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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

Paper Pattern

MCQS 40 each 1 mark
Short 4 each 2 marks
Short 4 each 3 marks
long 4 each 5 marks

Question No : 52 of 52 — Marks: 5 (Budgeted Time 10 Min)

Do you feel that is there any main concern about time constraint in real time operating system that a programmer must keep that in mind while writing an Operating System for a real-time environment? If not then give reason to support your answer and if yes then mention that main concern?

Answer (Please click here to Add Answer)

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Question No : 1 of 52 — Marks: 1 (Budgeted Time 1 Min)

A ----------system collects physically separate, possibly heterogeneous, systems into a single coherent system, providing the user with access to the various resources that the system maintains

Answer (Please select your correct option)

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- Distributed
- Real-time
- Single user
- Time-sharing

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Question No : 2 of 52 Marks: 1 (Budgeted Time 1 Min)

Wait and signal operations of semaphores were originally termed ----------

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Answer (Please select your correct option)

- P and V respectively.
- V and P respectively.
- P and P respectively.
- V and V respectively.

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Question No : 3 of 52 Marks: 1 (Budgeted Time 1 Min)

The total size of ---------- in a system is equal to the size of its main memory.

In this case we refer to the logical address as the **virtual address.** The set of all logical addresses generated by a program form the **logical address space** of a process; the set of all physical addresses corresponding to these logical addresses is a **physical address space** of the process. **The total size of physical address space in a system is equal to the size of its main memory**

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Answer (Please select your correct option)

- Physical address space
  Process address space
- Process address space
- Logical address space
- None of the given options

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Question No : 4 of 52 Marks: 1 (Budgeted Time 1 Min)

----------holds the smallest legal physical memory address for a process

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Answer (Please select your correct option)

- Limit register
- Index register
- Stack pointers register
- Base register

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Question No : 5 of 52 Marks: 1 (Budgeted Time 1 Min)

Physical memory is broken down into fixed-sized blocks, called---------- and Logical memory is divided into blocks of the same size, called ----------

Answer (Please select your correct option)

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- Frames, pages
- Pages, Frames
- Frames, holes
- Holes, segments

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Question No : 6 of 52 Marks: 1 (Budgeted Time 1 Min)

When a _____link is created, a directory entry for the existing file is created

Answer (Please select your correct option)

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- Soft
- Hard
- Soft or Hard
- Soft or Hard

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Question No : 7 of 52 Marks: 1 (Budgeted Time 1 Min)

In _____, each file is a linked list of disk blocks: blocks may be scattered anywhere on the disk.

Answer (Please select your correct option)

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- Indexed Allocation
- Contiguous Allocation
- Linked Allocation

page 235

- None of the given options

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Question No : 8 of 52 Marks: 1 (Budgeted Time 1 Min)

Shared libraries and kernel modules are stored in _____ directory

Answer (Please select your correct option)

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- /bin
- /dev
- /boot
- /lib

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Question No : 9 of 52 Marks: 1 (Budgeted Time 1 Min)

The integer value of _____ semaphores can not be greater than 1.

Answer (Please select your correct option)

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- Bounded buffer
- Counting
- Binary
- Mutex

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Question No : 10 of 52 Marks: 1 (Budgeted Time 1 Min)

Following is not the classical problem of synchronization.

Answer (Please select your correct option)

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- Bounded buffer problem
- Reader writer problem
- Dining philosophers problem
- Counting Semaphore problem

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Question No : 11 of 52 Marks: 1 (Budgeted Time 1 Min)

The _____ requires that no reader will be kept waiting unless a writer has already obtained permission to use the shared object.

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Answer (Please select your correct option)

- first readers-writers problem
- second readers-writers problem
- third readers-writers problem
- fourth readers-writers problem

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Question No : 12 of 52 Marks: 1 (Budgeted Time 1 Min)

The problem of Deadlocks can be solved by _____ method(s).

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Answer (Please select your correct option)

- Deadlock prevention
- Deadlock avoidance
- Allowing deadlock and recovery
- All of the given

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Question No : 13 of 52 Marks: 1 (Budgeted Time 1 Min)

A process is _____ if it is spending more time on paging

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Answer (Please select your correct option)

- Thrashing
- Demand paging
- Paging
- Fixed Allocation

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Question No : 14 of 52 Marks: 1 (Budgeted Time 1 Min)

In _____ page replacement algorithm oldest frame is replaced with another.

Answer (Please select your correct option)

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- LIFO
- FIFO
- LRU
- Optimal

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Question No : 15 of 52 Marks: 1 (Budgeted Time 1 Min)

The most important property of the working set is its _____.

Answer (Please select your correct option)

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- delay
- thrashing
- time
- size

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Question No : 16 of 52 Marks: 1 (Budgeted Time 1 Min)

Secondary Storage memory devices have _____ memory

Answer (Please select your correct option)

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- Volatile
- Non-volatile
  Non-volatile
- Temporary
  Temporary
- None of the option is correct

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Question No : 17 of 52 Marks: 1 (Budgeted Time 1 Min)

For some page replacement algorithms, the page fault rate may increase as the number of allocated frames _____.

Answer (Please select your correct option)

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- Keep Constant
- Increases
- Decreases
- All of above

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Question No : 18 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is caused due to un-used space in physical memory.

Answer (Please select your correct option)

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- Internal fragmentation
- External fragmentation
- Paging
- MVT

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Question No : 19 of 52 Marks: 1 (Budgeted Time 1 Min)

The size of a page is defined by _____

Answer (Please select your correct option)

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- CPU
- Page Table
- Physical Memory
- Logical Memory

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Question No : 20 of 52 Marks: 1 (Budgeted Time 1 Min)

In the Scan algorithm the disk _____ starts at one end of the disk, and moves toward the other end, servicing requests as it reaches each cylinder, until it gets to the other end of the disk.

Scan
In the Scan algorithm the disk arm starts at one end of the disk, and moves toward the other end, servicing requests as it reaches each cylinder, until it gets to the other end of the disk

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Answer (Please select your correct option)

- arm
- cylinder
- head
- non of these

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Question No : 21 of 52 Marks: 1 (Budgeted Time 1 Min)

In paged segmentation, we divide every segment in a process into _____ pages.

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Answer (Please select your correct option)

- Fixed size
- Variable size

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Question No : 22 of 52 Marks: 1 (Budgeted Time 1 Min)

In paged segmentation, the logical address is legal if **d** is _____segment length.

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Answer (Please select your correct option)

- Less than
- Greater than
- Equal to
- Greater than or equal to

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Question No : 23 of 52 Marks: 1 (Budgeted Time 1 Min)

Time from submission to completion of process is called ----------

Answer (Please select your correct option)

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- Response Time
- Throughput
- Waiting Time
- Turnaround Time: The interval from the time of submission to the time of completion is the

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Question No : 24 of 52 Marks: 1 (Budgeted Time 1 Min)

In case of a multi-processor environment, to ensure the atomic execution, one can

In case of a multi-processor environment, to ensure atomic execution is one can lock the data bus, or use a soft solution such as the Bakery algorithm.

Answer (Please select your correct option)

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- Lock the data bus
- Use a soft solution
- hardware instruction only
- both Lock the data bus and Use a soft solution

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Question No : 25 of 52 Marks: 1 (Budgeted Time 1 Min)

In _____ frame allocation scheme free frames are equally divided among processes

Fixed allocation
In this scheme free frames are equally divided among processes
Proportional Allocation
Number of frames allocated to a process is proportional to its size in this scheme

Answer (Please select your correct option)

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- Fixed
- Proportional
- Priority
- All of the given

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Question No : 26 of 52 Marks: 1 (Budgeted Time 1 Min)

ln –s command is used to create a _____link

Answer (Please select your correct option)

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- Soft
- Hard
- Soft or Hard
- None of the given options

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Question No : 27 of 52 Marks: 1 (Budgeted Time 1 Min)

---------- automatically holds for printers and other non-sharables

Answer (Please select your correct option)

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- Hold and wait
- Circular wait
- Mutual exclusion
- No preemption:

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Question No : 28 of 52 Marks: 1 (Budgeted Time 1 Min)

The main disadvantage of semaphore is ----------

Answer (Please select your correct option)

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- Context switching
- Busy waiting
- Synchronization
- None of the given options

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Question No : 29 of 52 Marks: 1 (Budgeted Time 1 Min)

----------keeps in memory only those instructions and data that are needed at any given time.

Answer (Please select your correct option)

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- Paging
- Swapping
- Overlays

The idea of overlays is to keep in memory only those instructions and data that are needed at any given time

- Fragmentation

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Question No : 30 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is/are a memory management scheme that supports programmer's view of memory.

Answer (Please select your correct option)

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- Paging
- Segmentation
- All of the given options
- Demand Paging

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Question No : 31 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is the time for the disk arm to move the head to the cylinder containing the desired sector

Answer (Please select your correct option)

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- Rotational Latency
- Access Time
- None of the given options
- Seek time

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Question No : 32 of 52 Marks: 1 (Budgeted Time 1 Min)

----------are used for communication between related or unrelated processes on a UNIX/Linux system.

Answer (Please select your correct option)

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- Pipes

Pipe: Pipes are used for communication between related processes on a system, a

- Named pipe (FIFO)
- BSD Sockets
- None of the given options

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Question No : 33 of 52 Marks: 1 (Budgeted Time 1 Min)

Linux is a version of

Answer (Please select your correct option)

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- Windows
- Solaris
- Unix
- Mac

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Question No : 34 of 52 Marks: 1 (Budgeted Time 1 Min)

Java virtual machine executes programs that have been translated into

Answer (Please select your correct option)

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- Java bytecode

Java Virtual Machine (JVM) loads, verifies, and executes programs that have been translated into Java Bytecode

- Java binarycode
- Java bitcode
- None of the given

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Question No : 35 of 52 Marks: 1 (Budgeted Time 1 Min)

What is different in parent and child processes?

Answer (Please select your correct option)

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- Process ID
- Open file descriptor table
- Root directory
- Environment

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Question No : 36 of 52 Marks: 1 (Budgeted Time 1 Min)

Shell is the exclusive feature of

Answer (Please select your correct option)

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- Application Software
- System Software
- DOS
- UNIX

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Question No : 37 of 52 Marks: 1 (Budgeted Time 1 Min)

Round robin is very good for_____ where response is an important issue

Answer (Please select your correct option)

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- Scope
- Batch system
- Time sharing system
- None of the given

not sure

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Question No : 38 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is a high speed cache used to hold recently referenced page table entries a part of paged virtual memory

In the translation look-aside buffer (TLB)
A solution to this problem is to use special, small, fast lookup hardware, called
translation look-aside buffer (TLB),

Answer (Please select your correct option)

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- Translation Look aside buffer
- Inverse page table
- Segmented page table
- All the above

not sure

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Question No : 39 of 52 Marks: 1 (Budgeted Time 1 Min)

The mechanism that brings a page into memory only when it is needed is called _____

Answer (Please select your correct option)

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- Segmentation
- Fragmentation
- Demand Paging
- Page Replacement

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Question No : 40 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ happens when a dynamic memory allocation algorithm allocates some memory and a small piece is left over that cannot be effectively used.

Answer (Please select your correct option)

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- Fragmentation
- Segmentation
- External Fragmentation
- Internal Fragmentation

not sure

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Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

What is a file control block?

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Answer (Please click here to Add Answer)

File Control Block

A file control block is a memory data structure that contains most of the attributes of a file.

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Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

Under what conditions can you use the Wait-for graph to detect deadlock?

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Answer (Please click here to Add Answer)

If all resources have only a single instance, then we can define a deadlock detection algorithm that uses a variant of the resource allocation graph, called a **wait-for graph**.

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Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

Name any two schemes that allows efficient implementation of page table?

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Answer (Please click here to Add Answer)

In the CPU registers

In the main memory

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Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

"Critical section means the section of code in two processes or more than two processes that is used to update a resource (e.g. a shred variable) which is shared between these processes."
Do you agree with the statement or not? If not, then give reason to support your answer.

Answer (Please click here to Add Answer)

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we write that line

Critical Section: A piece of code in a cooperating process in which the process may updates shared data (variable, file, database, etc.).

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Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

How can you differentiate between external and internal fragmentation.

Answer (Please click here to Add Answer)

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Internal Fragmentation is the area in a region or a page that is not used by the job occupying that region or page.
This space is unavailable for use by the system until that job is finished and the page or region is released.

External fragmentation
As processes come and go, *holes* of free space are created in the main memory

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Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the type of bits associated with each entry of segment table for protection?

Answer (Please click here to Add Answer)

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The bits associated with each entry in the segment table, for the purpose of protection are:

- Validation bit : if the validation bit is 0, it indicates an illegal segment
- Read, write, execute bits

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Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Different type of threads work in operating system, one of them is process threads and other one is kernel threads. If the kernel of the operating system does not know about these threads and the operating systems is fully aware of them and operating system does not know that these threads use either M:1 or M:N mapping. These threads are scheduled by the thread library and are not associated with any process but every thread belongs to a process and these threads are very easily managed. You need identify the type of these threads.

Answer (Please click here to Add Answer)

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Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

Let us consider an example of frame allocation:
Number of free frames = 64
Number of processes = 3
Process sizes: P1 = 10 pages; P2 = 40 pages; P3 = 127 pages
Discuss how many free frames will be put in the free frames list by using Proportional Allocation?

Answer (Please click here to Add Answer)

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Number of free frames = 64
Number of processes = 3
Process sizes: P1 = 10 pages; P2 = 40 pages; P3 = 127 pages
- **Fixed allocation**

64/3 = 21 frames per process and one put in the free frames list
- **Proportional Allocation**
- si = Size of process Pi
- S = Σ si
- m = Number of free frames
- ai = Allocation for Pi = (si / S) * m
- a1 = (10 / 177) * 64 = 3 frames
- a2 = (40 / 177) * 64 = 14 frames
- a3 = (127 / 177) * 64 = 45 frames
- Two free frames are put in the list of free frames

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

What is the command for mounting in UNIX, describe mounting in UNIX.

Answer (Please click here to Add Answer)

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Mounting in UNIX

All files accessible in a Unix system are arranged in one big tree, the file hierarchy, rooted at /. These files can be spread out over several devices. The mount command serves to attach the file system found on some device to the big file tree. Conversely, the umount command will detach it again. Here is the syntax of the mount command

mount -t *type device dir*

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Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

What are the possible criteria to decide that which process should be terminated while deadlock detection and recovery?

Answer (Please click here to Add Answer)

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When a deadlock detection algorithm determines that a deadlock exists, several alternatives exist. One possibility is to inform the operator that a deadlock has occurred, and to let the operator deal with the deadlock manually. The other possibility is to let the system recover from the deadlock automatically. There are two options for breaking a deadlock. One solution is simply to abort one or more processes to break the circular wait. The second option is to preempt some resources from one or more of the deadlocked processes

Made by: Waqar Siddhu

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

Three jobs (times: A=100, B=1, C=2) arrive in the order A, B, C.
Calculate the average waiting time and average turnaround time using First come, First serve algorithm. Also draw the gantt chart for the problem.

Answer (Please click here to Add Answer)

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Waiting times P1 = 0; P2 = 24; P3 = 27
Average waiting time: (0+24+27)/3 = 17

Turnaround time: The interval from the time of submission to the time of completion is the **turnaround time.** Turnaround time is the sum of the periods spent waiting to get into memory, waiting in the ready queue, executing on the CPU and doing I/O. We want to minimize the turnaround time

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