Difference between synchronous and asynchronous code?

1. Execution:

Synchronous:

- Executes sequentially

Asynchronous:

- Executes out of order, not waiting for one operation to complete before starting the next.

2. Behavior:

Synchronous:

- Can lead to a blocking behavior in applications, potentially making the UI unresponsive if a task takes a long time.

Asynchronous:

- Non-blocking behavior, allowing other tasks to run simultaneously.

3. Example:

Synchronous:

```
const result = someFunction();
console.log(result);
console.log('After function');
```

Asynchronous:

```
fetch('https://api.example.com/data')
.then(response => response.json())
.then(data => console.log(data))
.catch(error => console.error(error));
console.log('After fetch call');
```

4. Understanding & Debugging:

Synchronous:

- Generally easier to understand and debug due to its straightforward flow.

Asynchronous:

- Can be more complex due to the use of callbacks, promises, or async/await.

5. Suitability for Unpredictable Tasks:

Synchronous:

- Not well-suited for tasks that can take an unpredictable amount of time, such as network requests or reading from disk.

Asynchronous:

- Ideal for tasks like network requests, timers, and other operations that shouldn't block the main thread.

6. Common Methods/Functions:

Synchronous:

- Array.forEach(), Math.max(), etc.

Asynchronous:

- setTimeout(), fetch(), XMLHttpRequest, Promises, async/await.