P_i$  is replaced by the claim edge  $P_i \Rightarrow R_j$ .

\* When a process  $P_i$  requests resource  $R_j$  the request is granted only if converting the request

edge  $P_i \Rightarrow R_j$  to as assignment edge  $R_j \Rightarrow P_i$  do not result in a cycle. Cycle detection algorithm is

used to detect the cycle. If there are no cycles then the allocation of the resource to process leave the system in safe state

### iii) Virtual memory

Ans:

In [computing](#), **virtual memory** is a [memory management](#) technique developed for [multitasking kernels](#). This technique [virtualizes](#) a [computer architecture](#)'s various [hardware memory devices](#) (such as [RAM](#) modules and [disk storage](#) drives), allowing a [program](#) to be [\*\*designed as though\*\*](#):

- there is only one hardware memory device and this "virtual" device acts like a RAM module.
- the program has, by default, sole access to this virtual RAM module as the basis for a contiguous working memory (an [address space](#)).

iv) Thrashing.

Ans:

In [computer science](#), **thrashing** is a situation where large amounts of computer resources are used to do a minimal amount of work, with the system in a continual state of [resource contention](#). Once started, thrashing is typically self-sustaining until something occurs to remove the original situation that led to the initial thrashing behavior.

Usually thrashing refers to two or more processes accessing a shared resource repeatedly such that serious system performance degradation occurs because the system is spending a disproportionate amount of time just *accessing* the shared resource. Resource access time may generally be considered as wasted, since it does not contribute to the advancement of any process. This is often the case when a [CPU](#) can process more information than can be held in available [RAM](#); consequently the system spends more time preparing to execute instructions than actually executing them.

**Question Bank –Operating Systems (Unsolved)****Q.1 Fill in the blanks: (1 Mark each)**

1. Single system image is obtained in case of \_\_\_\_\_.
2. Turnaround Time refers to \_\_\_\_\_.
3. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.
4. Banker's algorithm is an example of \_\_\_\_\_ avoidance.
5. \_\_\_\_\_ is an example of Distributed operating system.
6. \_\_\_\_\_ is an example of timesharing scheduling policy.
7. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for non shareable resource.
8. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.
9. \_\_\_\_\_ is to NT , where as \_\_\_\_\_ is to DOS and \_\_\_\_\_ is to UNIX.
10. Give the expansion of the following with reference to the operating systems concepts: FCB is \_\_\_\_\_ IOCS is \_\_\_\_\_
11. Throughput in case of multiprogramming is\_\_\_\_\_.
12. \_\_\_\_\_ is process of modifying the addresses used in the address sensitive instructions of a program such that the program can execute correctly from the designated area of memory.
13. A program is a \_\_\_\_\_ entity , whereas a process is a \_\_\_\_\_ entity.
14. Mutex is a \_\_\_\_\_ Semaphore.
15. \_\_\_\_\_ is the coincidence of high paging traffic and low CPU utilization.
16. FCFS stands for \_\_\_\_\_.
17. The Scheduling policy in case of a batch processing system is \_\_\_\_\_.
18. Multiprogramming degenerates to \_\_\_\_\_ system if there is no proper mix of CPU and I/O bound jobs.
19. DMA stands for \_\_\_\_\_.
20. Protection of memory is ensured using \_\_\_\_\_ and \_\_\_\_\_.
21. \_\_\_\_\_ is forceful deallocation of a resource.
22. SPOOLING stands for \_\_\_\_\_.
23. A \_\_\_\_\_ operating system is an operating system which requires a timely response from a computer system.
24. \_\_\_\_\_ is a program in execution.
25. DOS is an example of \_\_\_\_\_ user system.
26. Unix is an example of \_\_\_\_\_ user system.
27. Unix uses \_\_\_\_\_ scheduling policy .
28. \_\_\_\_\_ and \_\_\_\_\_ are the goals of an operating system.
29. \_\_\_\_\_ is a distributed operating system.
30. The \_\_\_\_\_ determines which process is to be executed next.
31. PSW stands for \_\_\_\_\_.
32. Mutex is an acronym for \_\_\_\_\_.
33. A tape is a \_\_\_\_\_ device.
34. Single system image is obtained in case of \_\_\_\_\_.
35. Turnaround Time refers to \_\_\_\_\_.
36. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.
37. Banker's algorithm is an example of \_\_\_\_\_ avoidance.
38. \_\_\_\_\_ is an example of Distributed operating system.
39. \_\_\_\_\_ is an example of timesharing scheduling policy.
40. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for nonshareable resource.
41. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.
42. Unix is a \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ operating system.
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**Question Bank –Operating Systems (Unsolved)**

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49. A file is anything held on \_\_\_\_\_ storage.
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52. A thread is a \_\_\_\_\_ process.
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54. The motivations behind networks are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_.
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**Q.2 What do the following Abbreviations stand for? (1 mark each)**

1. LWP
2. HRQ
3. DMA
4. PCB
5. FAT

**Q.3 Multiple Answer Type Questions: (1 marks each)**

1. Which of the following is a non-preemptive O.S.?
  - a) UNIX
  - b) Windows 95
  - c) Windows NT
  - d) None
2. The CPU utilization is low when the system is \_\_\_\_\_.
  - a) Timesharing
  - b) Thrashing
  - c) Multiprocessing
  - d) None of the above.
3. The following iss not a form of IPC
  - a. Semaphore
  - b. Pipe
  - c. Shared memory
  - d. Buffering
4. The fol. is a part of FAT
  - a. Sector info
  - b. Disk type
  - c. Modified info
  - d. Date info

**Question Bank –Operating Systems (Unsolved)**

5. Device files in UNIX are
  - a. Device drivers
  - b. Special files
  - c. Pipes
  - d. Unstructured files
6. The time of admission of a job to ready queue to completion is :
  - a. Turnaround time
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  - a. HREQ
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15. The problem of thrashing may be reduced by
  - a. Using prepaging mechanism

**Question Bank –Operating Systems (Unsolved)**

- b. Writing well structured programs
  - c. Both 1 and 2
  - d. Neither 1 nor 2
16. Which of the following statements is not true?
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  - b. Challenge response method
  - c. Proof by possession method
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- a. region tables, u area, system level context
  - b. register context, pregion tables, user level context
  - c. system-level context, register context, user-level context
  - d. process table, user-level context, register context
22. Which of the following is NOT a part of a process control block :
- a. Values of CPU registers
  - b. CPU scheduling information
  - c. Memory limits of the process
  - d. List of files accessible to the process.
23. Suppose the architecture of a computer system is layered into the following four layers -
- 1) Operating systems software
  - 2) users' applications software
  - 3) hardware
  - 4) programming environment software
- Which of the following is a logical sequence of the four layers from bottom to top?
- a. 1, 2, 3, 4
  - b. 1, 3, 4, 2
  - c. 3, 1, 4, 2

**Question Bank –Operating Systems (Unsolved)**

- d. 3, 4, 1, 2
24. A Job Control Language is used for  
a. telling the system about a job's resource requirements  
b. telling the system administrator / operator about job's resource requirements.  
c. telling the programmer how to program the resource requirements of a job.  
d. none of the above
25. Which was the first processor to introduce protected mode?  
a) 8086  
b) 80286  
c) 80386  
d) 80486
26. The protected mode is necessary for -  
a) multi-tasking system  
b) multi-user system  
c) both a and b  
d) 16 bit programming
27. The segmented memory is provided mainly ...  
a) for higher speeds  
b) to maintain compatibility with old processors  
c) for ease of application programming  
d) simple hardware
28. Which of the following features is NOT found in RISC architectures ?  
a) A limited instruction set  
b) A large number of registers  
c) Virtual memory  
d) A large number of execution modes
29. The first CPU with P6 architecture was -  
a) Pentium  
b) Pentium Pro  
c) Pentium II  
d) Pentium III
30. The fastest storage element is -  
a) CD-ROM  
b) DRAM  
c) EDO-DRAM  
d) SDRAM
31. Which peripheral requires the highest data transfer rate?  
a) Sound Card  
b) Network card  
c) Hard disk  
d) Graphics Adapter
32. A virtual memory is required for -  
a) increasing the speed  
b) increasing the addressing modes  
c) overcoming the size limitation of main memory  
d) overcoming the size limitation of cache memory

**Question Bank –Operating Systems (Unsolved)**

33. When fork( ) is given  
a) It creates a child process  
b) Allocates slot in process table  
c) Returns 0 to parent & ID to child  
d) All of the above
34. A TSR is a program which will  
a) Be resident in the memory after termination of program  
b) Be called as and when the program is executed  
c) Terminate and Soon Remove the program from the memory  
d) All of the above
35. CPU performance is based on  
a) ALU width  
b) Clock speed  
c) Number of instructions executed per second  
d) How well CPU interacts with the rest of the system  
e) Both a and b  
f) None of the above
36. 80286 the addressing scheme is \_\_\_\_\_ addressing  
a) 8 bit  
b) 16 bit  
c) 24 bit  
d) 28 bit  
e) 32 bit
37. Shell executes \$0 and returns the  
a) Parameters entered in the command line  
b) Program name  
c) All of the above
38. .profile file is present in  
a) /usr  
b) /usr/user1  
c) /etc/admin  
d) None of the above
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**Question Bank –Operating Systems (Unsolved)**

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  - b. A disk compaction mechanism
  - c. A linked-block allocation mechanism
  - d. An indexed-block allocation mechanism
45. Peak Bandwidth of a 64-bit, 33 MHz based PCI bus would be:
- a. 133 MB/s
  - b. 266 MB/s
  - c. 512 MB/s
  - d. 33 MB/s
46. Main advantage of EISA bus over micro-channel bus was:
- a. It offered more bandwidth over micro-channel
  - b. It had software configurable devices
  - c. It was backward compatible with ISA
  - d. It made the existing peripherals run faster.
47. Which of the following devices is asynchronous ?
- a. SSRAM
  - b. EPROM
  - c. Disk controllers
  - d. All of the above.
48. Which of the following operating systems is available for non-intel platforms ?
- a. Windows-NT
  - b. Solaris
  - c. linux
  - d. all of the above.
49. In the systems which do not have multiple CPUs, is the 'cache coherency' an issue while design?
- a. Yes
  - b. No

**Q.4 SELECT TRUE OR FALSE: (1 mark each)**

- 1. It is possible to have a deadlock involving only a single process.
- 2. Unix is a network operating system.
- 3. All entries in FAT correspond to clusters.
- 4. A Device controller is a piece of hardware.
- 5. Round Robin understands priority.
- 6. SJF is the best scheduling policy.
- 7. Paging allows protection.
- 8. Circuit switching has two variants – connection oriented and connectionless.
- 9. LANs cover a radius of upto 10km.

**Question Bank –Operating Systems (Unsolved)**

10. Cipher text is decrypted text.
11. During system startup, program execution begins at addr FFF0H.
12. A virus is a type of worm.
13. Spooling uses the disk as a huge buffer, for reading as far ahead as possible on input devices and for storing output files until the output devices are able to accept them.
14. Ready queue in CPU scheduler is always a first-in, first-out (FIFO) queue.

**Q.5 Short Answer Questions: (3 mark each)**

1. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.
2. Differentiate between the CPU bound process and I/O bound process.
3. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.
4. What do you mean by locality of reference?
5. What is a dirty bit? Why is it used?
6. What is the difference between circuit switching and packet switching?
7. Justify the statement :  
“It is possible to support multiprogramming without using timesharing. However it is impractical to support timesharing without using multiprogramming”
8. Justify the statement :  
“Swapping improves/degrades the efficiency of system utilization”.
9. Describe the cause of READY → RUNNING transition.
10. What do you mean by “protection” incase of operating systems? How is it implemented?
11. What is Access Control List? Where is it used?
12. What is a deadlock? How does it occur?
13. What do you mean by scalability?
14. What is a capability list? Where is it used?
15. Comment on the statement:  
“Interactive processes should have low/high priority”
16. Name secondary storage devices and explain where they are typically used.
17. Which type of scheduler controls the degree of multiprogramming?
18. What is a race condition?
19. Which condition(s) is/are very necessary for a deadlock. Justify your answer.
20. What do you mean by a “kernel”?
21. What do you mean by the “context” of a process?
22. Give one difference between a .COM file and .EXE file in DOS.
23. Name the necessary conditions for a deadlock.
24. What is a critical section?
25. What is IOCS? What are its functions?
26. Explain advantages of distributed operating systems:
27. Name different scheduling policies and explain.
28. Differentiate between the logical address space and physical address space.
29. Explain in brief what you mean by:
  1. Multiprogramming
  2. Multiprocessing.
30. Name the five typical file operations.
31. Draw a block diagram showing the process transitions.
32. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.
33. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.
34. How many different types of files are possible on UNIX operating system ?  
Name them.
35. What is demand paging?
36. Explain Distributed processing with the help of examples.
37. Differentiate between contiguous and non-contiguous memory allocation.
38. What is deadlock? Give an example.
39. Explain the following: (3 marks each)

**Question Bank –Operating Systems (Unsolved)**

- a) Semaphores
- b) Disk caching
- c) Working set
- d) Locality of reference
- e) DMA
- f) Non-preemptive OS

**Q.6 Long answer Questions: (4 mark each)**

1. Consider a memory with 4 page frames, assuming that pages of a process are referenced in the following order:  
4,3, 2,1,4,3,5,4,3,2,1,5,2.  
1. Show, which would be better FIFO or LRU.
2. Considering the above reference string show how Belady's anomaly occurs in case of FIFO.
3. How is memory re-used?
4. With the help of an example show the mapping from virtual address space to physical address space in case of virtual memory.
5. List the fields of the FCB and explain their use.
6. What is the difference between thread, process and Task?
7. What is the critical section problem? How is it handled?
8. Which condition(s) is/are very necessary for a deadlock? Justify your answer.
9. Discuss the use of Active file tables.
10. What constitutes the environment of a process?
11. What do you mean by "static and dynamic binding"?
12. What do you mean by an Inode? Where is it used?
13. How can a deadlock be avoided? Explain.
14. Write in detail the methods of LRU implementation.
15. Explain State Transition Diagram.
16. What is Inter-process communication?
17. Define the terms: Thread; process; Context of a process.
18. Describe the PC architecture with a block diagram
19. Discuss the various issues involved in Process Management

**Question Bank –Operating Systems (Unsolved)****Q.1 Fill in the blanks: (1 Mark each)**

1. Single system image is obtained in case of \_\_\_\_\_.
2. Turnaround Time refers to \_\_\_\_\_.
3. \_\_\_\_\_ scheduler selects the process that is ready to execute to CPU.
4. Banker's algorithm is an example of \_\_\_\_\_ avoidance.
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7. \_\_\_\_\_ is an example of shareable resource and \_\_\_\_\_ is an example for non shareable resource.
8. \_\_\_\_\_ and \_\_\_\_\_ are the popular page replacement algorithms.
9. \_\_\_\_\_ is to NT , where as \_\_\_\_\_ is to DOS and \_\_\_\_\_ is to UNIX.
10. Give the expansion of the following with reference to the operating systems concepts: FCB is \_\_\_\_\_ IOCS is \_\_\_\_\_
11. Throughput in case of multiprogramming is\_\_\_\_\_.
12. \_\_\_\_\_ is process of modifying the addresses used in the address sensitive instructions of a program such that the program can execute correctly from the designated area of memory.
13. A program is a \_\_\_\_\_ entity , whereas a process is a \_\_\_\_\_ entity.
14. Mutex is a \_\_\_\_\_ Semaphore.
15. \_\_\_\_\_ is the coincidence of high paging traffic and low CPU utilization.
16. FCFS stands for \_\_\_\_\_.
17. The Scheduling policy in case of a batch processing system is \_\_\_\_\_.
18. Multiprogramming degenerates to \_\_\_\_\_ system if there is no proper mix of CPU and I/O bound jobs.
19. DMA stands for \_\_\_\_\_.
20. Protection of memory is ensured using \_\_\_\_\_ and \_\_\_\_\_.
21. \_\_\_\_\_ is forceful deallocation of a resource.
22. SPOOLING stands for \_\_\_\_\_.
23. A \_\_\_\_\_ operating system is an operating system which requires a timely response from a computer system.
24. \_\_\_\_\_ is a program in execution.
25. DOS is an example of \_\_\_\_\_ user system.
26. Unix is an example of \_\_\_\_\_ user system.
27. Unix uses \_\_\_\_\_ scheduling policy .
28. \_\_\_\_\_ and \_\_\_\_\_ are the goals of an operating system.
29. \_\_\_\_\_ is a distributed operating system.
30. The \_\_\_\_\_ determines which process is to be executed next.
31. PSW stands for \_\_\_\_\_.
32. Mutex is an acronym for \_\_\_\_\_.
33. A tape is a \_\_\_\_\_ device.
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**Question Bank –Operating Systems (Unsolved)**

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**Question Bank –Operating Systems (Unsolved)**

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**Question Bank –Operating Systems (Unsolved)**

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  - 2) users' applications software
  - 3) hardware
  - 4) programming environment software
- Which of the following is a logical sequence of the four layers from bottom to top?
- a. 1, 2, 3, 4
  - b. 1, 3, 4, 2
  - c. 3, 1, 4, 2

**Question Bank –Operating Systems (Unsolved)**

- d. 3, 4, 1, 2
24. A Job Control Language is used for  
a. telling the system about a job's resource requirements  
b. telling the system administrator / operator about job's resource requirements.  
c. telling the programmer how to program the resource requirements of a job.  
d. none of the above
25. Which was the first processor to introduce protected mode?  
a) 8086  
b) 80286  
c) 80386  
d) 80486
26. The protected mode is necessary for -  
a) multi-tasking system  
b) multi-user system  
c) both a and b  
d) 16 bit programming
27. The segmented memory is provided mainly ...  
a) for higher speeds  
b) to maintain compatibility with old processors  
c) for ease of application programming  
d) simple hardware
28. Which of the following features is NOT found in RISC architectures ?  
a) A limited instruction set  
b) A large number of registers  
c) Virtual memory  
d) A large number of execution modes
29. The first CPU with P6 architecture was -  
a) Pentium  
b) Pentium Pro  
c) Pentium II  
d) Pentium III
30. The fastest storage element is -  
a) CD-ROM  
b) DRAM  
c) EDO-DRAM  
d) SDRAM
31. Which peripheral requires the highest data transfer rate?  
a) Sound Card  
b) Network card  
c) Hard disk  
d) Graphics Adapter
32. A virtual memory is required for -  
a) increasing the speed  
b) increasing the addressing modes  
c) overcoming the size limitation of main memory  
d) overcoming the size limitation of cache memory

**Question Bank –Operating Systems (Unsolved)**

33. When fork( ) is given  
a) It creates a child process  
b) Allocates slot in process table  
c) Returns 0 to parent & ID to child  
d) All of the above
34. A TSR is a program which will  
a) Be resident in the memory after termination of program  
b) Be called as and when the program is executed  
c) Terminate and Soon Remove the program from the memory  
d) All of the above
35. CPU performance is based on  
a) ALU width  
b) Clock speed  
c) Number of instructions executed per second  
d) How well CPU interacts with the rest of the system  
e) Both a and b  
f) None of the above
36. 80286 the addressing scheme is \_\_\_\_\_ addressing  
a) 8 bit  
b) 16 bit  
c) 24 bit  
d) 28 bit  
e) 32 bit
37. Shell executes \$0 and returns the  
a) Parameters entered in the command line  
b) Program name  
c) All of the above
38. .profile file is present in  
a) /usr  
b) /usr/user1  
c) /etc/admin  
d) None of the above
39. Which of the following CPU scheduling algorithms will prevent starvation problem?  
a. Shortest-job-first  
b. Priority-scheduling  
c. Priority-scheduling with aging mechanism  
d. None of the above
40. Which of the following statements is true for a deadlock state  
a. The system cannot run any process  
b. The system can run processes barring those involved in the deadlock  
c. A running process cannot request any new resource  
d. All processes in the ready queue enter the wait queue
41. The problem of thrashing may be reduced by  
a. Using prepaging mechanism  
b. Writing well structured programs  
c. Both 1 and 2  
d. Neither 1 nor 2
42. Which of the following statements is not true?

**Question Bank –Operating Systems (Unsolved)**

- a. A directory is a special type of file
  - b. A directory is used to store file attributes
  - c. A directory is used to store file data
  - d. A directory is used to store file access information
43. Biometric devices are used for user authentication in
- a. Proof by knowledge method
  - b. Challenge response method
  - c. Proof by possession method
  - d. Proof by property method
44. A file system uses the contiguous space allocation mechanism for disk space allocation. For better utilization of disk space, this file system must use
- a. A garbage collection mechanism
  - b. A disk compaction mechanism
  - c. A linked-block allocation mechanism
  - d. An indexed-block allocation mechanism
45. Peak Bandwidth of a 64-bit, 33 MHz based PCI bus would be:
- a. 133 MB/s
  - b. 266 MB/s
  - c. 512 MB/s
  - d. 33 MB/s
46. Main advantage of EISA bus over micro-channel bus was:
- a. It offered more bandwidth over micro-channel
  - b. It had software configurable devices
  - c. It was backward compatible with ISA
  - d. It made the existing peripherals run faster.
47. Which of the following devices is asynchronous ?
- a. SSRAM
  - b. EPROM
  - c. Disk controllers
  - d. All of the above.
48. Which of the following operating systems is available for non-intel platforms ?
- a. Windows-NT
  - b. Solaris
  - c. linux
  - d. all of the above.
49. In the systems which do not have multiple CPUs, is the 'cache coherency' an issue while design?
- a. Yes
  - b. No

**Q.4 SELECT TRUE OR FALSE: (1 mark each)**

- 1. It is possible to have a deadlock involving only a single process.
- 2. Unix is a network operating system.
- 3. All entries in FAT correspond to clusters.
- 4. A Device controller is a piece of hardware.
- 5. Round Robin understands priority.
- 6. SJF is the best scheduling policy.
- 7. Paging allows protection.
- 8. Circuit switching has two variants – connection oriented and connectionless.
- 9. LANs cover a radius of upto 10km.

**Question Bank –Operating Systems (Unsolved)**

10. Cipher text is decrypted text.
11. During system startup, program execution begins at addr FFF0H.
12. A virus is a type of worm.
13. Spooling uses the disk as a huge buffer, for reading as far ahead as possible on input devices and for storing output files until the output devices are able to accept them.
14. Ready queue in CPU scheduler is always a first-in, first-out (FIFO) queue.

**Q.5 Short Answer Questions: (3 mark each)**

1. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.
2. Differentiate between the CPU bound process and I/O bound process.
3. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.
4. What do you mean by locality of reference?
5. What is a dirty bit? Why is it used?
6. What is the difference between circuit switching and packet switching?
7. Justify the statement :  
“It is possible to support multiprogramming without using timesharing. However it is impractical to support timesharing without using multiprogramming”
8. Justify the statement :  
“Swapping improves/degrades the efficiency of system utilization”.
9. Describe the cause of READY → RUNNING transition.
10. What do you mean by “protection” incase of operating systems? How is it implemented?
11. What is Access Control List? Where is it used?
12. What is a deadlock? How does it occur?
13. What do you mean by scalability?
14. What is a capability list? Where is it used?
15. Comment on the statement:  
“Interactive processes should have low/high priority”
16. Name secondary storage devices and explain where they are typically used.
17. Which type of scheduler controls the degree of multiprogramming?
18. What is a race condition?
19. Which condition(s) is/are very necessary for a deadlock. Justify your answer.
20. What do you mean by a “kernel”?
21. What do you mean by the “context” of a process?
22. Give one difference between a .COM file and .EXE file in DOS.
23. Name the necessary conditions for a deadlock.
24. What is a critical section?
25. What is IOCS? What are its functions?
26. Explain advantages of distributed operating systems:
27. Name different scheduling policies and explain.
28. Differentiate between the logical address space and physical address space.
29. Explain in brief what you mean by:
  1. Multiprogramming
  2. Multiprocessing.
30. Name the five typical file operations.
31. Draw a block diagram showing the process transitions.
32. A process can change its state from block state to run state. Is this statement True or False? Justify your answer.
33. Can we prevent deadlocks by denying mutual-exclusion condition? Justify your answer.
34. How many different types of files are possible on UNIX operating system ?  
Name them.
35. What is demand paging?
36. Explain Distributed processing with the help of examples.
37. Differentiate between contiguous and non-contiguous memory allocation.
38. What is deadlock? Give an example.
39. Explain the following: (3 marks each)

**Question Bank –Operating Systems (Unsolved)**

- a) Semaphores
- b) Disk caching
- c) Working set
- d) Locality of reference
- e) DMA
- f) Non-preemptive OS

**Q.6 Long answer Questions: (4 mark each)**

1. Consider a memory with 4 page frames, assuming that pages of a process are referenced in the following order:  
4,3, 2,1,4,3,5,4,3,2,1,5,2.
  1. Show, which would be better FIFO or LRU.
  2. Considering the above reference string show how Belady's anomaly occurs in case of FIFO.
  3. How is memory re-used?
  4. With the help of an example show the mapping from virtual address space to physical address space in case of virtual memory.
  5. List the fields of the FCB and explain their use.
  6. What is the difference between thread, process and Task?
  7. What is the critical section problem? How is it handled?
  8. Which condition(s) is/are very necessary for a deadlock? Justify your answer.
  9. Discuss the use of Active file tables.
  10. What constitutes the environment of a process?
  11. What do you mean by "static and dynamic binding"?
  12. What do you mean by an Inode? Where is it used?
  13. How can a deadlock be avoided? Explain.
  14. Write in detail the methods of LRU implementation.
  15. Explain State Transition Diagram.
  16. What is Inter-process communication?
  17. Define the terms: Thread; process; Context of a process.
  18. Describe the PC architecture with a block diagram
  19. Discuss the various issues involved in Process Management

## Operating System MCQ's Set1

Question No.	Questions & Answers
1	<p>What is operating system?</p> <p>a) collection of programs that manages hardware resources b) system service provider to the application programs c) link to interface the hardware and application programs d) all of the mentioned</p> <p><b>Ans : d</b></p>
2	<p>Q2.Dual mode of operating system has</p> <p>A)1Mode (B)2Modes ( C) 3 Modes (D)4 Modes</p> <p><b>Ans : B</b></p>
3	<p>Q3. 2. To access the services of operating system, the interface is provided by the</p> <p>a) System calls (b) API (c) Library (d) Assembly instructions</p> <p><b>Ans:A</b></p>
4	<p>Which one of the following is not true?</p> <p>a) kernel is the program that constitutes the central core of the operating system b) kernel is the first part of operating system to load into memory during booting c) kernel is made of various modules which can not be loaded in running operating system d) kernel remains in the memory during the entire computer session</p> <p><b>Ans:C</b></p>
5	<p>Which one of the following error will be handle by the operating system?</p> <p>a) power failure b) lack of paper in printer c) connection failure in the network d) all of the mentioned</p> <p><b>Ans:D</b></p>

6	<p>The main function of the command interpreter is</p> <ul style="list-style-type: none"> <li>a) to get and execute the next user-specified command</li> <li>b) to provide the interface between the API and application program</li> <li>c) to handle the files in operating system</li> <li>d) none of the mentioned</li> </ul>
	<b>Ans:A</b>
7	<p>The systems which allows only one process execution at a time, are called</p> <ul style="list-style-type: none"> <li>a) uniprogramming systems</li> <li>b) uniprocessing systems</li> <li>c) unitasking systems</li> <li>d) none of the mentioned</li> </ul>
	<b>Ans:B</b>
8	<p>Example of open source operating system is</p> <ul style="list-style-type: none"> <li>(a)Unix</li> <li>(b)Linux</li> <li>(c) Windows</li> <li>(d)both a &amp; b</li> </ul>
	<b>Ans : D</b>
9	<p>Environment in which programs of the computer system are executed is:</p> <ul style="list-style-type: none"> <li>(a)OS</li> <li>(b)Nodes</li> <li>(c)Clustered System</li> <li>(d)both a and b</li> </ul>
	<b>And : A</b>
10	<p>The main function of the command interpreter is:</p> <ul style="list-style-type: none"> <li>A. to get and execute the next user-specified command</li> <li>B. to provide the interface between the API and application program</li> <li>C. to handle the files in operating system</li> <li>D. none of the mentioned</li> </ul>
	<b>Ans:A</b>
11	<p>By operating system, the resource management can be done via:</p> <ul style="list-style-type: none"> <li>• A. time division multiplexing</li> <li>• B. space division multiplexing</li> <li>• C. both (a) and (b)</li> </ul>

	<ul style="list-style-type: none"> <li>• D. none of the mentioned</li> </ul> <p><b>Ans : C</b></p>
12	<p>If a process fails, most operating system write the error information to a:</p> <ul style="list-style-type: none"> <li>• A. log file</li> <li>• B. another running process</li> <li>• C. new file</li> <li>• D. none of the mentioned</li> </ul> <p><b>Ans:A</b></p>
13	<p>A properly designed operating system must ensure that an incorrect (or malicious) program cannot cause other programs to execute</p> <p>(a)Incorrectly (b)Correctly (c) Both a and b (d)None</p> <p><b>Ans: A</b></p>
14	<p>The user view of the system depends upon the</p> <p>(a)CPU (b)Software (c)Hardware (d)Interface</p> <p><b>Ans:D</b></p>
15	<p>Control and Status registers are used by processor to control</p> <p>A. Design of the Processor      B. Operation of the Processor      C. Speed of the Processor      D. Execution of the Processor</p> <p><b>Ans: b</b></p>
16	<p>Kernel mode of the operating system is also called</p> <p>(a) User mode (b)system mode (c)supervisor mode (d)both a and b</p> <p><b>Ans:C</b></p>
17	<p>Error detection and response clears the</p> <p>A. Program      B. Data      C. Information      D. Error Condition</p> <p><b>Ans:D</b></p>

18	<p>Program execution services are used to</p> <ul style="list-style-type: none"> <li>A. Control Program</li> <li>B. Delete Program</li> <li>C. Execute Program</li> <li>D. Update Programs</li> </ul>
19	<p>Access control in operating system is just another name for</p> <ul style="list-style-type: none"> <li>A. Data manipulation</li> <li>B. Files Access</li> <li>C. Compartmentalization of resources</li> <li>D. Data and Resources Access</li> </ul>
20	<p>Operating system provides System access function to protect</p> <ul style="list-style-type: none"> <li>A. I/O Modules</li> <li>B. Computer</li> <li>C. Memory</li> <li>D. Data and Resources</li> </ul>
21	<p>Readfile() call function in windows operating system is a UNIX's function called for</p> <ul style="list-style-type: none"> <li>A. fork()</li> <li>B. open()</li> <li>C. read()</li> <li>D. close()</li> </ul>
22	<p>The kernel is _____ of user threads.</p> <ul style="list-style-type: none"> <li>a) a part of</li> <li>b) the creator of</li> <li>c) unaware of</li> <li>d) aware of</li> </ul>
23	<p>Ans: C</p> <p>Because the kernel thread management is done by the</p>

	<p>Operating System itself :</p> <ul style="list-style-type: none"> <li>a) kernel threads are faster to create than user threads</li> <li>b) kernel threads are slower to create than user threads</li> <li>c) kernel threads are easier to manage as well as create than user threads</li> <li>d) none of the mentioned</li> </ul> <p>Ans:b</p>
24	<p>Kernel mode of operating system is also called</p> <ul style="list-style-type: none"> <li>A. user mode</li> <li>B. system mode</li> <li>C. supervisor mode</li> <li>D. Data mode</li> </ul> <p>Ans:C</p>
25	<p>Which of the following are the functions of operating system?</p> <ul style="list-style-type: none"> <li>i) recovering from errors ii) facilitating input/output</li> <li>iii) facilitating parallel operation iv) sharing hardware among users</li> <li>v) implementing user interface</li> </ul> <ul style="list-style-type: none"> <li>a. I,ii, and v only</li> <li>b.i,ii,iii and iv only</li> <li>c. ii,iii,iv and v only</li> <li>d.i,ii,iii,iv and v</li> </ul> <p>Ans : D</p>
26	<p>1kilobyte memory storage in form of bytes is equal to</p> <ul style="list-style-type: none"> <li>A. 1024 bytes</li> <li>B. 1026 bytes</li> <li>C. 1056 bytes</li> <li>D. 1058 bytes</li> </ul> <p>Ans :A</p>
27	<p>Bootstrap program that starts operating system is normally stored in</p> <ul style="list-style-type: none"> <li>A. RAM</li> </ul>

	B. ROM C. hard disk D. CD
	Ans:B
28	Interrupts which are initiated by an instruction are (a)Internal(B)External(C)Hardware (D)Software
	Ans. D
29	Example of open source operating system is A. UNIX B. Linux C. windows D. both a and b
	Ans: D
30	Kernel mode of operating system runs when mode bit is A. 1 B. 0 C. x D. undefined
	Ans:B
31	To access the services of operating system, the interface is provided by the A. system calls B. API C. library D. assembly instructions
	ANSWER: A
32	Cache memory is used A. to avoid speed mismatch B. to storage the data C. for data accusation D. none of the above
	ANSWER: A
33	What is the high speed memory between the main memory

	<p>and the CPU called?</p> <ol style="list-style-type: none"> <li>Register Memory</li> <li>Cache Memory</li> <li>Storage Memory</li> <li>Virtual Memory</li> </ol>
	Ans:B
34	<p>Cache Memory is implemented using the DRAM chips.</p> <ol style="list-style-type: none"> <li>True</li> <li>False</li> </ol> <p>Answer: b</p> <p>Explanation: The Cache memory is implemented using the SRAM chips and not the DRAM chips. SRAM stands for Static RAM. It is faster and is expensive.</p>
35	<p>Whenever the data is found in the cache memory it is called as _____</p> <ol style="list-style-type: none"> <li>HIT</li> <li>MISS</li> <li>FOUND</li> <li>ERROR</li> </ol>
	Ans:A
36	<p>When the data at a location in cache is different from the data located in the main memory, the cache is called _____</p> <ol style="list-style-type: none"> <li>Unique</li> <li>Inconsistent</li> <li>Variable</li> <li>Fault</li> </ol>
	Ans:B
37	<p>The transfer between CPU and Cache is _____</p> <ol style="list-style-type: none"> <li>Block transfer</li> <li>Word transfer</li> <li>Set transfer</li> <li>Associative transfer</li> </ol>
	Answer:b

	<p>Explanation: The transfer is a word transfer. In the memory subsystem, word is transferred over the memory data bus and it typically has a width of a word.</p>
38	<p>Levels between CPU and main memory were given a name of A.Hit time B.Miss Rate C.Locality in time D.Cache</p>
	<p>Ans.D</p>

Operating System MCQ Day2

1	<p>A system call is a routine built into the kernel and performs a basic function.</p> <p>a) True b) False</p>
2	<p>Ans: A</p> <p>When we execute a C program, CPU runs in _____ mode.</p> <p>a) user b) kernel c) supervisory d) system</p>
3	<p>Answer: a</p> <p>Explanation: When we execute a C program, the CPU runs in user mode. It remains in this particular mode until a system call is invoked.</p> <p>In _____ mode, the kernel runs on behalf of the user.</p>

- a) user
- b) kernel
- c) real
- d) all

Ans:b

Explanation: Whenever a process invokes a system call, the CPU switches from user mode to kernel mode which is a more privileged mode. The kernel mode is also called as supervisor mode. In this mode, the kernel runs on behalf of the user and has access to any memory location and can execute any machine instruction.

4

- All UNIX and LINUX systems have one thing in common which is \_\_\_\_\_
- a) set of system calls
  - b) set of commands
  - c) set of instructions
  - d) set of text editors

	<p>Ans:A</p>
5	<p>The chmod command invokes the _____ system call.</p> <ul style="list-style-type: none"><li>a) chmod</li><li>b) ch</li><li>c) read</li><li>d) change</li></ul>
	<p>Ans: A</p> <p>Explanation: Many commands and system calls share the same names.</p>
6	<p>For reading input, which of the following system call is used?</p> <ul style="list-style-type: none"><li>a) write</li><li>b) rd</li><li>c) read</li><li>d) change</li></ul>
7	<p>Ans:C</p> <p>Which of the following system call is</p>

used for opening or creating a file?

- a) read
- b) write
- c) open
- d) close

Ans:C

System call routines of operating system are mostly written in

- 8
- A. C
  - B. C++
  - C. java
  - D. both a and b

Ans:D

I/O modules performs requested action on

- 9
- A. Programmed I/O
  - B. Direct Memory Access (DMA)
  - C. Interrupt driven I/O

	D. I/O devices
	Ans:A
10	<p>Control and Status registers are used by processor to control</p> <ul style="list-style-type: none"> <li>A. Design of the Processor</li> <li>B. Operation of the Processor</li> <li>C. Speed of the Processor</li> <li>D. Execution of the Processor</li> </ul>
11	<p>Ans:B</p> <p>Kernel mode of operating system runs when the mode bit is</p> <p>(a)1 (b)0 (c)X (d)undefined</p>
12	<p>Ans:B</p> <p>One that is not a type of memory is</p> <ul style="list-style-type: none"> <li>A. cache</li> <li>B. ROM</li> <li>C. RAM</li> </ul>

	D. compilers
	Ans:D
13	I/O instruction transfer is used to read the  A. Data B. Information C. Instructions D. Description
	Ans:A
14	Addresses of interrupt programs of operating system are placed at  A. Interrupt cell routine B. Interrupt call service C. interrupt vector table D. interrupt service routine
	Ans: C
15	Which module gives control of the CPU to the process selected by the short-term scheduler?

- a) dispatcher
- b) interrupt
- c) scheduler
- d) none of the mentioned

Ans:A

16

The processes that are residing in main memory and are ready and waiting to execute are kept on a list called

- a) job queue
- b) ready queue
- c) execution queue
- d) process queue

Ans: B

17

The interval from the time of submission of a process to the time of completion is termed as

- a) waiting time
- b) turnaround time
- c) response time

d) throughput

Ans:B

Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?

- 18
- a) first-come, first-served scheduling
  - b) shortest job scheduling
  - c) priority scheduling
  - d) none of the mentioned

Ans:A

In priority scheduling algorithm

- 19
- a) CPU is allocated to the process with highest priority
  - b) CPU is allocated to the process with lowest priority
  - c) Equal priority processes can not be scheduled
  - d) None of the mentioned

	<b>Ans:A</b>
20	<p>In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of</p> <ul style="list-style-type: none"> <li>a) all process</li> <li>b) currently running process</li> <li>c) parent process</li> <li>d) init process</li> </ul>
	<b>Ans:B</b>
21	<p>Time quantum is defined in</p> <ul style="list-style-type: none"> <li>a) shortest job scheduling algorithm</li> <li>b) round robin scheduling algorithm</li> <li>c) priority scheduling algorithm</li> <li>d) multilevel queue scheduling algorithm</li> </ul>
	<b>Ans:B</b>
22	<p>Process are classified into different groups in</p> <ul style="list-style-type: none"> <li>a) shortest job scheduling algorithm</li> </ul>

- b) round robin scheduling algorithm
- c) priority scheduling algorithm
- d) multilevel queue scheduling algorithm

Ans:D

23

- In multilevel feedback scheduling algorithm
- a) a process can move to a different classified ready queue
  - b) classification of ready queue is permanent
  - c) processes are not classified into groups
  - d) none of the mentioned

Ans:A

24

- With multiprogramming, \_\_\_\_\_ is used productively.
- a) time
  - b) space

- c) money
- d) all of the mentioned

Ans:A

The two steps of a process execution are :

- a) I/O & OS Burst
- b) CPU & I/O Burst
- c) Memory & I/O Burst
- d) OS & Memory Burst

25

Ans:B

A process is selected from the \_\_\_\_\_ queue by the \_\_\_\_\_ scheduler, to be executed.

26

- a) blocked, short term
- b) wait, long term
- c) ready, short term
- d) ready, long term

**Ans:C**

In the following cases non – preemptive scheduling occurs :

- a) When a process switches from the running state to the ready state
- b) When a process goes from the running state to the waiting state
- c) When a process switches from the waiting state to the ready state
- d) All of the mentioned

**27**

**Ans:B**

The switching of the CPU from one process or thread to another is called :

**28**

- a) process switch
- b) task switch
- c) context switch
- d) all of the mentioned

**Ans:D**

**29**

Scheduling is done so as to :

- a) increase CPU utilization
- b) decrease CPU utilization
- c) keep the CPU more idle
- d) None of the mentioned

Ans:A

30

Scheduling is done so as to :

- a) increase the throughput
- b) decrease the throughput
- c) increase the duration of a specific amount of work
- d) None of the mentioned

Ans:A

31

Turnaround time is :

- a) the total waiting time for a process to finish execution
- b) the total time spent in the ready queue
- c) the total time spent in the running queue
- d) the total time from the completion till

the submission of a process

Ans:D

Scheduling is done so as to :

- a) increase the turnaround time
- b) decrease the turnaround time
- c) keep the turnaround time same
- d) there is no relation between scheduling and turnaround time

Ans:B

Round robin scheduling falls under the category of :

- a) Non preemptive scheduling
- b) Preemptive scheduling
- c) All of the mentioned
- d) None of the mentioned

Ans:B

34 With round robin scheduling algorithm

in a time shared system,

- a) using very large time slices converts it into First come First served scheduling algorithm
- b) using very small time slices converts it into First come First served scheduling algorithm
- c) using extremely small time slices increases performance
- d) using very small time slices converts it into Shortest Job First algorithm

Ans:A

35

With round robin scheduling algorithm in a time shared system,

- a) using very large time slices converts it into First come First served scheduling algorithm
- b) using very small time slices converts it into First come First served

	<p>scheduling algorithm</p> <p>c) using extremely small time slices increases performance</p> <p>d) using very small time slices converts it into Shortest Job First algorithm</p>
Ans:A	
36	<p>The FIFO algorithm :</p> <p>a) first executes the job that came in last in the queue</p> <p>b) first executes the job that came in first in the queue</p> <p>c) first executes the job that needs minimal processor</p> <p>d) first executes the job that has maximum processor needs</p>
Ans:B	
37	<p>The strategy of making processes that are logically runnable to be temporarily suspended is called :</p> <p>a) Non preemptive scheduling</p>

- b) Preemptive scheduling
- c) Shortest job first
- d) First come First served

Ans:B

38

Scheduling is :

- a) allowing a job to use the processor
- b) making proper use of processor
- c) all of the mentioned
- d) none of the mentioned

Ans:A

39

The real difficulty with SJF in short term scheduling is :

- a) it is too good an algorithm
- b) knowing the length of the next CPU request
- c) it is too complex to understand
- d) none of the mentioned

Ans:B

40

- Preemptive Shortest Job First scheduling is sometimes called :
- a) Fast SJF scheduling
  - b) EDF scheduling – Earliest Deadline First
  - c) HRRN scheduling – Highest Response Ratio Next
  - d) SRTN scheduling – Shortest Remaining Time Next

Ans:D

41

- One of the disadvantages of the priority scheduling algorithm is that :
- a) it schedules in a very complex manner
  - b) its scheduling takes up a lot of time
  - c) it can lead to some low priority process waiting indefinitely for the CPU
  - d) none of the mentioned

Ans:C

42	<p>‘Aging’ is :</p> <ul style="list-style-type: none"> <li>a) keeping track of cache contents</li> <li>b) keeping track of what pages are currently residing in memory</li> <li>c) keeping track of how many times a given page is referenced</li> <li>d) increasing the priority of jobs to ensure termination in a finite time</li> </ul> <p>Ans:D</p>
43	<p>A solution to the problem of indefinite blockage of low – priority processes is :</p> <ul style="list-style-type: none"> <li>a) Starvation</li> <li>b) Wait queue</li> <li>c) Ready queue</li> <li>d) Aging</li> </ul> <p>Ans:D</p>
44	<p>Which of the following scheduling algorithms gives minimum average waiting time ?</p> <ul style="list-style-type: none"> <li>a) FCFS</li> </ul>

- b) SJF
- c) Round – robin
- d) Priority

Ans:B

### Day 3 MCQ

1	Scheduling of threads are done by A. input B. output C. operating system D. memory  Ans:C
2	Multiprogramming of computer system increases A. memory B. storage C. CPU utilization D. Cost  Ans:C
3	Main memory of computer system is also called A. non volatile B. volatile C. reserved D. large  Ans:B
4	Secondary memory of computer system is also called A. non volatile B. volatile C. reserved D. small  ANSWER: A
5	To overcome the slow operating speeds of the secondary memory we make use of faster flash drives. a) True b) False  Ans:A
6	The fastest data access is provided using _____ a) Caches b) DRAM's c) SRAM's d) Registers

	Ans:D
7	The next level of memory hierarchy after the L2 cache is _____ a) Secondary storage b) TLB c) Main memory d) Register
	Ans:c
8	The last on the hierarchy scale of memory devices is _____ a) Main memory b) Secondary memory c) TLB d) Flash drives
	Ans:B
9	In the memory hierarchy, as the speed of operation increases the memory size also increases. a) True b) False
	Ans:B
10	In Priority Scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of Starvation of low priority processes may never execute, is resolved by _____. a)Terminating a procee b)aging c)mutual exclusion d)semaphore
	Ans:B
11	CPU performance is measured through _____. a)Throughput b)MHZ c)flaps d)none of the above
	Ans:A
12	Which algorithm suffers from Convoy Effect? a.FCFS b)SJF – Non preemptive c)SJF – Preemptive d.Round Robin
	Ans:A
13	What is the problem that arrives while using SJF algorithm? a.Deadlock b.Aging c.Starvation d.No Problem

	Ans:C
14	FCFS algorithm is implemented using a.Stack b.Tree c.Queue d.Graph
	Ans:C
15	'Aging' is : a.keeping track of cache contents b.keeping track of what pages are currently residing in memory c.keeping track of how many times a given page is referenced d.increasing the priority of jobs to ensure termination in a finite time
	Ans:D
16	Round robin scheduling falls under the category of : a) Non preemptive scheduling b) Preemptive scheduling c) All of the mentioned d) None of the mentioned
	Ans:B
17	With round robin scheduling algorithm in a time shared system, a) using very large time slices converts it into First come First served scheduling algorithm b) using very small time slices converts it into First come First served scheduling algorithm c) using extremely small time slices increases performance d) using very small time slices converts it into Shortest Job First algorithm
	Ans:A

MCQ's on Interprocess communication and Deaadlock

1	<p>Inter process communication :</p> <ul style="list-style-type: none"><li>a) allows processes to communicate and synchronize their actions when using the same address space</li><li>b) allows processes to communicate and synchronize their actions without using the same address space</li><li>c) allows the processes to only synchronize their actions without communication</li><li>d) none of the mentioned</li></ul>
2	<p>Ans:B</p> <p>Message passing system allows processes to :</p> <ul style="list-style-type: none"><li>a) communicate with one another without resorting to shared data</li><li>b) communicate with one another by resorting to shared data</li><li>c) share data</li><li>d) name the recipient or sender of the message</li></ul>

	Ans:A
3	An IPC facility provides at least two operations : a) write & delete message b) delete & receive message c) send & delete message d) receive & send message
	Ans:D
4	The link between two processes P and Q to send and receive messages is called : a) communication link b) message-passing link c) synchronization link d) all of the mentioned
	Ans:A
5	Concurrent access to shared data may result in : a) data consistency b) data insecurity c) data inconsistency d) none of the mentioned
	Ans:C
6	A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access

	<p>takes place is called :</p> <ul style="list-style-type: none"> <li>a) data consistency</li> <li>b) race condition</li> <li>c) aging</li> <li>d) starvation</li> </ul>
	Ans:B
7	<p>The segment of code in which the process may change common variables, update tables, write into files is known as :</p> <ul style="list-style-type: none"> <li>a) program</li> <li>b) critical section</li> <li>c) non – critical section</li> <li>d) synchronizing</li> </ul>
	Ans:B
8	<p>The following three conditions must be satisfied to solve the critical section problem :</p> <ul style="list-style-type: none"> <li>a) Mutual Exclusion</li> <li>b) Progress</li> <li>c) Bounded Waiting</li> <li>d) All of the mentioned</li> </ul>
	Ans:D
9	<p>Mutual exclusion implies that :</p> <ul style="list-style-type: none"> <li>a) if a process is executing in its critical section, then no other process must be executing in their critical sections</li> <li>b) if a process is executing in its critical section, then other</li> </ul>

	<p>processes must be executing in their critical sections</p> <p>c) if a process is executing in its critical section, then all the resources of the system must be blocked until it finishes execution</p> <p>d) none of the mentioned</p>
	Ans:A
10	<p>To enforce ..... two functions are provided enter-critical and exit-critical, where each function takes as an argument the name of the resource that is the subject of competition.</p> <p>A) Mutual Exclusion  B) Synchronization  C) Deadlock  D) Starvation</p>
	Ans:A
11	<p>In ..... only one process at a time is allowed into its critical section, among all processes that have critical sections for the same resource.</p> <p>A) Mutual Exclusion  B) Synchronization  C) Deadlock  D) Starvation</p>
	Ans:A
12	..... when a process leaves a critical section and more than one process is waiting, the selection of a waiting

- process is arbitrary.
- A) Busy waiting is employed
  - B) Starvation is possible
  - C) Deadlock is possible
  - D) All of the above

Ans:B

- 13 Which of the following condition is required for deadlock to be possible?
- a) mutual exclusion
  - b) a process may hold allocated resources while awaiting assignment of other resources
  - c) no resource can be forcibly removed from a process holding it
  - d) all of the mentioned

Ans:D

- 14 A system is in the safe state if
- a) the system can allocate resources to each process in some order and still avoid a deadlock
  - b) there exist a safe sequence
  - c) all of the mentioned
  - d) none of the mentioned

Ans:A

- 15 The circular wait condition can be prevented by
- a) defining a linear ordering of resource types
  - b) using thread

	<p>c) using pipes d) all of the mentioned</p>
	Ans:A
16	<p>Which one of the following is the deadlock avoidance algorithm?</p> <p>a) banker's algorithm b) round-robin algorithm c) elevator algorithm d) karn's algorithm</p>
	Ans:A
17	<p>For effective operating system, when to check for deadlock?</p> <p>a) every time a resource request is made b) at fixed time intervals c) every time a resource request is made at fixed time intervals d) none of the mentioned</p>
	Ans:C
18	<p>Which one of the following is a visual ( mathematical ) way to determine the deadlock occurrence?</p> <p>a) resource allocation graph b) starvation graph</p>

	<p>c) inversion graph  d) none of the mentioned</p>
	Ans:A
19	<p>To avoid deadlock</p> <p>a) there must be a fixed number of resources to allocate  b) resource allocation must be done only once  c) all deadlocked processes must be aborted  d) inversion technique can be used</p>
	Ans:A
20	<p>With ..... , requested resources are granted to processes whenever possible.</p> <p>A) deadlock detection  B) deadlock deletion  C) deadlock prevention  D) deadlock avoidance</p>
	Ans:A
21	

Which of the following are the strategies needed for recovery once deadlock has been detected.

- i) Abort all deadlocked processes
- ii) Backup each deadlocked process to some previously defined checkpoint and restart all processes
- iii) Successively abort deadlocked processes until deadlock no longer exists.
- iv) Successively preempt resources until deadlock no longer exist.

A) i, ii and iii only  
B) ii, iii and iv only  
C) i, iii and iv only  
D) All i, ii, iii and iv

Ans:D

22 Which of the following is/are the variety of mechanisms provided by UNIX for inter-processor communication and synchronization are as follows.

- i) Pipes ii) Messages iii) Shared Memory iv) Main Memory v) Semaphores

A) i, ii, iii and iv only  
B) i, ii, iii and v only  
C) i, iii, iv and v only  
D) ii, iii, iv and v only

Ans:B

23

	<p>Which of the following are the mechanism used by the W2K executive to implement synchronization facilities.</p> <p>i) Process ii) Threads iii) Condition Variables iv) Mutex v) Semaphore</p> <p>A) i, ii, iii and iv only B) i, ii, iii and v only C) i, ii, iv and v only D) ii, iii, iv and v only</p>
	Ans:C
24	<p>In UNIX concurrency mechanisms, pipes and messages provide a means of communicating data across processes, whereas ..... are used to trigger actions by other processes.</p> <p>A) Shared memory and signals B) Semaphores and shared memory C) Semaphores and signals D) Shared memory, semaphores and signals</p>
	Ans:C
25	<p>A ..... is a circular buffer allowing two processes to communicate on the producer consumer model.</p> <p>A) message B) pipe C) shared memory D) signal</p>
	Ans:B
26	<p>The schema used for deadlock ..... is invoking periodically to test for deadlock.</p> <p>A) prevention</p>

	<p>B) avoidance C) detection D) deletion</p> <p>Ans:C</p>
27	<p>While preventing deadlock with ..... needs no run-time computation since problem is solved in system design.</p> <p>A) request all resources B) preemption C) resource ordering D) finding safe path</p> <p>Ans:C</p>
28	<p>In ..... some resources, such as files, may allow multiple access for readers but only exclusive access for writers.</p> <p>A) Mutual Exclusion B) Hold and Wait C) Preemption D) Circular Wait</p> <p>Ans:A</p>
29	<p>For a deadlock to arise, which of the following conditions must hold simultaneously ?</p> <p>a) Mutual exclusion b) No preemption c) Hold and wait d) All of the mentioned</p>

	Ans:D
30	<p>Deadlock prevention is a set of methods :</p> <ul style="list-style-type: none"><li>a) to ensure that at least one of the necessary conditions cannot hold</li><li>b) to ensure that all of the necessary conditions do not hold</li><li>c) to decide if the requested resources for a process have to be given or not</li><li>d) to recover from a deadlock</li></ul> <p>Ans:A</p>

Sunbeam\_Day4\_OS\_MCQ's

1	<p>Physical memory is broken into fixed-sized blocks called _____</p> <ul style="list-style-type: none"><li>a) frames</li><li>b) pages</li><li>c) backing store</li><li>d) none of the mentioned</li></ul>
2	<p>Logical memory is broken into blocks of the same size called _____</p> <ul style="list-style-type: none"><li>a) frames</li><li>b) pages</li><li>c) backing store</li><li>d) none of the mentioned</li></ul>
3	<p>Every address generated by the CPU is divided into two parts :</p> <ul style="list-style-type: none"><li>a) frame bit &amp; page number</li><li>b) page number &amp; page offset</li><li>c) page offset &amp; frame bit</li><li>d) frame offset &amp; page offset</li></ul>
4	<p>The _____ is used as an index into the page table.</p> <ul style="list-style-type: none"><li>a) frame bit</li><li>b) page number</li><li>c) page offset</li><li>d) frame offset</li></ul>

	Ans:B
5	The _____ table contains the base address of each page in physical memory. a) process b) memory c) page d) frame
	Ans:C
6	The size of a page is typically : a) varied b) power of 2 c) power of 4 d) none of the mentioned
	Ans:B
7	With paging there is no _____ fragmentation. a) internal b) external c) either type of d) none of the mentioned
	Ans:B
8	Virtual memory allows : a) execution of a process that may not be completely in memory

	<p>b) a program to be smaller than the physical memory  c) a program to be larger than the secondary storage  d) execution of a process without being in physical memory</p>
	Ans:A
9	<p>Virtual memory is normally implemented by _____</p> <p>a) demand paging  b) buses  c) virtualization  d) all of the mentioned</p>
	Ans:A
10	<p>The valid – invalid bit, in this case, when valid indicates :</p> <p>a) the page is not legal  b) the page is illegal  c) the page is in memory  d) the page is not in memory</p>
	Ans:C
11	<p>A page fault occurs when :</p> <p>a) a page gives inconsistent data  b) a page cannot be accessed due to its absence from memory  c) a page is invisible  d) all of the mentioned</p>
	Ans:B
12	<p>In segmentation, each address is specified by :</p> <p>a) a segment number &amp; offset</p>

	<p>b) an offset &amp; value  c) a value &amp; segment number  d) a key &amp; value</p>
	Ans:A
13	<p>In paging the user provides only _____ which is partitioned by the hardware into _____ and _____</p> <p>a) one address, page number, offset  b) one offset, page number, address  c) page number, offset, address  d) none of the mentioned</p>
	Ans:A
14	<p>Each entry in a segment table has a :</p> <p>a) segment base  b) segment peak  c) segment value  d) none of the mentioned</p>
	Ans:A
15	<p>The segment base contains the :</p> <p>a) starting logical address of the process  b) starting physical address of the segment in memory  c) segment length  d) none of the mentioned</p>

	Ans:B
16	<p>The segment limit contains the :</p> <ul style="list-style-type: none"> <li>a) starting logical address of the process</li> <li>b) starting physical address of the segment in memory</li> <li>c) segment length</li> <li>d) none of the mentioned</li> </ul>
	Ans:C
17	<p>_____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.</p> <ul style="list-style-type: none"> <li>a) Paging</li> <li>b) Demand paging</li> <li>c) Segmentation</li> <li>d) Swapping</li> </ul>
	Ans:B
18	<p>A process is thrashing if</p> <ul style="list-style-type: none"> <li>a) it is spending more time paging than executing</li> <li>b) it is spending less time paging than executing</li> <li>c) page fault occurs</li> <li>d) swapping can not take place</li> </ul>

	Ans:A
19	<p>The three major methods of allocating disk space that are in wide use are :</p> <ul style="list-style-type: none"> <li>a) contiguous</li> <li>b) linked</li> <li>c) indexed</li> <li>d) all of the mentioned</li> </ul>
20	<p>In contiguous allocation :</p> <ul style="list-style-type: none"> <li>a) each file must occupy a set of contiguous blocks on the disk</li> <li>b) each file is a linked list of disk blocks</li> <li>c) all the pointers to scattered blocks are placed together in one location</li> <li>d) none of the mentioned</li> </ul>
21	<p>In linked allocation :</p> <ul style="list-style-type: none"> <li>a) each file must occupy a set of contiguous blocks on the disk</li> <li>b) each file is a linked list of disk blocks</li> <li>c) all the pointers to scattered blocks are placed together in one location</li> <li>d) none of the mentioned</li> </ul>

	Ans:B
22	<p>In indexed allocation :</p> <ul style="list-style-type: none"> <li>a) each file must occupy a set of contiguous blocks on the disk</li> <li>b) each file is a linked list of disk blocks</li> <li>c) all the pointers to scattered blocks are placed together in one location</li> <li>d) none of the mentioned</li> </ul>
	Ans:C
23	<p>Contiguous allocation of a file is defined by :</p> <ul style="list-style-type: none"> <li>a) disk address of the first block &amp; length</li> <li>b) length &amp; size of the block</li> <li>c) size of the block</li> <li>d) total size of the file</li> </ul>
	Ans:A
24	<p>_____ and _____ are the most common strategies used to select a free hole from the set of available holes.</p> <ul style="list-style-type: none"> <li>a) First fit, Best fit</li> <li>b) Worst fit, First fit</li> <li>c) Best fit, Worst fit</li> <li>d) None of the mentioned</li> </ul>

	Ans:A
25	<p>For each file there exists a _____ that contains information about the file, including ownership, permissions and location of the file contents.</p> <p>a) metadata  b) file control block  c) process control block  d) all of the mentioned</p>
	Ans:B
26	<p>Metadata includes :</p> <p>a) all of the file system structure  b) contents of files  c) both file system structure and contents of files  d) none of the mentioned</p>
	Ans:C
27	<p>In the linked allocation, the directory contains a pointer to the :</p> <p>I. first block  II. last block</p> <p>a) I only  b) II only  c) Both I and II</p>

	d) Neither I nor II
	Ans:C
28	<p>There is no _____ with linked allocation.</p> <ul style="list-style-type: none"> <li>a) internal fragmentation</li> <li>b) external fragmentation</li> <li>c) starvation</li> <li>d) all of the mentioned</li> </ul>
	Ans:B
29	<p>The major disadvantage with linked allocation is that :</p> <ul style="list-style-type: none"> <li>a) internal fragmentation</li> <li>b) external fragmentation</li> <li>c) there is no sequential access</li> <li>d) there is only sequential access</li> </ul>
	Ans:D
30	<p>Contiguous allocation has two problems _____ and _____ that linked allocation solves.</p> <ul style="list-style-type: none"> <li>a) external – fragmentation &amp; size – declaration</li> <li>b) internal – fragmentation &amp; external – fragmentation</li> <li>c) size – declaration &amp; internal – fragmentation</li> <li>d) memory – allocation &amp; size – declaration</li> </ul>

	Ans:A
31	Each _____ has its own index block. a) partition b) address c) file d) all of the mentioned
	Ans:C
32	Indexed allocation _____ direct access. a) supports b) does not support c) is not related to d) none of the mentioned
	Ans:A
33	A memory page containing a heavily used variable that was initialized very early and is in constant use is removed, then the page replacement algorithm used is : a) LRU b) LFU c) FIFO d) None of the mentioned

	Ans:C
34	The aim of creating page replacement algorithms is to : a) replace pages faster b) increase the page fault rate c) decrease the page fault rate d) to allocate multiple pages to processes
	Ans:C
35	A FIFO replacement algorithm associates with each page the _____ a) time it was brought into memory b) size of the page in memory c) page after and before it d) all of the mentioned
	Ans:A
36	Optimal page – replacement algorithm is : a) Replace the page that has not been used for a long time b) Replace the page that has been used for a long time c) Replace the page that will not be used for a long time d) None of the mentioned
	Ans:C
37	Optimal page – replacement algorithm is difficult to implement,

	<p>because :</p> <ul style="list-style-type: none"> <li>a) it requires a lot of information</li> <li>b) it requires future knowledge of the reference string</li> <li>c) it is too complex</li> <li>d) it is extremely expensive</li> </ul>
	<p>Ans:B</p>
38	<p>In the _____ algorithm, the disk arm starts at one end of the disk and moves toward the other end, servicing requests till the other end of the disk. At the other end, the direction is reversed and servicing continues.</p> <ul style="list-style-type: none"> <li>a) LOOK</li> <li>b) SCAN</li> <li>c) C-SCAN</li> <li>d) C-LOOK</li> </ul>
39	<p>Ans:B</p> <p>In the _____ algorithm, the disk head moves from one end to the other , servicing requests along the way. When the head reaches the other end, it immediately returns to the beginning of the disk without servicing any requests on the return trip.</p> <ul style="list-style-type: none"> <li>a) LOOK</li> <li>b) SCAN</li> <li>c) C-SCAN</li> <li>d) C-LOOK</li> </ul>

	Ans:C
40	<p>In the _____ algorithm, the disk arm goes as far as the final request in each direction, then reverses direction immediately without going to the end of the disk.</p> <ul style="list-style-type: none"><li>a) LOOK</li><li>b) SCAN</li><li>c) C-SCAN</li><li>d) C-LOOK</li></ul> <p>Ans:A</p>