



Core Java

Trainer: Nilesh Ghule



Process and Thread

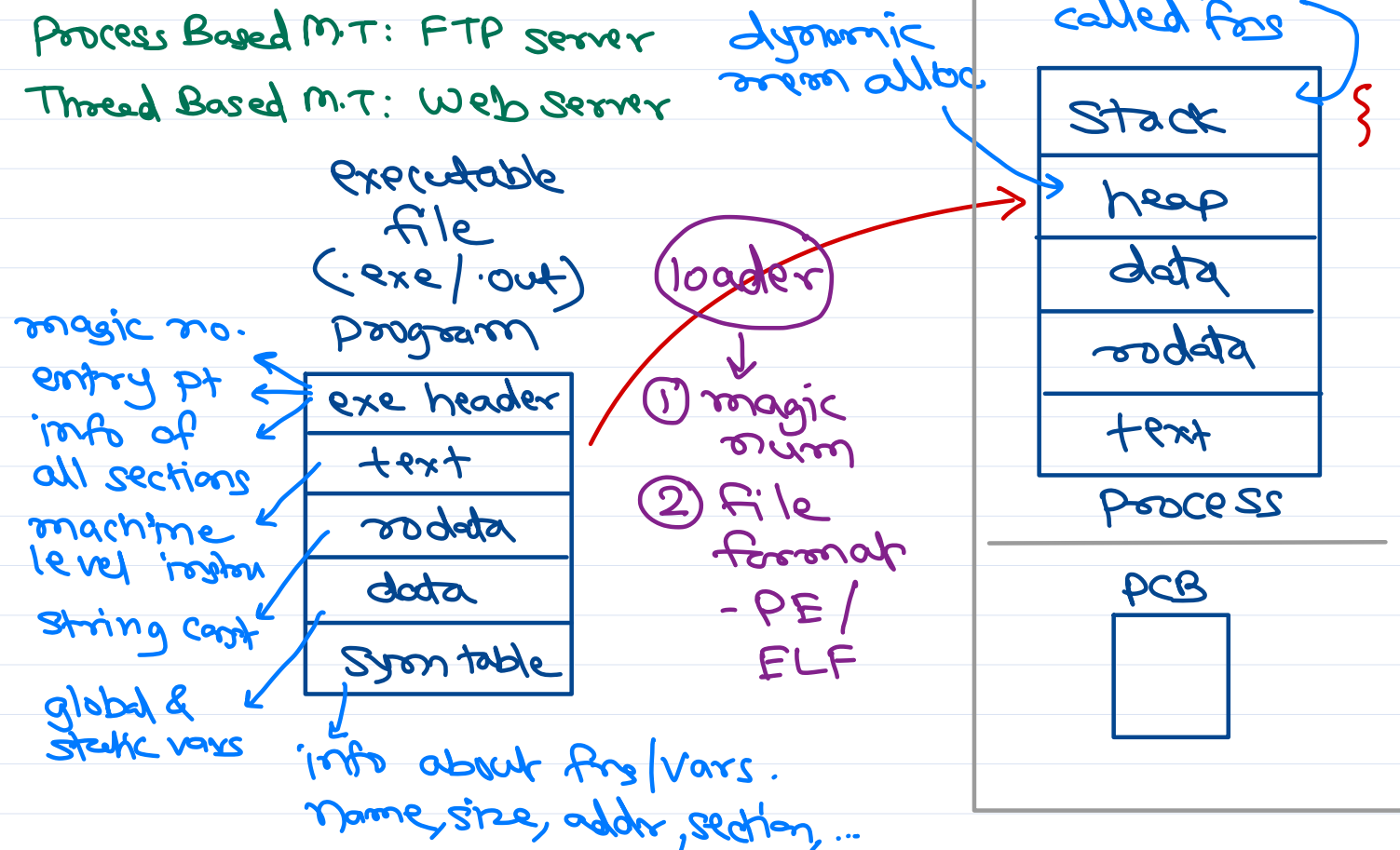
Program: Set of instructions given to Computer.

Process: Program in execution.

Thread: Lightweight process.

Process Based M.T: FTP server

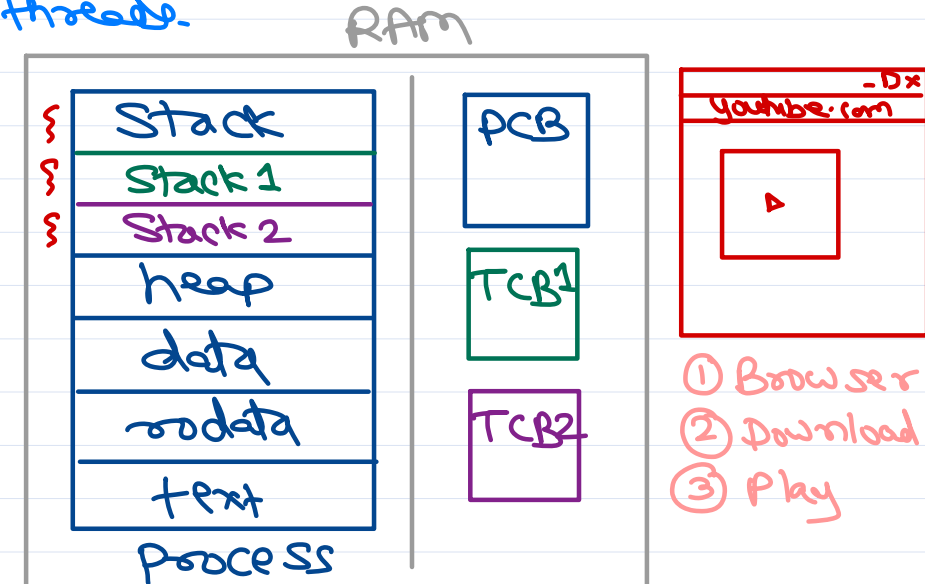
Thread Based M.T: Web server



Process is a container, that holds resources required for execution; while thread is unit of execution/scheduling.

Each process has one thread created by default - main thread.

To perform multiple tasks concurrently within a process, create additional threads.



Thread creation

extends Thread

```
class MyThread extends Thread {
```

```
    ...  
    @Override  
    void run() {  
        // code  
    }
```

}

in main(),

```
MyThread t1 = new MyThread();  
t1.start();
```

If a java class is already inherited from a class, it cannot be inherited from Thread class (multiple class inherit not allowed)

implements Runnable

```
class MyRunnable implements Runnable {
```

```
    @Override  
    void run() {  
        // code  
    }
```

}

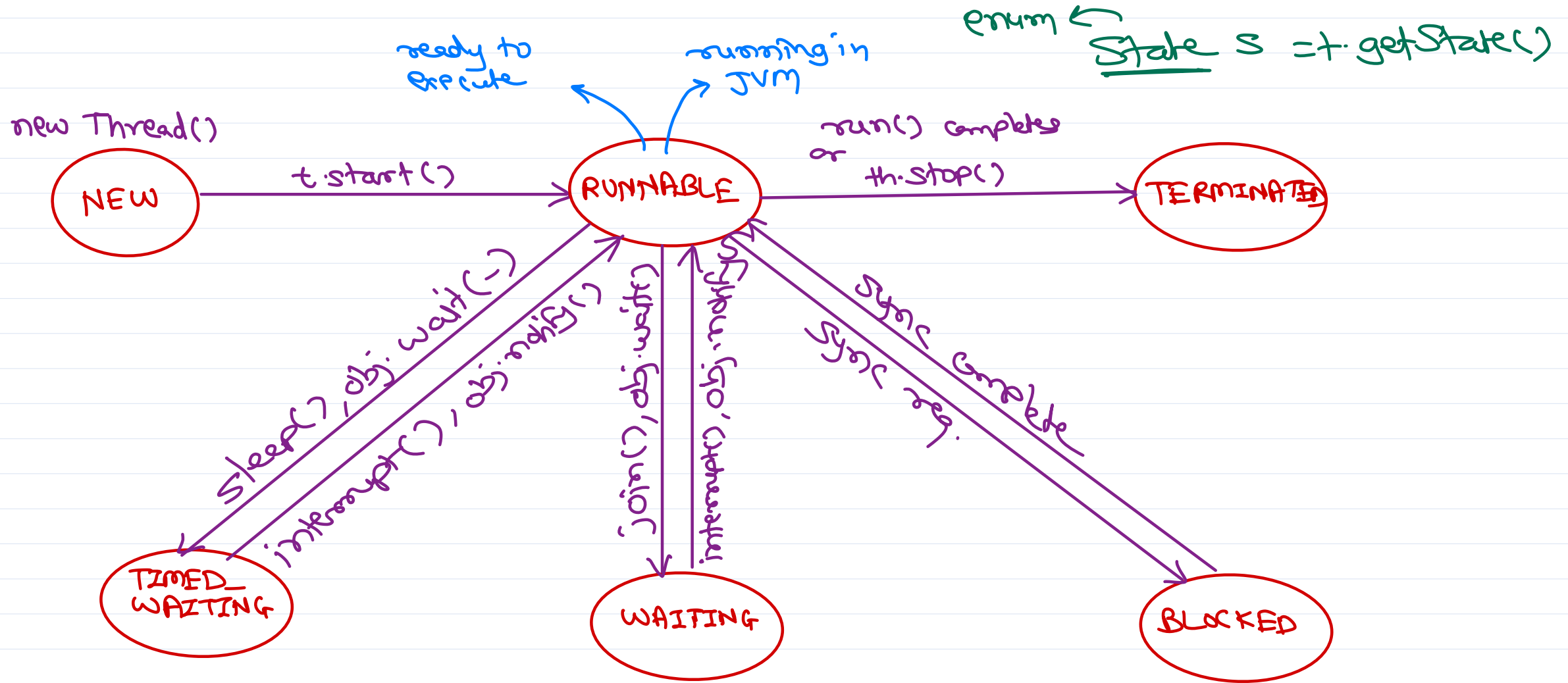
in main(),

```
MyRunnable mr = new MyRunnable();  
Thread t2 = new Thread(mr);  
t2.start();
```

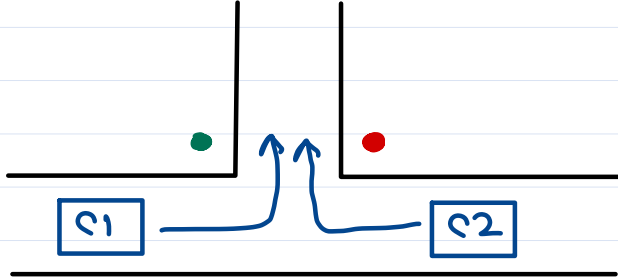
Even if class is inherited from other class, implementing Runnable is possible. Since Runnable is functional interface, we can use lambda expression.



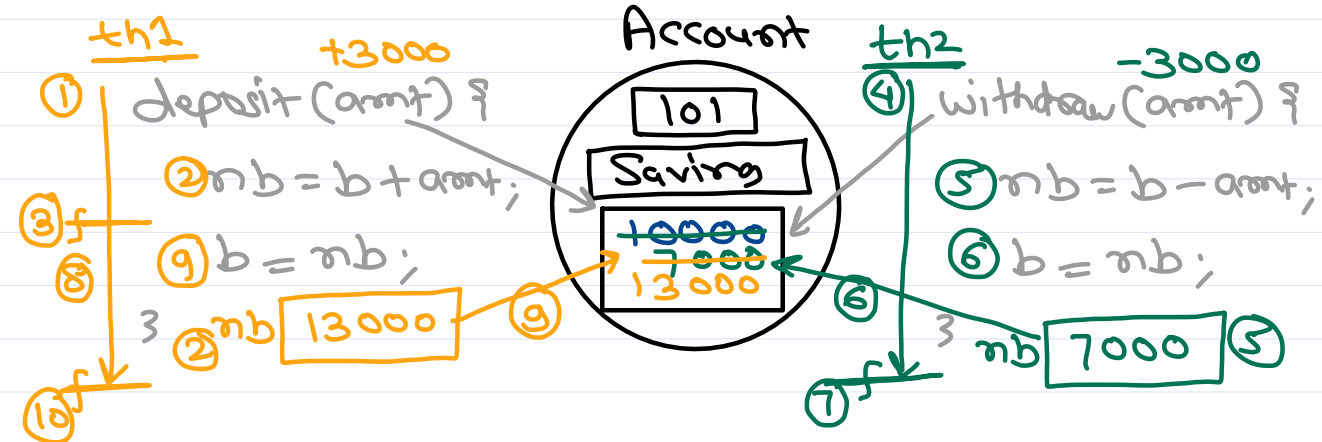
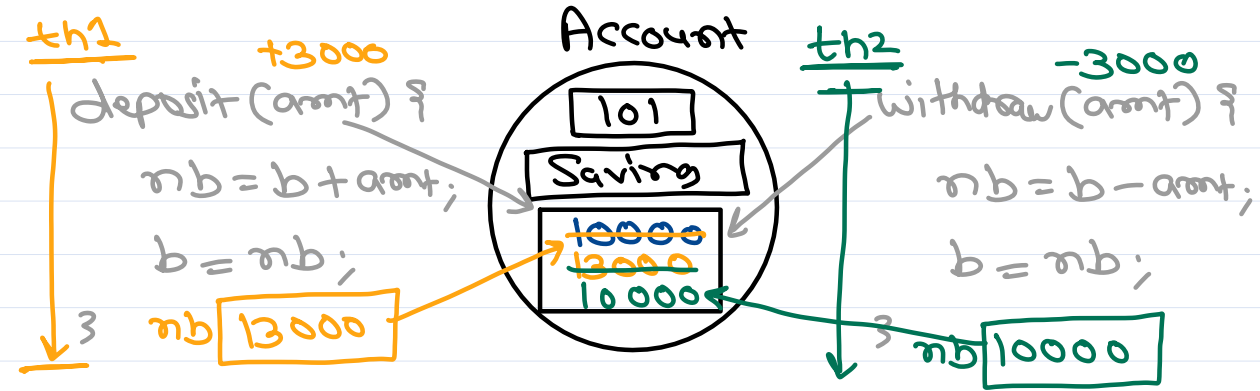
Thread life cycle



Race condition



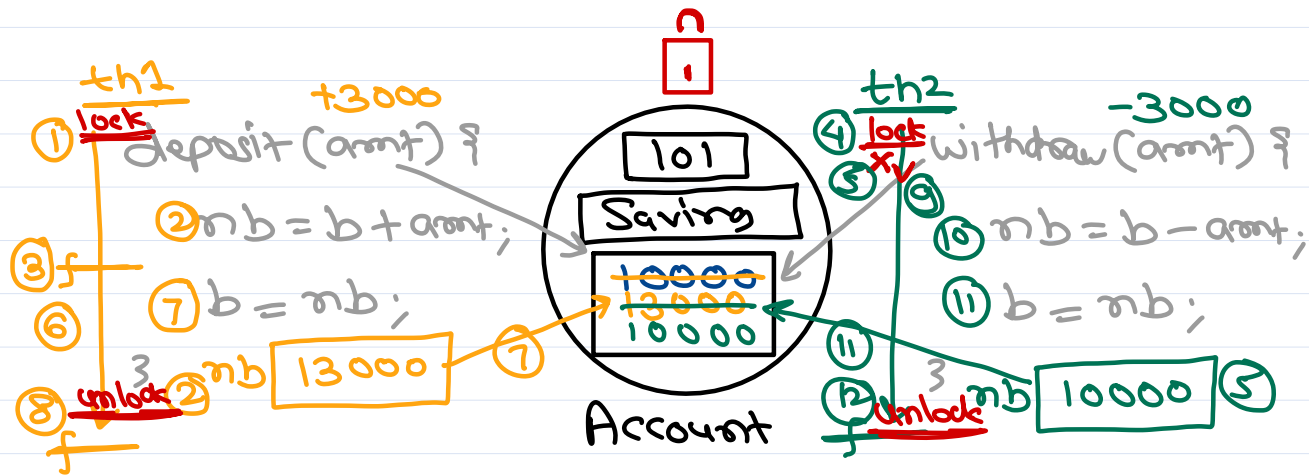
If multiple threads try to access same resource at the same time, race condition occurs.



Race Condition



Synchronisation

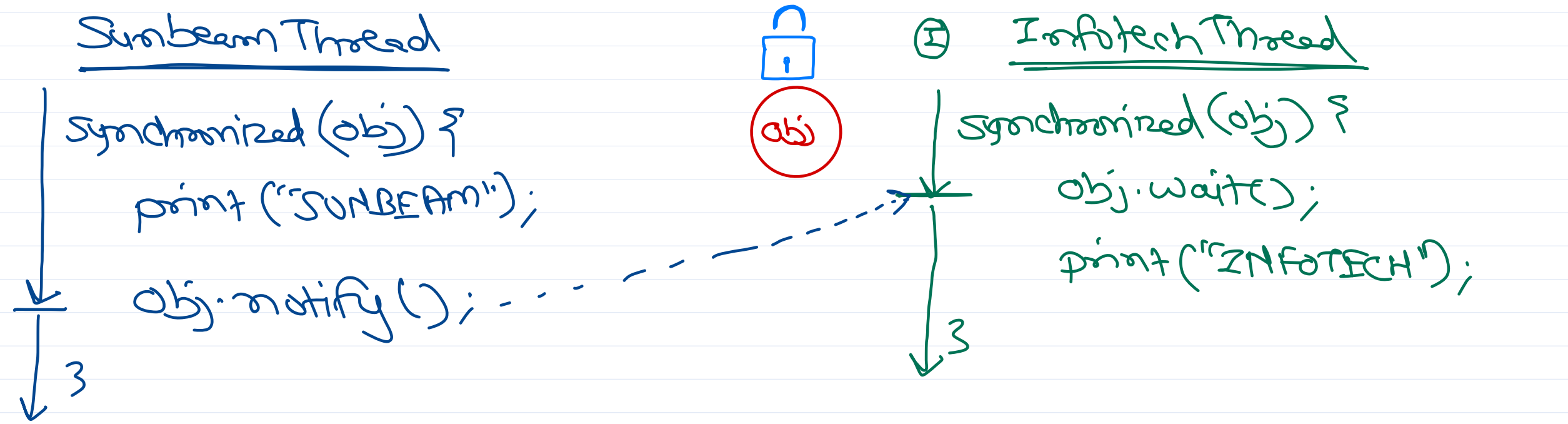


Blocking one/more threads so that only one thread can access the resource at a time, is called as "Synchronization".

Synchronized
key word → Synchronized
block
→ Synchronized
method



Inter- thread communication

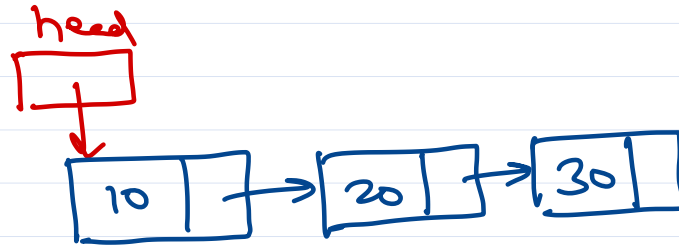


Member classes

```
class MyList {  
    static class Node {  
        int data;  
        Node next;  
    }  
}
```

```
    Node head;  
    void display();  
}
```

```
    class MyIter {  
        Node cur;  
        = head Node;  
        next();  
    }  
}
```



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Thank you!

Nilesh Ghule <nilesh@sunbeaminfo.com>

