MCQ OS-1 - pdf related to operating system

Mathematics AS level (Padmashree Dr. D.Y. Patil Vidyapith)

What is operating system?{ ~ collection of programs that manages hardware resources ~ system service provider to the application programs ~ link to interface the hardware and application programs = all of the mentioned}

To access the services of operating system, the interface is provided by the { = system calls ~ API ~ library ~ assembly instructions}

Which one of the following is not true?{ ~ kernel is the program that constitutes the central core of the operating system ~ kernel is the first part of operating system to load into memory during booting = kernel is made of various modules which can not be loaded in running operating system ~ kernel remains in the memory during the entire computer session}

Which one of the following error will be handle by the operating system?
{~ power failure ~lack of paper in printer ~ connection failure in the network = all of the mentioned}

The main function of the command interpreter is{= to get and execute the next user-specified command ~ to provide the interface between the API and application program ~ to handle the files in operating system ~ none of the mentioned}

By operating system, the resource management can be done via{ ~ time division multiplexing ~ space division multiplexing = both ~ none of the mentioned}

If a process fails, most operating system write the error information to a{ = log file ~ another running process ~ new file ~ none of the mentioned}

Which facility dynamically adds probes to a running system, both in user processes and in the kernel?{ = DTrace ~ DLocate ~ DMap ~ DAdd}

Which one of the following is not a real time operating system?{ ~ VxWorks ~ Windows CE ~ RTLinux = Palm OS}

The OS X has { ~ monolithic kernel = hybrid kernel ~c) microkernel ~ monolithic kernel with modules}

The systems which allows only one process execution at a time, are called { = uniprogramming systems ~ uniprocessing systems ~ unitasking systems ~ none of the mentioned}

In operating system, each process has its own
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of the mentioned

Answer:d

In Unix, Which system call creates the new process?
a) fork
b) create
c) new

d) none of the mentioned

Answer:a

A process can be terminated due to
a) normal exit
b) fatal error
c) killed by another process
d) all of the mentioned

Answer:d

What is the ready state of a process?
a) when process is scheduled to run after some execution
b) when process is unable to run until some task has been completed
c) when process is using the CPU
d) none of the mentioned

Answer:a
Explanation:When process is unable to run until some task has been completed, the process is in blocked state and if process is using the CPU, it is in running state.

What is interprocess communication?
a) communication within the process
b) communication between two process
c) communication between two threads of same process
d) none of the mentioned

Answer:b

A set of processes is deadlock if
a) each process is blocked and will remain so forever
b) each process is terminated
c) all processes are trying to kill each other
d) none of the mentioned

Answer:a

A process stack does not contain
a) function parameters
b) local variables
c) return addresses
d) PID of child process

Answer:d

Which system call returns the process identifier of a terminated child?
a) wait
b) exit
c) fork
d) get

Answer:a

1 The address of the next instruction to be executed by the current process is provided by the
a) CPU registers
b) program counter
c) process stack
d) pipe

Answer:b

A Process Control Block(PCB) does not contain which of the following :
a) Code
b) Stack
c) Heap
d) Data
e) Program Counter
f) Process State
g) I/O status information
h) bootstrap program

Answer: h
.

The number of processes completed per unit time is known as _____.
a) Output
b) Throughput
c) Efficiency
d) Capacity

Answer: b

The state of a process is defined by :
a) the final activity of the process
b) the activity just executed by the process
c) the activity to next be executed by the process
d) the current activity of the process

Answer: d
.

Which of the following is not the state of a process ?
a) New
b) Old
c) Waiting
d) Running
e) Ready
f) Terminated

Answer: b

The Process Control Block is :
a) Process type variable
b) Data Structure
c) a secondary storage section
d) a Block in memory

Answer: b
.

The entry of all the PCBs of the current processes is in :
a) Process Register
b) Program Counter
c) Process Table

d) Process Unit

Answer: c

The degree of multi-programming is :
a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

Answer: d

A single thread of control allows the process to perform :
a) only one task at a time
b) multiple tasks at a time
c) All of these

Answer: a

The objective of multi-programming is to : (choose two)
a) Have some process running at all times
b) Have multiple programs waiting in a queue ready to run
c) To minimize CPU utilization
d) To maximize CPU utilization

Answer: a and d

Which of the following do not belong to queues for processes ?
a) Job Queue
b) PCB queue
c) Device Queue
d) Ready Queue

Answer: b

When the process issues an I/O request :
a) It is placed in an I/O queue
b) It is placed in a waiting queue
c) It is placed in the ready queue
d) It is placed in the Job queue

Answer: a

When a process terminates : (Choose Two)
a) It is removed from all queues
b) It is removed from all, but the job queue
c) Its process control block is de-allocated
d) Its process control block is never de-allocated

Answer: a and c

What is a long-term scheduler ?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of these

Answer: a

If all processes I/O bound, the ready queue will almost always be _____, and the Short term Scheduler will have a _____ to do.
a) full,little
b) full,lot
c) empty,little
d) empty,lot

Answer: c

What is a medium-term scheduler ?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping

d) None of these

Answer: c

What is a short-term scheduler ?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of these

Answer: b

The primary distinction between the short term scheduler and the long term scheduler is :
a) The length of their queues
b) The type of processes they schedule
c) The frequency of their execution
d) None of these

Answer: c

The only state transition that is initiated by the user process itself is :
a) block
b) wakeup
c) dispatch
d) None of these

Answer: a

1 In a time-sharing operating system, when the time slot given to a process is completed, the process goes from the running state to the :
a) Blocked state
b) Ready state
c) Suspended state
d) Terminated state

Answer: b

1 In a multi-programming environment :
a) the processor executes more than one process at a time
b) the programs are developed by more than one person
c) more than one process resides in the memory
d) a single user can execute many programs at the same time

Answer: c

1 Suppose that a process is in “Blocked” state waiting for some I/O service. When the service is completed, it goes to the :
a) Running state
b) Ready state
c) Suspended state
d) Terminated state

Answer: b

1 The context of a process in the PCB of a process does not contain :
a) the value of the CPU registers
b) the process state
c) memory-management information
d) context switch time

Answer: d

1 Which of the following need not necessarily be saved on a context switch between processes ? (GATE CS 200
a) General purpose registers
b) Translation look-aside buffer
c) Program counter
d) All of these

Answer: b

1 Which of the following does not interrupt a running process ? (GATE CS 200
a) A device
b) Timer
c) Scheduler process

d) Power failure

Answer: c

1 Several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called a(n) ____.
a) Shared Memory Segments
b) Entry Section
c) Race condition
d) Process Synchronization

Answer: c

1 Which of the following state transitions is not possible ?
a) blocked to running
b) ready to running
c) blocked to ready
d) running to blocked

Answer: a

Which process can affect of be affected by other processes executing in the system?
a) cooperating process
b) child process
c) parent process
d) init process

Answer:a

When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called
a) dynamic condition
b) race condition
c) essential condition
d) critical condition

Answer:b

If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called
a) mutual exclusion
b) critical exclusion
c) synchronous exclusion
d) asynchronous exclusion

Answer:a

Which one of the following is a synchronization tool?
a) thread
b) pipe
c) semaphore
d) socket

Answer:c

A semaphore is a shared integer variable
a) that can not drop below zero
b) that can not be more than zero
c) that can not drop below one
d) that can not be more than one

Answer:a

Mutual exclusion can be provided by the
a) mutex locks
b) binary semaphores
c) both (a) and (b)
d) none of the mentioned

Answer:c
Explanation:Binary Semaphores are known as mutex locks.

7 When high priority task is indirectly preempted by medium priority task effectively inverting the relative priority of the two tasks, the scenario is called

a) priority inversion
b) priority removal
c) priority exchange
d) priority modification

Answer:a
.

Process synchronization can be done on
a) hardware level
b) software level
c) both (a) and (b)
d) none of the mentioned

Answer:c

A monitor is a module that encapsulates
a) shared data structures
b) procedures that operate on shared data structure
c) synchronization between concurrent procedure invocation
d) all of the mentioned

Answer:d

To enable a process to wait within the monitor,
a) a condition variable must be declared as condition
b) condition variables must be used as boolean objects
c) semaphore must be used
d) all of the mentioned

Answer:a

Restricting the child process to a subset of the parent's resources prevents any process from :
a) overloading the system by using a lot of secondary storage
b) under-loading the system by very less CPU utilization
c) overloading the system by creating a lot of sub-processes
d) crashing the system by utilizing multiple resources

Answer: c

A parent process calling _____ system call will be suspended until children processes terminate.
a) wait

b) fork
c) exit
d) exec

Answer: a

Cascading termination refers to termination of all child processes before the parent terminates _____.
a) Normally
b) Abnormally
c) Normally or abnormally
d) None of these

Answer: a

With ……. only one process can execute at a time; meanwhile all other process are waiting for the processor. With …….. more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Multiprogramming, Uniprocessing
c) Multiprogramming, Multiprocessing
d) Uniprogramming, Multiprocessing

Answer: c

In UNIX, each process is identified by its :
a) Process Control Block
b) Device Queue
c) Process Identifier
d) None of these

Answer: c

In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
a) A Negative integer, Zero
b) Zero, A Negative integer
c) Zero, A nonzero integer
d) A nonzero integer, Zero

Answer: c

The child process can : (choose two)
a) be a duplicate of the parent process
b) never be a duplicate of the parent process
c) have another program loaded into it

d) never have another program loaded into it

Answer: a and c

The child process completes execution,but the parent keeps executing, then the child process is known as :
a) Orphan
b) Zombie
c) Body
d) Dead

Answer: b

The systems which allows only one process execution at a time, are called
a) uniprogramming systems
b) uniprocessing systems
c) unitasking systems
d) none of the mentioned

Answer:a
Explanation:Those systems which allows more than one process execution at a time, are called multiprogramming systems. Uniprocessing means only one processor.

In operating system, each process has its own
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
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Answer:d
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Which system call returns the process identifier of a terminated child?
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Answer:a

The address of the next instruction to be executed by the current process is provided by the
a) CPU registers
b) program counter
c) process stack
d) pipe

Answer:b

Concurrent access to shared data may result in :
a) data consistency
b) data insecurity
c) data inconsistency
d) None of these

Answer: c

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 takes place is called :
a) data consistency
b) race condition
c) aging
d) starvation

Answer: b

The segment of code in which the process may change common variables, update tables, write into files is known as :
a) program
b) critical section
c) non – critical section
d) synchronizing

Answer: b

The following three conditions must be satisfied to solve the critical section problem : (choose three)
a) Aging
b) Mutual Exclusion
c) Deadlock
d) Progress

e) Bounded Waiting

Answer: b,d and e

Mutual exclusion implies that :
a) if a process is executing in its critical section, then no other process must be executing in their critical sections
b) if a process is executing in its critical section, then other processes must be executing in their critical sections
c) if a process is executing in its critical section, then all the resources of the system must be blocked until it finishes execution
d) None of these

Answer: a

Bounded waiting implies that there exists a bound on the number of times a process is allowed to enter its critical section :
a) after a process has made a request to enter its critical section and before the request is granted
b) when another process is in its critical section
c) before a process has made a request to enter its critical section
d) None of these

Answer: a

A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one
b) two
c) three
d) four

Answer: b

In the bakery algorithm to solve the critical section problem :
a) each process is put into a queue and picked up in an ordered manner
b) each process receives a number (may or may not be unique) and the one with the lowest number is served next
c) each process gets a unique number and the one with the highest number is served next
d) each process gets a unique number and the one with the lowest number is served next

Answer: b

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d) None of these

Answer: a

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c) before a process has made a request to enter its critical section
d) None of these

Answer: a

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d) each process gets a unique number and the one with the lowest number is served next

Answer: b

What will happen if a non-recursive mutex is locked more than once ?
a) Starvation
b) Deadlock
c) Aging
d) Signaling

Answer: b
Explanation: If a thread which had already locked a mutex, tries to lock the mutex again, it will enter into the waiting list of that mutex, which results in deadlock. It is because no other thread can unlock the mutex.

A semaphore :
a) is a binary mutex
b) must be accessed from only one process
c) can be accessed from multiple processes
d) None of these

Answer: c

The two kinds of semaphores are : (choose two)
a) mutex
b) binary
c) counting
d) decimal

Answer: b and c

A mutex :
a) is a binary mutex
b) must be accessed from only one process
c) can be accessed from multiple processes
d) None of these

Answer: b

At a particular time of computation the value of a counting semaphore is Then 20 P operations and 15 V operations were completed on this semaphore.The resulting value of the semaphore is : (GATE 198
a) 42
b) 2
c) 7
d) 12

Answer: b
Explanation: P represents Wait and V represents Signal. P operation will decrease the value by 1 everytime and V operation will increase the value by 1 everytime.

A binary semaphore is a semaphore with integer values : (choose two)
a) 1
b) -1
c) 0
d) 5

Answer: a and c
.

The following pair of processes share a common variable X :
Process A
int Y;
A1: Y = X*2;
A2: X = Y;

Process B
int Z;
B1: Z = X+1;
B2: X = Z;

X is set to 5 before either process begins execution. As usual, statements within a process are executed sequentially, but statements in process A may execute in any order with respect to statements in process B.
i) How many different values of X are possible after both processes finish executing ?
a) two
b) three
c) four
d) eight

Answer: c
Explanation: Here are the possible ways in which statements from A and B can be interleaved.
A1 A2 B1 B2: X = 11
A1 B1 A2 B2: X = 6
A1 B1 B2 A2: X = 10
B1 A1 B2 A2: X = 10
B1 A1 A2 B2: X = 6
B1 B2 A1 A2: X = 12

ii) Suppose the programs are modified as follows to use a shared binary semaphore T :
Process A
int Y;
A1: Y = X*2;
A2: X = Y;
signal(T);

Process B
int Z;
B1: wait(T);
B2: Z = X+1;
X = Z;

T is set to 0 before either process begins execution and, as before, X is set to
Now, how many different values of X are possible after both processes finish executing ?

a) one
b) two
c) three
d) four

Answer: a
Explanation:The semaphore T ensures that all the statements from A finish execution before B begins. So now there is only one way in which statements from A and B can be interleaved:
A1 A2 B1 B2: X = 1

Semaphores are mostly used to implement :
a) System calls
b) IPC mechanisms
c) System protection
d) None of these

Answer: b
.

Spinlocks are intended to provide _____ only.
a) Mutual Exclusion
b) Bounded Waiting
c) Aging
d) Progress

Answer: b

) The bounded buffer problem is also known as :
a) Readers – Writers problem
b) Dining – Philosophers problem
c) Producer – Consumer problem
d) None of these

Answer: c
.

In the bounded buffer problem, there are the empty and full semaphores that :
a) count the number of empty and full buffers
b) count the number of empty and full memory spaces
c) count the number of empty and full queues
d) None of these

Answer: a
.

In the bounded buffer problem :
a) there is only one buffer
b) there are n buffers (n being greater than one but finite)
c) there are infinite buffers
d) the buffer size is bounded

Answer: b
.

To ensure difficulties do not arise in the readers – writers problem, _____ are given exclusive access to the shared object.
a) readers
b) writers
c) None of these

Answer: b
.

The dining – philosophers problem will occur in case of :
a) 5 philosophers and 5 chopsticks
b) 4 philosophers and 5 chopsticks
c) 3 philosophers and 5 chopsticks

d) 6 philosophers and 5 chopsticks

Answer: a
.

A deadlock free solution to the dining philosophers problem :
a) necessarily eliminates the possibility of starvation
b) does not necessarily eliminate the possibility of starvation
c) eliminates any possibility of any kind of problem further
d) None of these

Answer: b
.

All processes share a semaphore variable **mutex**, initialized to Each process must execute wait(mutex) before entering the critical section and signal(mutex) afterward.

i) Suppose a process executes in the following manner :
signal(mutex);
…..
critical section
…..
wait(mutex);

In this situation :
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) All of these

Answer: c
.

ii) Suppose a process executes in the following manner (replacing signal with wait) :
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) All of these

Answer: a
.

Consider the methods used by processes P1 and P2 for accessing their critical sections whenever needed, as given below. The initial values of shared boolean variables S1 and S2 are randomly assigned. (GATE 201

Method used by P1 :
while(S1==S;
Critical section
S1 = S2;

Method used by P2 :
while(S1!=S;
Critical section
S2 = not(S;

Which of the following statements describes properties achieved ?
a) Mutual exclusion but not progress
b) Progress but not mutual exclusion
c) Neither mutual exclusion nor progress
d) Both mutual exclusion and progress

Answer: d
.

A monitor is a type of :
a) semaphore
b) low level synchronization construct
c) high level synchronization construct
d) None of these

Answer: c
.

A monitor is characterized by :
a) a set of programmer defined operators
b) an identifier
c) the number of variables in it
d) All of these

Answer: a
.

A procedure defined within a _____ can access only those variables declared locally within the _____ and its formal parameters.

a) process, semaphore
b) process, monitor
c) semaphore, semaphore
d) monitor, monitor

Answer: d
.

The monitor construct ensures that :
a) only one process can be active at a time within the monitor
b) n number of processes can be active at a time within the monitor (n being greater than
c) the queue has only one process in it at a time
d) All of these

Answer: a
.

The operations that can be invoked on a condition variable are : (choose two)
a) wait
b) hold
c) signal
d) continue

Answer: a and c
.

The process invoking the wait operation is :
a) suspended until another process invokes the signal operation
b) waiting for another process to complete before it can itself call the signal operation
c) stopped until the next process in the queue finishes execution
d) None of these

Answer: a
.

If no process is suspended, the signal operation :
a) puts the system into a deadlock state
b) suspends some default process' execution
c) nothing happens
d) the output is unpredictable

Answer: c
.

What is the reusable resource?
a) that can be used by one process at a time and is not depleted by that use
b) that can be used by more than one process at a time
c) that can be shared between various threads
d) none of the mentioned

Answer:a
.

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

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) both (a) and (b)
d) none of the mentioned

Answer:c
.

The circular wait condition can be prevented by
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

Answer:a
.

Which one of the following is the deadlock avoidance algorithm?
a) banker's algorithm
b) round-robin algorithm
c) elevator algorithm

d) karn’s algorithm

Answer:a
.

What is the drawback of banker’s algorithm?
a) in advance processes rarely know that how much resource they will need
b) the number of processes changes as time progresses
c) resource once available can disappear
d) all of the mentioned

Answer:d
.

For effective operating system, when to check for deadlock?
a) every time a resource request is made
b) at fixed time intervals
c) both (a) and (b)
d) none of the mentioned

Answer:c
.

A problem encountered in multitasking when a process is perpetually denied necessary resources is called
a) deadlock
b) starvation
c) inversion
d) aging

Answer:b
.

Which one of the following is a visual (mathematical) way to determine the deadlock occurrence?
a) resource allocation graph
b) starvation graph
c) inversion graph
d) none of the mentioned

Answer:a
.

1 To avoid deadlock
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

Answer:a

The number of resources requested by a process :
a) must always be less than the total number of resources available in the system
b) must always be equal to the total number of resources available in the system
c) must not exceed the total number of resources available in the system
d) must exceed the total number of resources available in the system

Answer: c
.

The request and release of resources are _____.
a) command line statements
b) interrupts
c) system calls
d) special programs

Answer: c
.

Multithreaded programs are :
a) lesser prone to deadlocks
b) more prone to deadlocks
c) not at all prone to deadlocks
d) None of these

Answer: b
Explanation: Multiple threads can compete for shared resources.

For a deadlock to arise, which of the following conditions must hold simultaneously ?
(choose all that apply)
a) Mutual exclusion
b) Starvation

c) Hold and wait
d) No preemption
e) Circular wait

Answer: a, c, d and e
.

For Mutual exclusion to prevail in the system :
a) at least one resource must be held in a non sharable mode
b) the processor must be a uniprocessor rather than a multiprocessor
c) there must be at least one resource in a sharable mode
d) All of these

Answer: a
Explanation: If another process requests that resource (non – shareable resource), the requesting process must be delayed until the resource has been released.

For a Hold and wait condition to prevail :
a) A process must be not be holding a resource, but waiting for one to be freed, and then request to acquire it
b) A process must be holding at least one resource and waiting to acquire additional resources that are being held by other processes
c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of these

Answer: b
.

Deadlock prevention is a set of methods :
a) to ensure that at least one of the necessary conditions cannot hold
b) to ensure that all of the necessary conditions do not hold
c) to decide if the requested resources for a process have to be given or not
d) to recover from a deadlock

Answer: a
.

For non sharable resources like a printer, mutual exclusion :
a) must exist
b) must not exist
c) may exist

d) None of these

Answer: a
Explanation: A printer cannot be simultaneously shared by several processes.

For sharable resources, mutual exclusion :
a) is required
b) is not required
c) None of these

Answer: b
Explanation: They do not require mutually exclusive access, and hence cannot be involved in a deadlock.

1 To ensure that the hold and wait condition never occurs in the system, it must be ensured that :
a) whenever a resource is requested by a process, it is not holding any other resources
b) each process must request and be allocated all its resources before it begins its execution
c) a process can request resources only when it has none
d) All of these

Answer: d
Explanation: c – A process may request some resources and use them. Before it can can request any additional resources, however it must release all the resources that it is currently allocated.

1 The disadvantage of a process being allocated all its resources before beginning its execution is :
a) Low CPU utilization
b) Low resource utilization
c) Very high resource utilization
d) None of these

Answer: b
.

1 To ensure no preemption, if a process is holding some resources and requests another resource that cannot be immediately allocated to it :
a) then the process waits for the resources be allocated to it
b) the process keeps sending requests until the resource is allocated to it
c) the process resumes execution without the resource being allocated to it

d) then all resources currently being held are preempted

Answer: d

.

1 One way to ensure that the circular wait condition never holds is to :
a) impose a total ordering of all resource types and to determine whether one precedes another in the ordering
b) to never let a process acquire resources that are held by other processes
c) to let a process wait for only one resource at a time
d) All of these

Answer: a

Inter process communication :
a) allows processes to communicate and synchronize their actions when using the same address space.
b) allows processes to communicate and synchronize their actions without using the same address space.
c) allows the processes to only synchronize their actions without communication.
d) None of these

Answer: b
.

Message passing system allows processes to :
a) communicate with one another without resorting to shared data.
b) communicate with one another by resorting to shared data.
c) share data
d) name the recipient or sender of the message

Answer: a
.

An IPC facility provides atleast two operations : (choose two)
a) write message
b) delete message
c) send message
d) receive message

Answer: c and d
.

Messages sent by a process :
a) have to be of a fixed size
b) have to be a variable size
c) can be fixed or variable sized
d) None of these

Answer: c
.

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 these

Answer: a
.

Which of the following are TRUE for direct communication 😕choose two)
a) A communication link can be associated with N number of process(N = max. number of processes supported by system)
b) A communication link can be associated with exactly two processes
c) Exactly N/2 links exist between each pair of processes(N = max. number of processes supported by system)
d) Exactly one link exists between each pair of processes

Answer: b and d
.

In indirect communication between processes P and Q :
a) there is another process R to handle and pass on the messages between P and Q
b) there is another machine between the two processes to help communication
c) there is a mailbox to help communication between P and Q
d) None of these

Answer: c
.

In the non blocking send :
a) the sending process keeps sending until the message is received
b) the sending process sends the message and resumes operation
c) the sending process keeps sending until it receives a message
d) None of these

Answer: b
.

In the Zero capacity queue : (choose two)
a) the queue has zero capacity
b) the sender blocks until the receiver receives the message
c) the sender keeps sending and the messages dont wait in the queue
d) the queue can store atleast one message

Answer: a and b

.

1 The Zero Capacity queue :
a) is referred to as a message system with buffering
b) is referred to as a message system with no buffering
c) is referred to as a link
d) None of these

Answer: b

.

1 Bounded capacity and Unbounded capacity queues are referred to as :
a) Programmed buffering
b) Automatic buffering
c) User defined buffering
d) No buffering

Answer: b

The initial program that is run when the computer is powered up is called :
a) boot program
b) bootloader
c) initializer
d) bootstrap program

Answer: d
.

How does the software trigger an interrupt ?
a) Sending signals to CPU through bus
b) Executing a special operation called system call
c) Executing a special program called system program
d) Executing a special program calle interrupt trigger program

Answer: b
.

What is a trap/exception ?
a) hardware generated interrupt caused by an error
b) software generated interrupt caused by an error
c) user generated interrupt caused by an error
d) None of these

Answer: b
.

What is an ISR ?
a) Information Service Request
b) Interrupt Service Request
c) Interrupt Service Routine
d) Information Service Routine

Answer: c
.

An interrupt vector
a) is an address that is indexed to an interrupt handler
b) is a unique device number that is indexed by an address
c) is a unique identity given to an interrupt

d) None of these

Answer: a
.

DMA is used for : (choose two)
a) High speed devices(disks and communications network)
b) Low speed devices
c) Saving CPU cycles
d) Utilizing CPU cycles

Answer: a and c
.

In a memory mapped input/output :
a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready
b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available
c) the CPU receives an interrupt when the device is ready for the next byte
d) the CPU runs a user written code and does accordingly

Answer: b
.

In a programmed input/output(PIO) :
a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready
b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available
c) the CPU receives an interrupt when the device is ready for the next byte
d) the CPU runs a user written code and does accordingly

Answer: a
.

In an interrupt driven input/output :
a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready
b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available
c) the CPU receives an interrupt when the device is ready for the next byte

d) the CPU runs a user written code and does accordingly

Answer: c

.

1 In the layered approach of Operating Systems : (choose two)
a) Bottom Layer(is the User interface
b) Highest Layer(N) is the User interface
c) Bottom Layer(is the hardware
d) Highest Layer(N) is the hardware

Answer: b and c

.

1 How does the Hardware trigger an interrupt ?
a) Sending signals to CPU through system bus
b) Executing a special program called interrupt program
c) Executing a special program called system program
d) Executing a special operation called system call

Answer: a

.

1 Which operation is performed by an interrupt handler ?
a) Saving the current state of the system
b) Loading the interrupt handling code and executing it
c) Once done handling, bringing back the system to the original state it was before the interrupt occurred
d) All of these

Answer: d

A monitor is a type of :
a) semaphore
b) low level synchronization construct
c) high level synchronization construct
d) None of these

Answer: c
.

A monitor is characterized by :
a) a set of programmer defined operators
b) an identifier
c) the number of variables in it
d) All of these

Answer: a
.

A procedure defined within a _____ can access only those variables declared locally within the _____ and its formal parameters.
a) process, semaphore
b) process, monitor
c) semaphore, semaphore
d) monitor, monitor

Answer: d
.

The monitor construct ensures that :
a) only one process can be active at a time within the monitor
b) n number of processes can be active at a time within the monitor (n being greater than
c) the queue has only one process in it at a time
d) All of these

Answer: a
.

The operations that can be invoked on a condition variable are : (choose two)
a) wait
b) hold
c) signal

d) continue

Answer: a and c

.

The process invoking the wait operation is :
a) suspended until another process invokes the signal operation
b) waiting for another process to complete before it can itself call the signal operation
c) stopped until the next process in the queue finishes execution
d) None of these

Answer: a

.

If no process is suspended, the signal operation :
a) puts the system into a deadlock state
b) suspends some default process' execution
c) nothing happens
d) the output is unpredictable

Answer: c

.

The bounded buffer problem is also known as :
a) Readers – Writers problem
b) Dining – Philosophers problem
c) Producer – Consumer problem
d) None of these

Answer: c
.

In the bounded buffer problem, there are the empty and full semaphores that :
a) count the number of empty and full buffers
b) count the number of empty and full memory spaces
c) count the number of empty and full queues
d) None of these

Answer: a
.

In the bounded buffer problem :
a) there is only one buffer
b) there are n buffers (n being greater than one but finite)
c) there are infinite buffers
d) the buffer size is bounded

Answer: b
.

To ensure difficulties do not arise in the readers – writers problem, _____ are given exclusive access to the shared object.
a) readers
b) writers
c) None of these

Answer: b
.

The dining – philosophers problem will occur in case of :
a) 5 philosophers and 5 chopsticks
b) 4 philosophers and 5 chopsticks
c) 3 philosophers and 5 chopsticks

d) 6 philosophers and 5 chopsticks

Answer: a
.

A deadlock free solution to the dining philosophers problem :
a) necessarily eliminates the possibility of starvation
b) does not necessarily eliminate the possibility of starvation
c) eliminates any possibility of any kind of problem further
d) None of these

Answer: b
.

All processes share a semaphore variable **mutex**, initialized to Each process must execute wait(mutex) before entering the critical section and signal(mutex) afterward.

i) Suppose a process executes in the following manner :
signal(mutex);
…..
critical section
…..
wait(mutex);

In this situation :
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) All of these

Answer: c
.

ii) Suppose a process executes in the following manner (replacing signal with wait) :
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) All of these

Answer: a
.

Consider the methods used by processes P1 and P2 for accessing their critical sections whenever needed, as given below. The initial values of shared boolean variables S1 and S2 are randomly assigned. (GATE 201

Method used by P1 :
while(S1==S;
Critical section
S1 = S2;

Method used by P2 :
while(S1!=S;
Critical section
S2 = not(S;

Which of the following statements describes properties achieved ?
a) Mutual exclusion but not progress
b) Progress but not mutual exclusion
c) Neither mutual exclusion nor progress
d) Both mutual exclusion and progress

Answer: d

CPU scheduling is the basis of _____.
a) multiprocessor systems
b) multiprogramming operating systems
c) larger memory sized systems
d) None of these

Answer: b
.

With multiprogramming, _____ is used productively.
a) time
b) space
c) money
d) All of these

Answer: a
.

The two steps of a process execution are : (choose two)
a) I/O Burst
b) CPU Burst
c) Memory Burst
d) OS Burst

Answer: a and b
.

An I/O bound program will typically have :
a) a few very short CPU bursts
b) many very short I/O bursts
c) many very short CPU bursts
d) a few very short I/O bursts

Answer: c
.

A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term
b) wait, long term
c) ready, short term

d) ready, long term

Answer: c
.

In the following cases non – preemptive scheduling occurs : (Choose two)
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) When a process terminates

Answer: b and d
Explanation: There is no other choice.

The switching of the CPU from one process or thread to another is called :
a) process switch
b) task switch
c) context switch
d) All of these

Answer: d
.

Dispatch latency is :
a) the speed of dispatching a process from running to the ready state
b) the time of dispatching a process from running to ready state and keeping the CPU idle
c) the time to stop one process and start running another one
d) None of these

Answer: c
.

Scheduling is done so as to :
a) increase CPU utilization
b) decrease CPU utilization
c) keep the CPU more idle
d) None of these

Answer: a
.

1 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 these

Answer: a
.

1 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

Answer: d
.

1 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

Answer: b
.

1 Waiting time is :
a) the total time in the blocked and waiting queues
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

Answer: b
.

1 Scheduling is done so as to :
a) increase the waiting time
b) keep the waiting time the same
c) decrease the waiting time
d) None of these

Answer: c

.

1 Response time is :
a) the total time taken from the submission time till the completion time
b) the total time taken from the submission time till the first response is produced
c) the total time taken from submission time till the response is output
d) None of these

Answer: b

.

1 Scheduling is done so as to :
a) increase the response time
b) keep the response time the same
c) decrease the response time
d) None of these

Answer: c

Inter process communication :
a) allows processes to communicate and synchronize their actions when using the same address space.
b) allows processes to communicate and synchronize their actions without using the same address space.
c) allows the processes to only synchronize their actions without communication.
d) None of these

Answer: b
.

Message passing system allows processes to :
a) communicate with one another without resorting to shared data.
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c) share data
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Answer: a
.

An IPC facility provides atleast two operations : (choose two)
a) write message
b) delete message
c) send message
d) receive message

Answer: c and d
.

Messages sent by a process :
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.

The link between two processes P and Q to send and receive messages is called :
a) communication link
b) message-passing link

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.

Which of the following are TRUE for direct communication choose two)
a) A communication link can be associated with N number of process(N = max. number of processes supported by system)
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a) there is another process R to handle and pass on the messages between P and Q
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c) there is a mailbox to help communication between P and Q
d) None of these

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.

In the non blocking send :
a) the sending process keeps sending until the message is received
b) the sending process sends the message and resumes operation
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d) None of these

Answer: b
.

In the Zero capacity queue : (choose two)
a) the queue has zero capacity
b) the sender blocks until the receiver receives the message
c) the sender keeps sending and the messages dont wait in the queue
d) the queue can store atleast one message

Answer: a and b

.

1 The Zero Capacity queue :
a) is referred to as a message system with buffering
b) is referred to as a message system with no buffering
c) is referred to as a link
d) None of these

Answer: b

.

1 Bounded capacity and Unbounded capacity queues are referred to as :
a) Programmed buffering
b) Automatic buffering
c) User defined buffering
d) No buffering

Answer: b

Signals that occur at the same time, are presented to the process :
a) one at a time, in a particular order
b) one at a time, in no particular order
c) all at a time
d) None of these

Answer: b
.

Which of the following is not TRUE :
a) Processes may send each other signals
b) Kernel may send signals internally
c) a field is updated in the signal table when the signal is sent
d) each signal is maintained by a single bit

Answer: c
Explanation: A field is updated in the **process table** when the signal is sent.

Signals of a given type :
a) are queued
b) are all sent as one
c) cannot be queued
d) None of these

Answer: b
Explanation: The signal handler will be invoked only once.

The three ways in which a process responds to a signal are : (choose three)
a) ignoring the signal
b) handling the signal
c) performing some default action
d) asking the user to handle the signal

Answer: a, b and c
.

Signals are identified by :
a) signal identifiers
b) signal handlers
c) signal actions

d) None of these

Answer: a
.

When a process blocks the receipt of certain signals : (choose two)
a) The signals are delivered
b) The signals are not delivered
c) The signals are not received until they are unblocked
d) The signals are received by the process once they are delivered

Answer: a and c
.

The _____ maintains pending and blocked bit vectors in context of each process.
a) CPU
b) Memory
c) Process
d) Kernel

Answer: d
.

In UNIX, the set of masked signals can be set or cleared using the _____ function.
a) sigmask
b) sigmaskproc
c) sigprocmask
d) sigproc

Answer: c
.

The usefulness of signals as a general inter process communication mechanism is limited because :
a) they do not work between processes
b) they are user generated
c) they cannot carry information directly
d) None of these

Answer: c
.

1 The usual effect of abnormal termination of a program is :
a) core dump file generation
b) system crash
c) program switch
d) signal destruction

Answer: a
.

1 In UNIX, the abort() function sends the _____ signal to the calling process, causing abnormal termination.
a) SIGTERM
b) SIGSTOP
c) SIGABORT
d) SIGABRT

Answer: d
.

1 **In most cases**, if a process is sent a signal while it is executing a system call :
a) the system call will continue execution and the signal will be ignored completely
b) the system call is interrupted by the signal, and the signal handler comes in
c) the signal has no effect until the system call completes
d) None of these

Answer: c
.

1 A process can never be sure that a signal it has sent _____.
a) has which identifier
b) has not been lost
c) has been sent
d) All of these

Answer: b
.

1 In UNIX, the _____ system call is used to send a signal.
a) sig
b) send
c) kill

d) sigsend

Answer: c

Which of the following system calls does not return control to the calling point, on termination ?
a) fork
b) exec
c) ioctl
d) longjmp

Answer: b
.

The following program:
main()
{
if(fork()>
sleep(10;
}
results in the creation of:
a) an orphan process
b) a zombie process
c) a process that executes forever
d) None of these

Answer: b
.

Which of the following system calls transforms executable binary file into a process ?
a) fork
b) exec
c) ioctl
d) longjmp

Answer: b

The following C program :

```
main()
{
fork();fork();printf("yes");
}
```

prints yes:
a) only once
b) twice
c) four times
d) eight times

Answer: c
.

Which of the following calls never returns an error ?
a) getpid
b) fork
c) ioctl
d) open

Answer: a
.

A fork system call will fail if :
a) the previously executed statement is also a fork call.
b) the limit on the maximum number of processes in the system would be executed.
c) the limit on the maximum number of processes that can be under execution by a single user would be executed.
d) All of these

Answer: b and c
.

If a thread invokes the exec system call,
a) only the exec executes as a separate process.
b) the program specified in the parameter to exec will replace the entire process.
c) the exec is ignored as it is invoked by a thread.
d) None of these

Answer: b
.

If exec is called immediately after forking,
a) the program specified in the parameter to exec will replace the entire process.
b) all the threads will be duplicated
c) all the threads will not be duplicated
d) None of these

Answer: a and c
.

If a process does not call exec after forking,
a) the program specified in the parameter to exec will replace the entire process.
b) all the threads should be duplicated
c) all the threads should not be duplicated
d) None of these

Answer: b
Explanation: The new process is purely based on fork, due to no exec command, duplication will be done.

The model in which one kernel thread is mapped to many user-level threads is called :
a) Many to One model
b) One to Many model
c) Many to Many model
d) One to One model

Answer: a
.

The model in which one user-level thread is mapped to many kernel level threads is called :
a) Many to One model
b) One to Many model
c) Many to Many model
d) One to One model

Answer: b
.

In the Many to One model, if a thread makes a blocking system call :
a) the entire process will be blocked

b) a part of the process will stay blocked, with the rest running
c) the entire process will run
d) None of these

Answer: a
.

In the Many to One model, multiple threads are unable to run in parallel on multiprocessors because :
a) only one thread can access the kernel at a time
b) many user threads have access to just one kernel thread
c) there is only one kernel thread
d) None of these

Answer: a
.

The One to One model allows :
a) increased concurrency
b) decreased concurrency
c) increased or decreased concurrency
d) concurrency equivalent to other models

Answer: a
.

In the One to One model when a thread makes a blocking system call :
a) other threads are strictly prohibited from running
b) other threads are allowed to run
c) other threads only from other processes are allowed to run
d) None of these

Answer: b
.

Which of the following is the drawback of the One to One Model ?
a) increased concurrency provided by this model
b) decreased concurrency provided by this model
c) creating so many threads at once can crash the system
d) creating a user thread requires creating the corresponding kernel thread

Answer: d
.

When is the Many to One model at an advantage ?
a) When the program does not need multi-threading
b) When the program has to be multi-threaded
c) When there is a single processor
d) None of these

Answer: a
.

In the Many to Many model true concurrency cannot be gained because :
a) the kernel can schedule only one thread at a time
b) there are too many threads to handle
c) it is hard to map threads with each other
d) None of these

Answer: a
.

1 In the Many to Many model when a thread performs a blocking system call :
a) other threads are strictly prohibited from running
b) other threads are allowed to run
c) other threads only from other processes are allowed to run
d) None of these

Answer: b

A thread is also called :
a) Light Weight Process(LWP)
b) Heavy Weight Process(HWP)
c) Process
d) None of these

Answer: a
.

A thread shares its resources(like data section, code section, open files, signals) with :
a) other process similar to the one that the thread belongs to

b) other threads that belong to similar processes
c) other threads that belong to the same process
d) All of these

Answer: c
.

A heavy weight process :
a) has multiple threads of execution
b) has a single thread of execution
c) can have multiple or a single thread for execution
d) None of these

Answer: b
.

A process having multiple threads of control implies :
a) it can do more than one task at a time
b) it can do only one task at a time, but much faster
c) it has to use only one thread per process
d) None of these

Answer: a
.

Multithreading an interactive program will increase responsiveness to the user by :
a) continuing to run even if a part of it is blocked
b) waiting for one part to finish before the other begins
c) asking the user to decide the order of multithreading
d) None of these

Answer: a
.

Resource sharing helps :
a) share the memory and resources of the process to which the threads belong.
b) an application have several different threads of activity all within the same address space
c) reduce the address space that a process could potentially use
d) All of these

Answer: d
.

Multithreading on a multi – CPU machine :
a) decreases concurrency
b) increases concurrency
c) doesnt affect the concurrency
d) can increase or decrease the concurrency

Answer: b
.

The kernel is _____ of user threads.
a) a part of
b) the creator of
c) unaware of
d) aware of

Answer: c
.

If the kernel is single threaded, then any user level thread performing a blocking system call will :
a) cause the entire process to run along with the other threads
b) cause the thread to block with the other threads running
c) cause the entire process to block even if the other threads are available to run
d) None of these

Answer: c
.

1 Because the kernel thread management is done by the Operating System itself :
a) kernel threads are faster to create than user threads
b) kernel threads are slower to create than user threads
c) kernel threads are easier to manage as well as create then user threads
d) None of these

Answer: b
.

1 If a kernel thread performs a blocking system call, _____.
a) the kernel can schedule another thread in the application for execution.

b) the kernel cannot schedule another thread in the same application for execution.
c) the kernel must schedule another thread of a different application for execution.
d) the kernel must schedule another thread of the same application on a different processor.

Answer: a
.

1 Which of the following is FALSE ? (GATE 200
a) Context switch time is longer for kernel level threads than for user level threads
b) User level threads do not need any hardware support
c) Related kernel level threads can be scheduled on different processors in a multiprocessor system
d) Blocking one kernel level thread blocks all other related threads

Answer: d

Which one of the following is not shared by threads?
a) program counter
b) stack
c) both (a) and (b)
d) none of the mentioned

Answer:c
.

A process can be
a) single threaded
b) multithreaded
c) both (a) and (b)
d) none of the mentioned

Answer:c
.

If one thread opens a file with read privileges then
a) other threads in the another process can also read from that file
b) other threads in the same process can also read from that file
c) any other thread can not read from that file

d) all of the mentioned

Answer:b
.

The time required to create a new thread in an existing process is
a) greater than the time required to create a new process
c) less than the time required to create a new process
c) equal to the time required to create a new process
d) none of the mentioned

Answer:b
.

When the event for which a thread is blocked occurs,
a) thread moves to the ready queue
b) thread remains blocked
c) thread completes
d) a new thread is provided

Answer:a
.

The jacketing technique is used to
a) convert a blocking system call into nonblocking system call
b) create a new thread
c) communicate between threads
d) terminate a thread

Answer:a
.

Termination of the process terminates
a) first thread of the process
b) first two threads of the process
c) all threads within the process
d) no thread within the process

Answer:c
.

Which one of the following is not a valid state of a thread?
a) running
b) parsing
c) ready
d) blocked

Answer:b
.

The register context and stacks of a thread are deallocated when the thread
a) terminates
b) blocks
c) unblocks
d) spawns

Answer:a
.

1 Thread synchronization is required because
a) all threads of a process share the same address space
b) all threads of a process share the same global variables
c) all threads of a process can share the same files
d) all of the mentioned

Answer:d

The wait-for graph is a deadlock detection algorithm that is applicable when :
a) all resources have a single instance
b) all resources have multiple instances
c) both a and b

Answer: a
.

An edge from process Pi to Pj in a wait for graph indicates that :
a) Pi is waiting for Pj to release a resource that Pi needs
b) Pj is waiting for Pi to release a resource that Pj needs
c) Pi is waiting for Pj to leave the system
d) Pj is waiting for Pi to leave the system

Answer: a
.

If the wait for graph contains a cycle :
a) then a deadlock does not exist
b) then a deadlock exists
c) then the system is in a safe state
d) either b or c

Answer: b
.

If deadlocks occur frequently, the detection algorithm must be invoked _____.
a) rarely
b) frequently
c) None of these

Answer: b
.

The disadvantage of invoking the detection algorithm for every request is :
a) overhead of the detection algorithm due to consumption of memory
b) excessive time consumed in the request to be allocated memory
c) considerable overhead in computation time
d) All of these

Answer: c
.

A deadlock eventually cripples system throughput and will cause the CPU utilization to _____.
a) increase
b) drop
c) stay still
d) None of these

Answer: b
.

Every time a request for allocation cannot be granted immediately, the detection algorithm is invoked. This will help identify : (choose all that apply)
a) the set of processes that have been deadlocked

b) the set of processes in the deadlock queue
c) the specific process that caused the deadlock
d) All of these

Answer: a and c
.

A computer system has 6 tape drives, with ‘n’ processes competing for them. Each process may need 3 tape drives. The maximum value of ‘n’ for which the system is guaranteed to be deadlock free is :
a) 2
b) 3
c) 4
d) 1

Answer: a
.

A system has 3 processes sharing 4 resources. If each process needs a maximum of 2 units then, deadlock :
a) can never occur
b) may occur
c) has to occur
d) None of these

Answer: a
.

1 ‘m’ processes share ‘n’ resources of the same type. The maximum need of each process doesn’t exceed ‘n’ and the sum of all their maximum needs is always less than m+n. In this setup, deadlock :
a) can never occur
b) may occur
c) has to occur
d) None of these

Answer: a

Each request requires that the system consider the _____, _____, _____ to decide whether the current request can be satisfied or must wait to

avoid a future possible deadlock. (choose three)
a) resources currently available
b) processes that have previously been in the system
c) resources currently allocated to each process
d) future requests and releases of each process

Answer: a, c and d
.

Given a priori information about the _____ number of resources of each type that maybe requested for each process, it is possible to construct an algorithm that ensures that the system will never enter a deadlock state.
a) minimum
b) average
c) maximum
d) approximate

Answer: c
.

A deadlock avoidance algorithm dynamically examines the _____, to ensure that a circular wait condition can never exist.
a) resource allocation state
b) system storage state
c) operating system
d) resources

Answer: a
.

A state is safe, if :
a) the system does not crash due to deadlock occurrence
b) the system can allocate resources to each process in some order and still avoid a deadlock
c) the state keeps the system protected and safe
d) All of these

Answer: b
.

A system is in a safe state only if there exists a :
a) safe allocation

b) safe resource
c) safe sequence
d) All of these

Answer: c
.

All unsafe states are :
a) deadlocks
b) not deadlocks
c) fatal
d) None of these

Answer: b
.

A system has 12 magnetic tape drives and 3 processes : P0, P1, and P Process P0 requires 10 tape drives, P1 requires 4 and P2 requires 9 tape drives.

Process
P0
P1
P2

Maximum needs (process-wise : P0 through P2 top to bottom)
10
4
9

Currently allocated (process-wise)
5
2
2

Which of the following sequence is a safe sequence ?
a) P0, P1, P2
b) P1, P2, P0
c) P2, P0, P1
d) P1, P0, P2

Answer: d
.

If no cycle exists in the resource allocation graph :
a) then the system will not be in a safe state
b) then the system will be in a safe state
c) either a or b
d) None of these

Answer: b
.

The resource allocation graph is not applicable to a resource allocation system :
a) with multiple instances of each resource type
b) with a single instance of each resource type
c) Both a and b

Answer: a
.

1 The Banker's algorithm is _____ than the resource allocation graph algorithm.
a) less efficient
b) more efficient
c) None of these

Answer: a
.

1 The data structures available in the Banker's algorithm are : (choose all that apply)
a) Available
b) Need
c) Allocation
d) Maximum
e) Minimum
f) All of these

Answer: a,b,c,d
.

1 The content of the matrix Need is :
a) Allocation – Available
b) Max – Available
c) Max – Allocation

d) Allocation – Max

Answer: c

.

1 A system with 5 processes P0 through P4 and three resource types A, B, C has A with 10 instances, B with 5 instances, and C with 7 instances. At time t0, the following snapshot has been taken :

Process
P0
P1
P2
P3
P4

Allocation (process-wise : P0 through P4 top to bottom)
A B C
0 1 0
2 0 0
3 0 2
2 1 1
0 0 2

Max (process-wise : P0 through P4 top to bottom)
A B C
7 5 3
3 2 2
9 0 2
2 2 2
4 3 3

Available
A B C
3 3 2
The sequence leads the system to :
a) an unsafe state
b) a safe state
c) a protected state
d) a deadlock

Answer: b

I/O hardware contains
a) bus
b) controller
c) I/O port and its registers
d) all of the mentioned

Answer:d
.

The data-in register of I/O port is
a) read by host to get input
b) read by controller to get input
c) written by host to send output
d) written by host to start a command

Answer:a
.

The host sets _____ bit when a command is avialable a command is avialable for the controller to execute.
a) write
b) status
c) command-ready
d) control

Answer:c
.

When hardware is accessed by reading and writing to the specific memory locations, then it is called
a) port-mapped I/O
b) controller-mapped I/O
c) bus-mapped I/O
d) none of the mentioned

Answer:d
Explanation:It is called memory-mapped I/O.

Device drivers are implemented to interface
a) character devices
b) block devices
c) network devices

d) all of the mentioned

Answer:d
.

Which hardware triggers some operation after certain programmed count?
a) programmable interval timer
b) interrupt timer
c) programmable timer
d) none of the mentioned

Answer:a
.

The device-status table contains
a) each I/O device type
b) each I/O device address
c) each I/O device state
d) all of the mentioned

Answer:d
.

Which buffer holds the output for a device?
a) spool
b) output
c) status
d) magic

Answer:a
.

Which one of the following connects high-speed high-bandwidth device to memory subsystem and CPU.
a) expansion bus
b) PCI bus
c) SCSI bus
d) none of the mentioned

Answer:a
.

1 A process is moved to wait queue when I/O request is made with
a) non-blocking I/O
b) blocking I/O
c) asynchronous I/O
d) synchronous I/O

Answer:b

The NFS servers :
a) are stateless
b) save the current state of the request
c) maybe stateless
d) None of these

Answer : a
.

Every NFS request has a _____, allowing the server to determine if a request is duplicated or if any are missing.
a) name
b) transaction
c) sequence number
d) All of these

Answer : c
.

A server crash and recovery will _____ to a client.
a) be visible
b) affect
c) be invisible
d) harm

Answer : c
Explanation: All blocks that the server is managing for the client will be intact.

The server must write all NFS data _____.
a) synchronously
b) asynchronously
c) index-wise

d) None of these

Answer : a
.

A single NFS write procedure :
a) can be atomic
b) is atomic
c) is non atomic
d) None of these

Answer : b
.

The NFS protocol, _____ concurrency control mechanisms.
a) provides
b) does not provide
c) may provide
d) None of these

Answer : b
.

_____ in NFS involves the parsing of a path name into seperate directory entries – or components.
a) Path parse
b) Path name parse
c) Path name translation
d) Path name parsing

Answer : c
.

For every pair of component and directory vnode after path name translation :
a) a single NFS lookup call is used sequentially
b) a single NFS lookup call is used beginning from the last component
c) atleast two NFS lookup calls per component are performed
d) a seperate NFS lookup call is performed

Answer : d
.

When a client has a cascading mount, _____ server(s) is/are involved in a path name traversal.
a) atleast one
b) more than one
c) more than two
d) more than three

Answer : b

A machine in Network file system (NFS) can be _____.
a) client
b) server
c) both a and b
d) neither a nor b

Answer : c
.

A _____ directory is mounted over a directory of a _____ file system.
a) local, remote
b) remote, local
c) None of these

Answer : c
.

The _____ becomes the name of the root of the newly mounted directory.
a) root of the previous directory
b) local directory
c) remote directory itself
d) None of these

Answer : b
.

_____ mounts, is when a file system can be mounted over another file system, that is remotely mounted, not local.
a) recursive
b) cascading

c) trivial
d) None of these

Answer : b
.

The mount mechanism _____ a transitive property.
a) exhibits
b) does not exhibit
c) may exhibit
d) None of these

Answer : b
Explanation: Mounting a remote file system does not give the client access to other file systems that were, by chance, mounted over the former file system.

A mount operation includes the : (choose all that apply)
a) name of the network
b) name of the remote directory to be mounted
c) name of the server machine storing it
d) All of these

Answer : b and c
.

The mount request is mapped to the corresponding _____ and is forwarded to the mount server running on the specific server machine.
a) IPC
b) system
c) CPU
d) RPC

Answer : b
.

The server maintains a/an _____ that specifies local file systems that it exports for mounting, along with names of machines that are permitted to mount them.
a) export list
b) import list
c) sending list
d) receiving list

Answer : a
.

In UNIX, the file handle consists of a _____ and _____.
a) file-system identifier
b) an inode number
c) a FAT
d) a file pointer

Answer : a and b

Some directory information is kept in main memory or cache to _____.
a) fill up the cache
b) increase free space in secondary storage
c) decrease free space in secondary storage
d) speed up access

Answer : d
.

A systems program such as fsck in _____ is a consistency checker.
a) UNIX
b) Windows
c) Macintosh
d) Solaris

Answer : a
.

A consistency checker _____ and tries to fix any inconsistencies it finds.
a) compares the data in the secondary storage with the data in the cache
b) compares the data in the directory structure with the data blocks on disk
c) compares the system generated output and user required output
d) All of these

Answer : b
.

Each set of operations for performing a specific task is a _____.
a) program

b) code
c) transaction
d) All of these

Answer : c
.

Once the changes are written to the log, they are considered to be _____.
a) committed
b) aborted
c) completed
d) None of these

Answer : a
.

When an entire committed transaction is completed, _____.
a) it is stored in the memory
b) it is removed from the log file
c) it is redone
d) None of these

Answer : b
.

A circular buffer :
a) writes to the end of its space and then continues at the beginning
b) overwrites older values as it goes
c) both a and b
d) neither a nor b

Answer : c
.

All the changes that were done from a transaction that did not commit before the system crashed, have to be _____.
a) saved
b) saved and the transaction redone
c) undone
d) None of these

Answer : c

Reliability of files can be increased by :
a) keeping the files safely in the memory
b) making a different partition for the files
c) by keeping them in external storage
d) by keeping duplicate copies of the file

Answer: d
.

Protection is only provided at the _____ level.
a) lower
b) central
c) higher
d) None of these

Answer: a
.

The main problem with access control lists is :
a) their maintenance
b) their length
c) their permissions
d) All of these

Answer: b
.

Many systems recognize three classifications of users in connection with each file (to condense the access control list) :
a) Owner
b) Group
c) Sub-owner
d) Universe

Answer: a, b and d
.

All users in a group get _____ access to a file.
a) different
b) similar
c) None of these

Answer: b
.

Universe consists of :
a) all users that arent included in the group or owners
b) all users that are not owners
c) all users in the system
d) None of these

Answer: c
.

In UNIX, groups can be created and modified by :
a) superuser
b) any user
c) a programmer only
d) the people in the group only

Answer: a
.

To control access the three bits used in UNIX are represented by :
a) r
b) w
c) ex
d) x

Answer: a, b, d
.

If each access to a file is controlled by a password, then the disadvantage is that :
a) user will need to remember a lot of passwords
b) it is not reliable
c) it is not efficient
d) All of these

Answer: a
.

1 In a multilevel directory structure :
a) the same previous techniques will be used as in the other structures
b) a mechanism for directory protection will have to applied
c) the subdirectories do not need protection once the directory is protected
d) None of these

Answer: b
.

1 In UNIX, the directory protection is handled _____ to the file protection.
a) different
b) similar
c) it is not handled at all
d) None of these

Answer: b
.

1 Disks are segmented into one or more partitions, each containing a file system or _____.
a) left ‘raw’
b) made into swap space
c) made into backup space
d) left ‘ripe’

Answer: a

A mount point is :
a) an empty directory at which the mounted file system will be attached
b) a location where everytime file systems are mounted
c) is the time when the mounting is done
d) None of these

Answer: a
.

When a file system is mounted over a directory that is not empty : (choose all that apply)
a) the system may disallow the mount
b) the system must allow the mount

c) the system may allow the mount and the directory's existing files will then be made obscure
d) All of these

Answer: a and c

.

In UNIX, exactly which operations can be executed by group members and other users is definable by :
a) the group's head
b) the file's owner
c) the file's permissions
d) All of these

Answer: b

.

A process _____ lower the priority of another process, if both are owned by the same owner.
a) must
b) can
c) cannot
d) None of these

Answer: b

.

In distributed file system, _____ directories are visible from the local machine.
a) protected
b) local
c) private
d) remote

Answer: d

.

In the world wide web, a ____ is needed to gain access to the remote files, and seperate operations are used to transfer files.
a) laptop
b) plugin
c) browser

d) player

Answer: c
.

Anonymous access allows a user to transfer files :
a) without having an account on the remote system
b) only if he accesses the system with a guest account
c) only if he has an account on the remote system
d) None of these

Answer: a
Explanation: The world wide web uses anonymous file exchange almost exclusively.

The machine containing the files is the _____, and the machine wanting to access the files is the _____.
a) master, slave
b) memory, user
c) server, client
d) None of these

Answer: c
.

Distributed naming services/Distributed information systems have been devised to :
a) provide information about all the systems
b) provide unified access to the information needed for remote computing
c) provide unique names to all systems in a network
d) All of these

Answer: b
.

1 Domain name system provides :
a) host-name-to-network-address translations for the entire internet
b) network-address-to-host-name translations for the entire internet
c) binary to hex translations for the entire internet
d) All of these

Answer: a
.

1 To recover from failures in the network operations, _____ information maybe maintained.
a) ip address
b) state
c) stateless
d) operating system

Answer: b
.

1 The series of accesses between the open and close operations is a :
a) transaction
b) procedure
c) program
d) file session

Answer: d

An absolute path name begins at the :
a) leaf
b) stem
c) current directory
d) root

Answer : d
.

A relative path name begins at the :
a) leaf
b) stem
c) current directory
d) root

Answer : c
.

In tree structure, when deleting a directory that is not empty :
a) The contents of the directory are safe
b) The contents of the directory are also deleted
c) None of these

Answer : b
.

When two users keep a subdirectory in their own directories, the structure being referred to is :
a) tree structure
b) cyclic graph directory structure
c) two level directory structure
d) acyclic graph directory

Answer : d
.

A tree structure _____ the sharing of files and directories.
a) allows
b) may restrict
c) restricts
d) None of these

Answer : c
.

With a shared file : (choose two)
a) only one actual file exists
b) there are two copies of the file
c) the changes made by one person are not reflected to the other
d) the changes made by one person are reflected to the other

Answer : a and d
.

In UNIX, a link is : (choose all that apply)
a) a connection between two files
b) a pointer to another file or subdirectory
c) implemented as an absolute or relative path name
d) a directory entry

Answer : b, c and d
.

The operating system _____ the links when traversing directory trees, to preserve the acyclic structure of the system.

a) considers
b) ignores
c) deletes
d) None of these

Answer : b
.

The deletion of a link, _____ the original file.
a) deletes
b) affects
c) does not affect
d) None of these

Answer : c
.

1 When keeping a list of all the links/references to a file, and the list is empty, implies that :
a) the file has no copies
b) the file is deleted
c) the file is hidden
d) None of these

Answer : b
.

1 When a cycle exists, the reference count maybe non zero, even when it is no longer possible to refer to a directory or file, due to _____.
a) the possibility of one hidden reference
b) the possibility of two hidden references
c) the possibility of self referencing
d) None of these

Answer : c

To organise file systems on disk, :
a) they are split into one or more partitions
b) information about files is added to each partition
c) they are made on different storage spaces
d) All of these

Answer: a and b

.

The directory can be viewed as a _____, that translates file names into their directory entries.
a) symbol table
b) partition
c) swap space
d) cache

Answer: a

.

In the single level directory :
a) All files are contained in different directories all at the same level
b) All files are contained in the same directory
c) Depends on the operating system
d) None of these

Answer: b

.

In the single level directory :
a) all directories must have unique names
b) all files must have unique names
c) all files must have unique owners
d) All of these

Answer: b

.

In the two level directory structure :
a) each user has his/her own user file directory
b) the system has its own master file directory
c) both a and b
d) None of these

Answer: c

.

When a user job starts in a two level directory system, or a user logs in :
a) the users user file directory is searched

b) the system's master file directory is searched
c) the master file directory is indexed by user name or account number, and each entry points to the UFD for that user
d) All of these

Answer: b and c

.

When a user refers to particular file, :
a) system MFD is searched
b) his own UFD is searched
c) both MFD and UFD are searched
d) every directory is searched

Answer: b and c

.

The disadvantage of the two level directory structure is that :
a) it does not solve the name collision problem
b) it solves the name collision problem
c) it does not isolate users from one another
d) it isolates users from one another

Answer : d

.

In the tree structured directories,
a) the tree has the stem directory
b) the tree has the leaf directory
c) the tree has the root directory
d) All of these

Answer : c

.

1 The current directory contains, most of the files that are :
a) of current interest to the user
b) stored currently in the system
c) not used in the system
d) not of current interest to the system

Answer : a
.

1 Path names can be of two types : (choose two)
a) absolute
b) local
c) global
d) relative

Answer : a and d

The UNIX sytem uses a/an _____, stored at the beginning of a some files to indicate roughly the type of file.
a) identifier
b) extension
c) virtual number
d) magic number

Answer: d
.

The larger the block size, the _____ the internal fragmentation.
a) greater
b) lesser
c) same
d) None of these

Answer: a
.

In the sequential access method, information in the file is processed :
a) one disk after the other, record access doesnt matter
b) one record after the other
c) one text document after the other
d) None of these

Answer: b
.

Sequential access method _____ , on random access devices.
a) works well
b) doesnt work well

c) Both a and b
d) None of these

Answer: a
.

The direct access method is based on a _____ model of a file, as _____ allow random access to any file block.
a) magnetic tape, magnetic tapes
b) tape, tapes
c) disk, disks
d) All of these

Answer: c
.

For a direct access file :
a) there are restrictions on the order of reading and writing
b) there are no restrictions on the order of reading and writing
c) access is restricted permission wise
d) access is not restricted permission wise

Answer: b
.

A relative block number is an index relative to :
a) the beginning of the file
b) the end of the file
c) the last written position in file
d) None of these

Answer: a
.

The index contains :
a) names of all contents of file
b) pointers to each page
c) pointers to the various blocks
d) All of these

Answer: c
.

When for large files, the index itself becomes too large to be kept in memory :
a) IBM is called
b) an index is created for the index file
c) secondary index files are created
d) All of these

Answer: b

Data cannot be written to secondary storage unless written within a _____.
a) file
b) swap space
c) directory
d) text format

Answer: a
.

File attributes consist of :
a) name
b) type
c) identifier
d) content
e) size

Answer: a, b, c, e
.

The information about all files is kept in :
a) swap space
b) operating system
c) seperate directory structure
d) None of these

Answer: c
.

A file is a/an _____ data type.
a) abstract
b) primitive

c) public
d) private

Answer: a
.

The operating system keeps a small table containing information about all open files called :
a) system table
b) open-file table
c) file table
d) directory table

Answer: b
.

In UNIX, the open system call returns :
a) pointer to the entry in the open file table
b) pointer to the entry in the system wide table
c) a file to the process calling it
d) None of these

Answer: a
.

System wide table in UNIX contains process independent information such as :
a) location of file on disk
b) access dates
c) file size
d) file contents

Answer: a, b, c
.

The open file table has a/an _____ associated with each file.
a) file content
b) file permission
c) open count
d) close count

Answer: c
Explanation: open count indicates the number of processes that have the file open.

The file name is generally split into two parts :
a) name
b) identifier
c) extension
d) type

Answer: a and c

Management of metadata information is done by
a) file-organisation module
b) logical file system
c) basic file system
d) application programs

Answer:b
.

A file control block contains the information about
a) file ownership
b) file permissions
c) location of file contents
d) all of the mentioned

Answer:d
.

Which table contains the information about each mounted volume?
a) mount table
b) system-wide open-file table
c) per-process open-file table
d) all of the mentioned

Answer:d
.

To create a new file application program calls
a) basic file system
b) logical file system
c) file-organisation module
d) none of the mentioned

Answer:b
.

When a process closes the file
a) per-process table entry is removed
b) system wide entry's open count is decremented
c) both (a) and (b)
d) none of the mentioned

Answer:c
.

What is raw disk?
a) disk without file system
b) empty disk
c) disk lacking logical file system
d) disk having file system

Answer:a
.

The data structure used for file directory is called
a) mount table
b) hash table
c) file table
d) process table

Answer:b
.

In which type of allocation method each file occupy a set of contiguous block on the disk?
a) contiguous allocation
b) dynamic-storage allocation
c) linked allocation

d) indexed allocation

Answer:a
.

If the block of free-space list is free then bit will
a) 1
b) 0
c) both 0 and a can be possible
d) none of the mentioned

Answer:a
.

1 Which protocol establishes the initial logical connection between a server and a client?
a) transmission control protocol
b) user datagram protocol
c) mount protocol
d) datagram congestion control protocol

Answer:c

_____ is a unique tag, usually a number, identifies the file within the file system.
a) File identifier
b) File name
c) File type
d) none of the mentioned

Answer:a
.

To create a file
a) allocate the space in file system
b) make an entry for new file in directory
c) both (a) and (b)
d) none of the mentioned

Answer:c
.

By using the specific system call, we can
a) open the file
b) read the file
c) write into the file
d) all of the mentioned

Answer:d
.

File type can be represented by
a) file name
b) file extension
c) file identifier
d) none of the mentioned

Answer:b
.

Which file is a sequence of bytes organized into blocks understandable by the system's linker?
a) object file
b) source file
c) executable file
d) text file

Answer:a
.

What is the mounting of file system?
a) crating of a filesystem
b) deleting a filesystem
c) attaching portion of the file system into a directory structure
d) removing portion of the file system into a directory structure

Answer:c
.

Mapping of file is managed by
a) file metadata
b) page table
c) virtual memory

d) file system

Answer:a

.

Mapping of network file system protocol to local file system is done by
a) network file system
b) local file system
c) volume manager
d) remote mirror

Answer:a

.

Which one of the following explains the sequential file access method?
a) random access according to the given byte number
b) read bytes one at a time, in order
c) read/write sequentially by record
d) read/write randomly by record

Answer:b

.

1 file system fragmentation occurs when
a) unused space or single file are not contiguous
b) used space is not contiguous
c) unused space is non-contiguous
d) multiple files are non-contiguous

Answer:a

A process is thrashing if :
a) it spends a lot of time executing, rather than paging
b) it spends a lot of time paging, than executing
c) it has no memory allocated to it
d) None of these

Answer: b

.

Thrashing _____ the CPU utilization.
a) increases
b) keeps constant
c) decreases
d) None of these

Answer: c
.

A locality is :
a) a set of pages that are actively used together
b) a space in memory
c) an area near a set of processes
d) None of these

Answer: a
.

When a subroutine is called,
a) it defines a new locality
b) it is in the same locality from where it was called
c) it does not define a new locality
d) b and c

Answer: a
.

A program is generally composed of several different localities, which _____ overlap.
a) may
b) must
c) do not
d) must not

Answer: a
.

In the working set model, for :
2 6 1 5 7 7 7 7 5 1 6 2 3 4 1 2 3 4 4 4 3 4 3 4 4 4 1 3 2 3
if DELTA = 10, then the working set at time t1 (….7 5 is :
a) {1, 2, 4, 5, 6}
b) {2, 1, 6, 7, 3}
c) {1, 6, 5, 7, 2}

d) {1, 2, 3, 4, 5}

Answer: c
.

The accuracy of the working set depends on the selection of :
a) working set model
b) working set size
c) memory size
d) number of pages in memory

Answer: b
.

If working set window is too small :
a) it will not encompass entire locality
b) it may overlap several localities
c) it will cause memory problems
d) None of these

Answer: a
.

If working set window is too large :
a) it will not encompass entire locality
b) it may overlap several localities
c) it will cause memory problems
d) None of these

Answer: b
.

1 If the sum of the working – set sizes increases, exceeding the total number of available frames :
a) then the process crashes
b) the memory overflows
c) the system crashes
d) the operating system selects a process to suspend

Answer: d
.

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 For LRU page replacement algorithm with 4 frames, the number of page faults is :
a) 10
b) 14
c) 8
d) 11

Answer: a
.

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 For LRU page replacement algorithm with 5 frames, the number of page faults is :
a) 10
b) 14
c) 8
d) 11

Answer: c
.

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 For FIFO page replacement algorithms with 3 frames, the number of page faults is :
a) 16
b) 15
c) 14
d) 11

Answer: a
.

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 For FIFO page replacement algorithms with 4 frames, the number of page faults is :
a) 16
b) 15
c) 14
d) 11

Answer: c

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 For Optimal page replacement algorithms with 3 frames, the number of page faults is : {~ 16 ~ 15 ~ 14 = 11}

Consider the following page reference string :
1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 For Optimal page replacement algorithms with 5 frames, the number of page faults is : {~ 6 = 7 ~ 10 ~ 9}

Because of virtual memory, the memory can be shared among
a) processes
b) threads
c) instructions
d) none of the mentioned

Answer:a
Explanation:None.

_____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.
a) Paging
b) Demand paging
c) Segmentation
d) Swapping

Answer:b
Explanation:None.

The pager concerns with the
a) individual page of a process
b) entire process
c) entire thread
d) first page of a process

Answer:a
Explanation:None.

Swap space exists in
a) primary memory
b) secondary memory
c) CPU

d) none of the mentioned

Answer:b
Explanation:None.

When a program tries to access a page that is mapped in address space but not loaded in physical memory, then
a) segmentation fault occurs
b) fatal error occurs
c) page fault occurs
d) no error occurs

Answer:c
Explanation:None.

Effective access time is directly proportional to
a) page-fault rate
b) hit ratio
c) memory access time
d) none of the mentioned

Answer:a
Explanation:None.

In FIFO page replacement algorithm, when a page must be replaced
a) oldest page is chosen
b) newest page is chosen
c) random page is chosen
d) none of the mentioned

Answer:a
Explanation:None.

Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?
a) first in first out algorithm
b) additional reference bit algorithm
c) least recently used algorithm
d) counting based page replacement algorithm

Answer:c
Explanation:None.

A process is thrashing if
a) it is spending more time paging than executing
b) it is spending less time paging than executing
c) page fault occurs
d) swapping can not take place

Answer:a
Explanation:None.

1 Working set model for page replacement is based on the assumption of
a) modularity
b) locality
c) globalization
d) random access

Answer:b

Virtual memory allows :
a) execution of a process that may not be completely in memory
b) a program to be larger than the physical memory
c) a program to be larger than the secondary storage
d) execution of a process without being in physical memory

Answer: a and b
.

The instruction being executed, must be in :
a) physical memory
b) logical memory
c) None of these

Answer: a
.

Error handler codes, to handle **unusual** errors are :
a) almost never executed
b) executed very often
c) executed periodically
d) None of these

Answer: a
.

The ability to execute a program that is only partially in memory has benefits like : (choose all that apply)
a) the amount of physical memory cannot put a constraint on the program
b) programs for an extremely large virtual space can be created
c) CPU utilization decreases
d) Throughput increases
e) response time is not affected
f) turnaround time increases
g) less I/O will be needed to load or swap each user program in memory
h) All of these

Answer: a, b, d, e, g
.

In virtual memory. the programmer _____ of overlays.
a) has to take care
b) does not have to take care
c) None of these

Answer: b
.

Virtual memory is normally implemented by _____.
a) demand paging
b) buses
c) virtualization
d) All of these

Answer: a
.

Segment replacement algorithms are more complex than page replacement algorithms because :

a) Segments are better than pages
b) Pages are better than segments
c) Segments have variable sizes
d) Segments have fixed sizes

Answer: c
.

A swapper manipulates _____, whereas the pager is concerned with individual _____ of a process.
a) the entire process, parts
b) all the pages of a process, segments
c) the entire process, pages
d) None of these

Answer: c
.

Using a pager :
a) increases the swap time
b) decreases the swap time
c) decreases the amount of physical memory needed
d) increases the amount of physical memory needed

Answer: b and c
.

1 The valid – invalid bit, in this case, when valid indicates :
a) the page is legal
b) the page is illegal
c) the page is in memory
d) the page is not in memory

Answer: a and c
.

1 A page fault occurs when :
a) a page gives inconsistent data
b) a page cannot be accesses due to its absence from memory
c) a page is invisible
d) All of these

Answer: b
.

1 When a page fault occurs, the state of the interrupted process is :
a) disrupted
b) invalid
c) saved
d) None of these

Answer: c
.

1 When a process begins execution with no pages in memory :
a) process execution becomes impossible
b) a page fault occurs for every page brought into memory
c) process causes system crash
d) None of these

Answer: b
.

1 If the memory access time is denoted by ‘ma’ and ‘p’ is the probability of a page fault (0 <= p <= . Then the effective access time for a demand paged memory is :
a) p x ma + (1-p) x page fault time
b) ma + page fault time
c) (1-p) x ma + p x page fault time
d) None of these

Answer: c
.

1 When the page fault rate is low :
a) the turnaround time increases
b) the effective access time increases
c) the effective access time decreases
d) a and b

Answer: c
.

1 Locality of reference implies that the page reference being made by a process :
a) will always be to the page used in the previous page reference

b) is likely to be one of the pages used in the last few page references
c) will always be one of the pages existing in memory
d) will always lead to page faults

Answer: b

Which of the following page replacement algorithms suffers from Belady's Anomaly ?
a) Optimal replacement
b) LRU
c) FIFO
d) Both optimal replacement and FIFO

Answer: c
.

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 page transfers with an empty internal store of 3 frames is :
a) 8
b) 10
c) 9
d) 7

Answer: c
.

In question 2, if the number of page frames is increased to 4, then the number of page transfers :
a) decreases
b) increases
c) remains the same
d) None of these

Answer: b
.

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 these

Answer: c
.

A virtual memory system uses First In First Out (FIFO) page replacement policy and allocates a fixed number of frames to a process. Consider the following statements :
P : Increasing the number of page frames allocated to a process sometimes increases the page fault rate
Q : Some programs do not exhibit locality of reference
Which of the following is TRUE?
a) Both P and Q are true, and Q is the reason for P
b) Both P and Q are true, but Q is not the reason for P
c) P is false but Q is true
d) Both P and Q are false

Answer: c
.

Users _____ that their processes are running on a paged system.
a) are aware
b) are unaware
c) None of these

Answer: b
.

If no frames are free, _____ page transfer(s) is/are required.
a) one
b) two
c) three
d) four

Answer: b
.

When a page is selected for replacement, and its modify bit is set :
a) the page is clean
b) the page has been modified since it was read in from the disk
c) the page is dirty
d) a and b

Answer: b and c

.

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

Answer: c

.

1 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 these

Answer: a

.

1 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 these

Answer: c

.

1 Optimal page – replacement algorithm is difficult to implement, because :
a) it requires a lot of information
b) it requires future knowledge of the reference string
c) it is too complex
d) it is extremely expensive

Answer: b

.

1 LRU page – replacement algorithm associates with each page the _____
a) time it was brought into memory
b) the time of that page's last use

c) page after and before it
d) All of these

Answer: b
.

1 For 3 page frames, the following is the reference string :
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
i) How many page faults does the LRU page replacement algorithm produce ?
a) 10
b) 15
c) 11
d) 12

Answer: d
.

ii) How many page faults does the FIFO page replacement algorithm produce ?
a) 10
b) 15
c) 11
d) 12

Answer: b
.

1 The two methods how LRU page replacement policy can be implemented in hardware are : (choose two)
a) Counters
b) RAM
c) Stack
d) Registers

Answer: a and c

When using counters to implement LRU, we replace the page with the :
a) smallest time value
b) largest time value
c) greatest size
d) None of the mentioned

Answer: a
Explanation: Whenever a reference to a page is made, the contents of the clock register are copied into the time-of-use field in the page-table entry for that page. In this way we always have the time of the last reference to each page.

In the stack implementation of the LRU algorithm, a stack can be maintained in a manner :
a) whenever a page is used, it is removed from the stack and put on top
b) the bottom of the stack is the LRU page
c) the top of the stack contains the LRU page and all new pages are added to the top
d) None of the mentioned

Answer: a and b
.

There is a set of page replacement algorithms that can never exhibit Belady's Anomaly, called :
a) queue algorithms
b) stack algorithms
c) string algorithms
d) None of the mentioned

Answer: b
.

Applying the LRU page replacement to the following reference string :
1 2 4 5 2 1 2 4
The main memory can accommodate 3 pages and it already has pages 1 and Page 1 came in before page
How many page faults will occur ?
a) 2
b) 3
c) 4
d) 5

Answer: c
.

Increasing the RAM of a computer typically improves performance because:
a) Virtual memory increases
b) Larger RAMs are faster
c) Fewer page faults occur

d) None of the mentioned

Answer: c

.

The essential content(s) in each entry of a page table is / are :
a) Virtual page number
b) Page frame number
c) Both virtual page number and page frame number
d) Access right information

Answer: b

.

The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by :{= the instruction set architecture ~ page size ~ physical memory size ~ number of processes in memory}

The reason for using the LFU page replacement algorithm is :{= an actively used page should have a large reference count ~ a less used page has more chances to be used again ~ it is extremely efficient and optimal ~ All of the mentioned}

The reason for using the MFU page replacement algorithm is :{~an actively used page should have a large reference count = a less used page has more chances to be used again ~ it is extremely efficient and optimal ~ All of the mentioned}

The implementation of the LFU and the MFU algorithm is very uncommon because : {~they are too complicated ~ they are optimal = they are expensive ~ All of the mentioned}