Camlin Page
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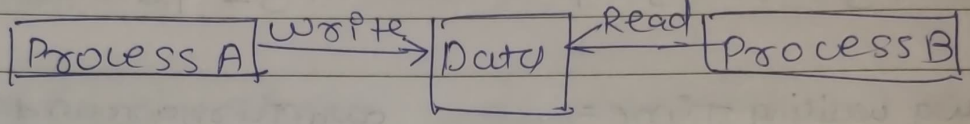
Assignment no. 4

Q.1) What is process synchronization? What is need of process synchronization?

→ • Process synchronization is the way by process can share same data between them called as a shared data.

• It helps to maintain consistency between them by using a variable or a hardware.



• Here, the process 1 is changing the data in a memory location where other process is i.e. process B is trying to read data from same memory location.

~~• There are~~

• Need of synchronization :-

The need of synchronization originates when processes need to execute concurrently.

The main purpose of synchronization is the sharing of resources without interference using mutual exclusion.

The other purpose is the collection of process interaction in an Operating System.

Q.2) Define.

1) Entry Section:-

Entry section is part of the process which decide the entry of particular process in the critical section, out of many other processes.

2) Critical section:-

It is the part in which only one process is allowed to enter and modify the shared variable. This part of the process ensures that only ~~one only~~ no other process can access the resource of shared data.

3) Exit Section:-

This process allows the other process that are waiting in Entry section, to enter into critical sections. It checks that a process that after a process has finished execution in critical section can be removed through this Exit Section.

4) Remainder Section:- (Non-Critical)

The other part of the code other than Entry Section, critical section and Exit Section are known as Remainder section.

Q.3) What are the condition that must be satisfied for process synchronization?

→ . Conditions that must be satisfied for process synchronization:-

a) Mutual Exclusion:-

It states that no other process is allowed to execute in critical section. if a process is executing in critical section.

b) Progress:-

When no process is in the critical section, then any process from outside that request for execution can enter in the critical section without any ~~delay~~ delay. Only those process can ~~at~~ enter that have requested and have finite time to enter the process.

c) Bounded waiting:-

An upper bound must exist on number of times a process enters so that other processes are allowed to enter their critical sections after a process has made a request to enter its critical section and before that request is granted.

Q.4) What are the types of process synchronization. Explain in brief.

→ • Types of process synchronization are as follows:-

1) With busy waiting:-

In this, the process which is traying to access the critical section continuously tries to get into the critical section by checking the condition. CPU time is wasted in Busy waiting.

2) Without busy waiting:-

In this, the process which is traying to access critical section checks the condition only once. If another process is present in the critical section then it goes to sleep.

When the process in the critical section gets completed then this process is waked.