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Node.JS - How it works

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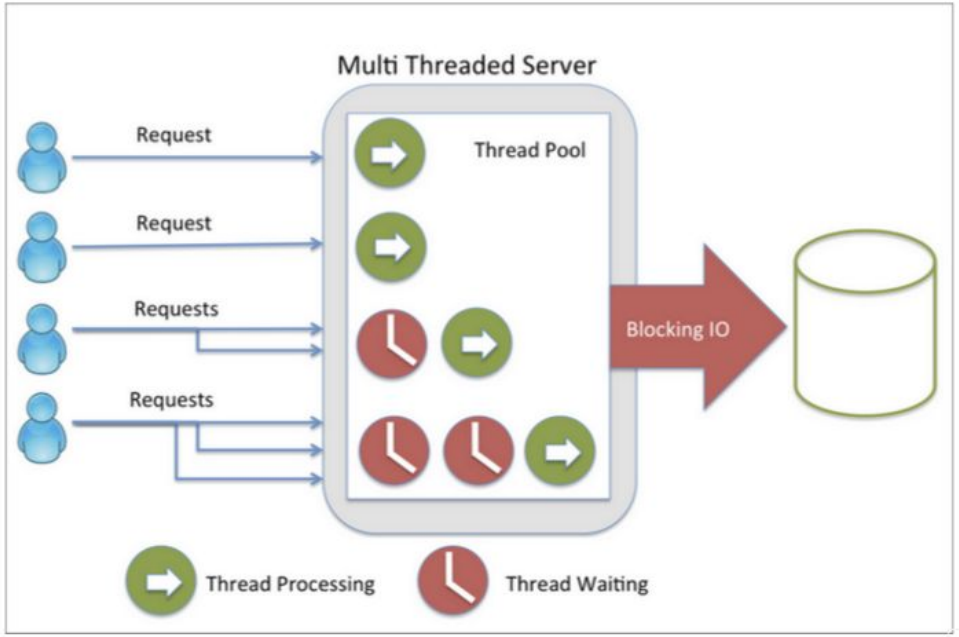
We will cover with the following concepts

1) Blocking vs Non-blocking IO

2) Event loop

3) Concept of callbacks.

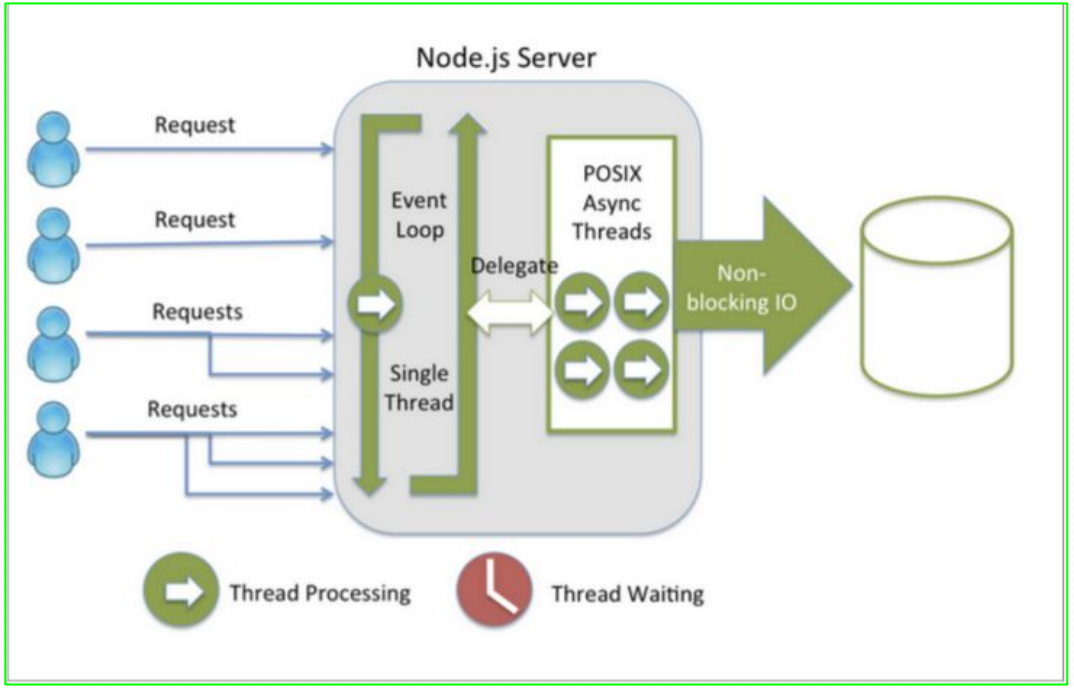
Things used to happen in a 'Blocking IO' ways



Think about a fancy restaurant or hotel with waiters and reservations. The problem with this hotel at scale will be -

- Limited number of seats, so only x number of people can use the service
- Waiters tending to individual customers, even in between meals. Scale is limited to number of waiters available.
- If all waiters are busy, you will have to wait.
- If there are 10 employees, at least 3-4 are engaged in taking orders or customer delight.

Node.JS follows a Non-Blocking Event loop



Now think about self service restaurants like KFC or Mcdonalds-

- If there are 10 employees, at least 1-2 are engaged in taking orders and rest in preparing the food.
- People wait in a queue, place their order, if its immediately available they get the stuff, or they are “called back” when their order is ready.
- Scale is not limited to seats as their is an option of take aways as well.
- Nobody has to wait in line. The queue moves in a round-robin kind of fashion and everybody is served with something.

Blocking Vs Non-Blocking

Traditional I/O

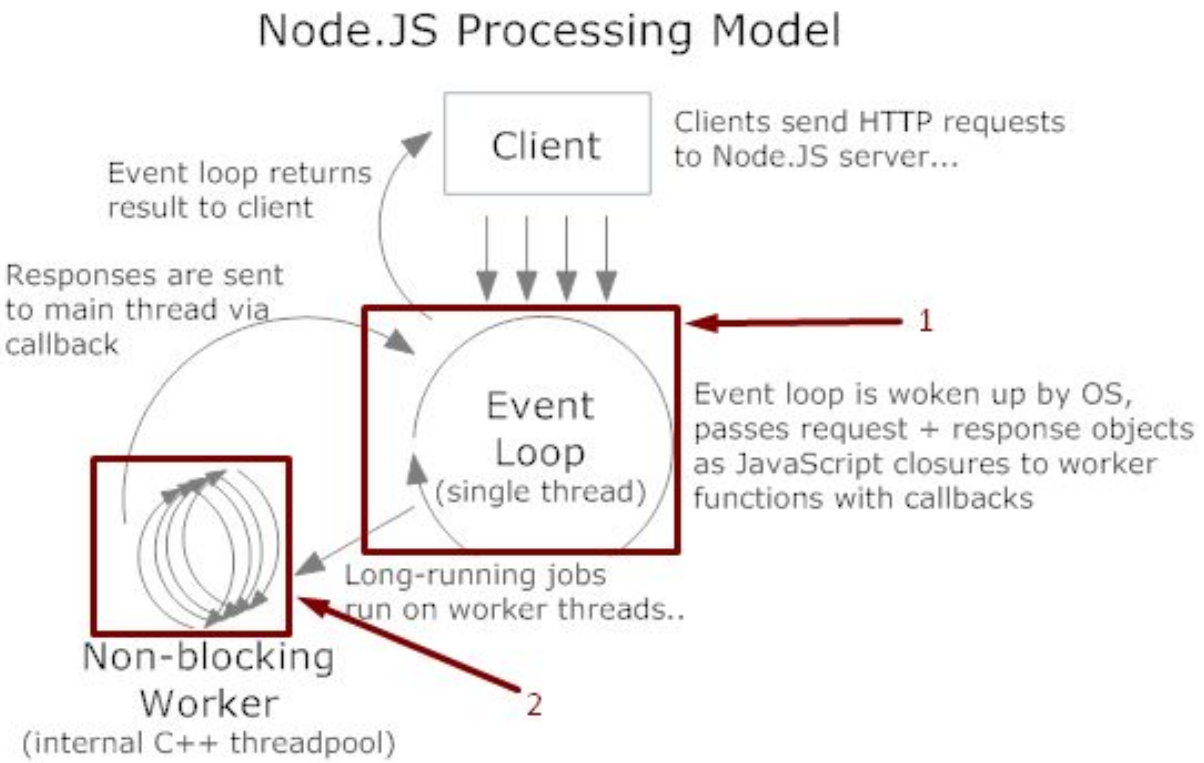
```
var result = db.query("select x,y from tableXY");
doSomethingWithResult(result); //waits for the result!
doSomethingWithoutResult(); //execution is un-necessarily
  blocked!
```

Non-blocking I/O

Callback on db query completion event

```
db.query("select x, y from tableXY",
         function (result){
             // gets called once the result is ready!
                 doSomethingWithResult(result);
         });
doSomethingWithoutResult(); //executes without any delay!
```

Processing Model is fairly simple!



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Now you know the reason why Node.JS is so fast and scalable.

- Node.JS is single threaded and asynchronous. Every I/O operations doesn't block another.
- Unlike old technologies, each request to the server doesn't open another thread.
- V8 Engine at core compiles JS to machine code very fast and hence improves the execution speed.

The next steps are ...

NPM
Hello World Program