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Assignment C2

Q.1) What is Banker's Algorithm?

→ Bankers Algorithm, also called detection algorithm, is a resource allocation and deadlock avoidance algorithm. It works whenever new process is created, it must specify maximum instances of each resource type that it needs to execute. It is named as bankers because it is used in banking system to determine whether a loan can be granted or not.

Q.2) Who is the Inventor of Banker's Algorithm? -

→ Bankers Algorithm was developed by Edeger Dijkstra.

Q] Explain Safe & Unsafe State

→ i) Safe State → The state that regularly leads to a single party is a safe state as it is generally assumed that one candidate has base of support. A state is safe if system can allocate all resources requested by all processes without entering deadlock state.

ii) Unsafe State

→ If a safe sequence does not exist then system is in unsafe state which may lead to deadlock

Q) Define Deadlock.

→ A deadlock is a situation in which 2 computer process showing the same resource are effectively preventing each other from accessing the resources

Eg: If Process P_1 needs resource R_1 to complete execution & P_2 needs again to complete its execution then this situation is in deadlock state.

Q] Define deadlock prevention, detection & avoidance

→ 1) Deadlock prevention :→ Preventing deadlock by constraining how requests for resources can be made in system & how they are handled in system design. The goal is to ensure that atleast one of the necessary conditions for deadlock can never hold.

2) Deadlock Detection: It is the process of determining that a deadlock exists and identifying process & resources involved in the deadlock.

3) Deadlock Avoidance: It merely works to avoid deadlock, does not prevent it completely. Basic idea is to allocate resources only if resulting global state is a safe state.

Q) Write advantages & disadvantages of Banker's Algorithm.

→ Advantages of Banker's Algorithm

1) It is used to avoid deadlock.
2) It is less restrictive than deadlock prevention.

Disadvantages of Banker's Algorithm:

1) It only works for fixed no. of resources.
2) It is not suitable for multi-access systems.
3) Needs advance knowledge of maximum needs.