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Program BS (S.E)
Semester 3rd.
Assignment O-S
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Q1:- Explain the necessary ..... handling deadlock.

Ans:- Deadlock:

It is a situation where a set of processes are blocked. bcz each process is holding a resource & waiting for another resource aquired by some other process

Example:

When two trains are coming towards each other on same track & there is only one track none of the train can move once they are infront of each other.
So same is the situation with O.S.

Necessary condition:

There are four conditions that are necessary to achieve deadlock.

1. Mutual exclusion.
2. Hold & wait.
3. No prempton.
4. Circular wait.

(i) mutual Exclusion:- At least once resource must be held in a non Sharable mode: if any other process requests their resources, then that process must wait for the resource to be released.

(ii) Hold & wait:- A process must be simultaneously holding at least once resources and waiting for at least one resource that is currently being held by some other process

(iii) No-preemption:-
once a process is holding a resource (i.e once its request has been granted) ~~then once its request had~~ then that resource cannot be taken away from that process until the process voluntarily release it.

(iv) Circular wait:-
A set of process {P0, P1, P2 ... PN} must exist such that every P[i] is waiting for P[i+1 % (N+1)] (note that this condition implied the hold and wait condition.

Q2:- Is it possible to have a deadlock involving only 1 single process? Explain.

Ans:- No, its not possible.

A deadlock situation can arise if in the following 4 conditions hold simultaneously in a system -

Mutual exclusion.
Hold & wait.
No preemption.
Circular wait.

No it's not possible to have a circular with only one - So it is not possible to have a deadlock involving only one process.

Q3:- Consider a system consisting ..... deadlock free -

Ans:- Suppose the system is deadlock this implies that each process is holding 1 resource & is waiting for 1 more. Since there are three processes & 4 resources, one process must be able to obtain two resources - This process requires no more resources & therefore it will return its resources when done.

Q.no (4) — (4)

Ans:- Resource Allocation Graph:-

The Resource allocation Graph is the pictorial representation of the State of the System. As its name Suggest, the Resource Allocation Graph is the Complete information about all the Processes which are holding Some resource and waiting for Some Resource.

it also Contains the information about the all the instances of all resources whether they are available or being used by the processes.

In Resource allocation graph the Process is represented by a a circle while the Resource is represent by a rectangle

Vertices:- vertices are mainly of two types Resource and process each of them will be represented by a diffrent Shape. circle represent process while rectangle represent resource.

Edges:- Edges are also of two types, one represents assignments and other represent the wait of process for a resource. The above image each Show of them.

A process is Shown as waiting for resource if the tail of an arrow is attached to the process.

Q5- Can a system ..... Starvation problem-

Ans- Deduction of starvation requires future knowledge - Since no amount of reward keeping statistics on process & including this as part of the cost factors in the selection -

Process for victim for preemption roll back --

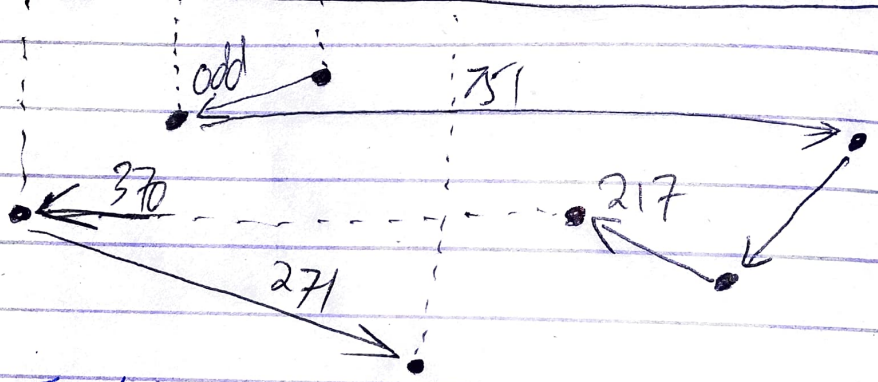
Q6:-

Ans:- Disk scheduling algorithms:

①:- FCFS:

It is simplest of all the disk scheduling algorithms.
In FCFS, the requests are addressed in the order they arrive in the disk queue.

0 105 123 345 376 475 682 874 888.



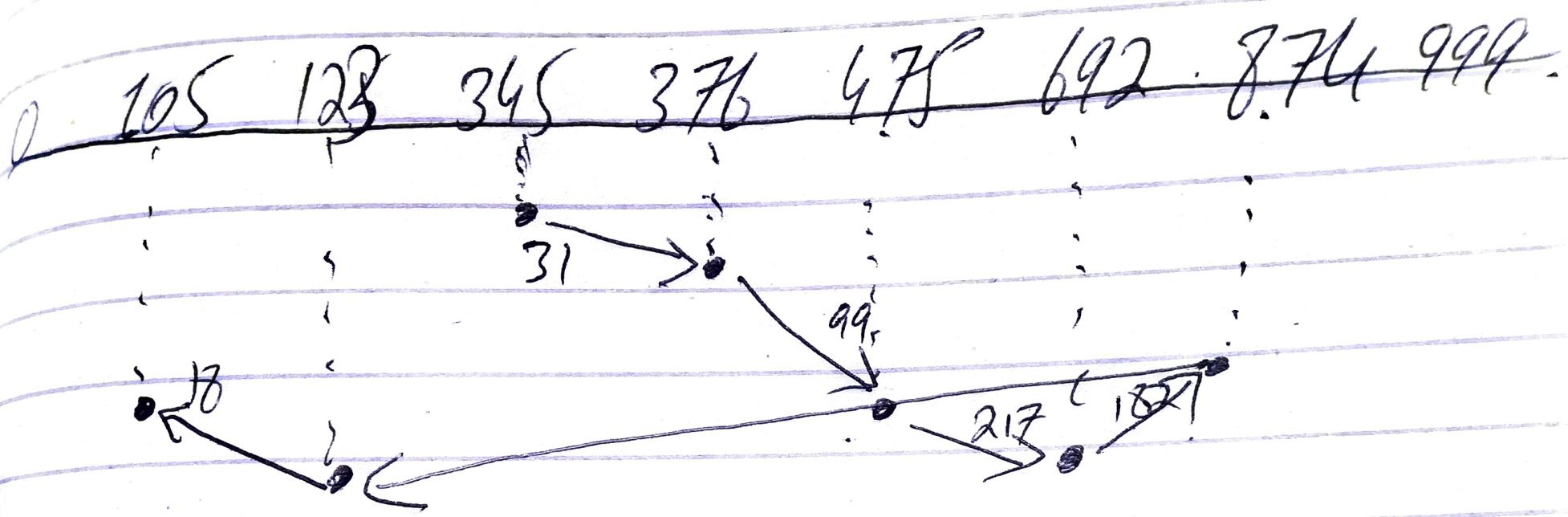
Total R/w head movement.

222 + 751 + 182 + 217 + 370 + 271 = 2013

②:-

SSTF:

In SSTF request with shortest seek time of every request is calculated in advance in queue & then they are scheduled acc... to their calculated seek time



Total R/w head movement.

$31 + 99 + 182 + 217 + 182 + 751 + 18 = 1298.$