

# Quiz 4

Question on use of synchronized

## Question # 1

**What is the `synchronized` keyword?**

Java provides a built-in mechanism to provide atomicity called the `synchronized` block. A synchronized method is a shorthand for a synchronized block that spans an entire method body and whose lock is the object on which the method is being invoked.

A synchronized block consists of a reference to an object that serves as the lock and a block of code that will be guarded by the lock.

Synchronized blocks guarded by the same lock will execute one at a time. These blocks can be thought of as being executed atomically. Locks provide serialized access to the code paths they guard.

Below is an example of a class with a synchronized method.

```
class ContactBook {  
  
    Collection<String> contacts = new ArrayList<>();  
  
    synchronized void addName(String name) {  
        contacts.add(name);  
    }  
}
```

Note the synchronized method above is equivalent to the following rewrite:

```
void addName(String name) {
```

```
void addName(String name) {  
    synchronized(this) {  
        contacts.add(name);  
    }  
}
```

## Question # 2

***Is the print statement in the below code reachable?***

```
void doubleSynchronization() {  
  
    synchronized (this) {  
        synchronized (this) {  
            System.out.println("Is this line unreachable ?");  
        }  
    }  
}
```

Q

- ☐ A) Code isn't reachable because we try to synchronize twice on the same object
- ☐ B) Code is reachable because we can synchronize multiple times on the same object

CHECK ANSWERS

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Consider the below class which has a synchronized method. Can you tell what object does the thread invoking the `addName()` method synchronize on?

```
class ContactBook {  
  
    Collection<String> contacts = new ArrayList<>();  
  
    synchronized void addName(String name) {  
        contacts.add(name);  
    }  
}
```

Class may be used as follows:

```
ContactBook contactBook = new ContactBook();  
contactBook.addName("Trump");
```

Q

- ☐ A) The main thread
- ☐ B) Thread invoking the method
- ☐ C) The object on which a thread invokes the method
- ☐ D) synchronize is a synchronization keyword and doesn't require any objects for operation

Show Explanation

Question # 4

***An instance method synchronizes on the instance object, do you know what object do static methods synchronize on?***

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