

1. In Node.js there are event loop queues and microtask queues. In the event loop queues there are:

- * timer(this phase executes callbacks scheduled by setTimeout() and setInterval()).

- * I/O(execute I/O related callbacks).

- * polling(retrieve new I/O events; execute I/O related callbacks (almost all with the exception of close

callbacks, the ones scheduled by timers, and setImmediate() node will block here when appropriate).

- * check(setImmediate() callbacks are invoked here).

- * close (some close callbacks like socket.on)

In Microtask queues:

- * nextTick queue(Node processes all the callbacks in the nextTick queue after

the current operation completes and before the event loop continues.)

- * promise queue(All callbacks in the promise queue are executed after callbacks in the nextTick queue.)

Callbacks in the Microtask Queues have priority. they are executed before callbacks in the Timer Queue.

2. Output:

start

end

nextTick 1

nextTick 2

Promise...1

Promise...2

timeout 1

timeout 2

nextTick 3

timeout 3

3. Output:

timeout

Immediate

readFile....

4. In Node.js:

output: undefined because in node js, this keyword refers to global object and message is not defined on the

global object.

In browser:

Output: 'Hello World' this keyword inside a regular function refers to the global object (window), and message

is a global variable.

5. Console output: Josh Edward

6. Throws file not found error because In app.js, we are trying to import from pattern2.js, but the filename is pattern1.js.

7. Throws file not found error because In app.js, we are trying to import from pattern2.js, but the filename is pattern1.js.

8. Console output: { firstname: 'John', lastname: 'Smith' }