

# An Optimized AB SYN Algorithm for Synchronization and Inter Task Communication in Real Time Operating System

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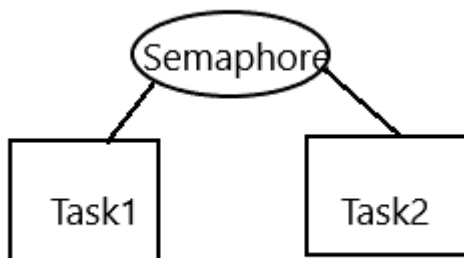
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**Abstract-** Real time Operating System are the time constrained systems and the synchronization should faster to improve the performance. The existing algorithm have the time complexity  $O(n)$ . The proposed AB SYN algorithm uses a LOCK before and the event .AN SYN is inside the kernel so that we can faster the application. AB SYN algorithm have the time complexity of  $\log(n)$ .

## I. INTRODUCTION

Synchronization and inter task communication is the key area in the operating system. Task is anything that perform particular function. Synchronization means how the task coordinates with the resources to perform particular function. There may be data transfer in the form of variable. In old days we use global variable is to do that.

1. Semaphore and mutex: Semaphore is the key to hold the resources for different tasks. We use 0 if the resources are available. 1 if the resources are holding by some other task. The resources are of different types like input output, CPU or data. Sometimes inter task communication by using global variable. Mutex works similar to semaphore. Here we use LOCK and UNLOCK for synchronization. Static variable is used for inter task communication.

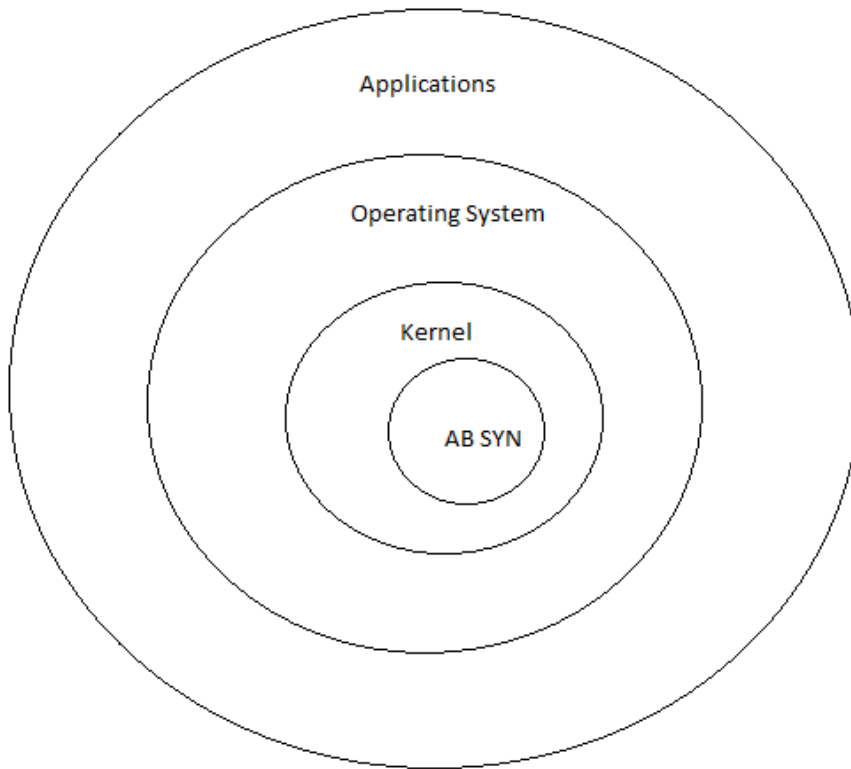


## Fig 1: Semaphore

2. Signaling: Signaling is by means of synchronization where we use some flags or variable for communication. There are two types of Signaling includes flag signaling and data signaling. In flag signaling the task uses flags for synchronization. For example, HOLD is high when there is a task running. In address signaling uses address of data for communication. The data may be of string and number.
3. Message Queue: Message queue is for synchronization where a fixed size queue is reserved for synchronization and inter task communication. Most commonly use 32-bit variable for message queue for each task. This queue is also used for message passing in the operating system.
4. Mail Box: Mail box is similar to Message queue where the task communicates through mail box. The data transfer between the task through the mail box.

## II. PROPOSED AB SYN ALGORITHM FOR SYNCHRONIZATION

The proposed AB SYN Algorithm for Synchronization in Operating System includes a LOCK which set a value 0 or 1 before and time for synchronization. It's a signalling mechanism by using task flag. It also uses pointer to access each task.



**Fig 3:AB SYN Architecture**

```
AB_SYN()  
Set LOCK=0  
T={T1,T2,T3...Tn}  
Pointer variable *Ptr=T  
While(!NULL)  
I=0  
If(Ti Subset of T)  
If(T[[i][0]==0)  
LOCK=1  
End if  
Value=T[[i][0]->Ptr  
End if
```

```
LOCK=0  
End  
  
Task T(i,j)  
Set of operations  
End T
```

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