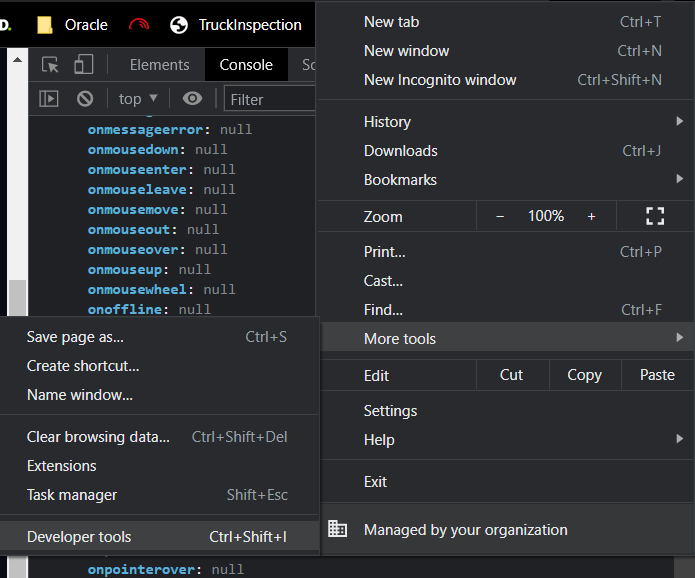
**NODE JS TUTORIAL**

* To install nodejs -> go to nodejs official website and install latest version.
* To check version of nodejs : enter in CMD -> type **node -v** press enter.

To use Javascript in browser -> click on … of chrome browser and click on More tools -> Developer tools -> then we can use javascript codes in console window.



**Blocking vs Non-Blocking I/O** : blocking I/O(input output operations) means it blocks the entire process while doing any input output operations whereas non-blocking I/O doesn’t blocks the process while performing any i/o operations.

**Documentation of API** : <https://nodejs.org/dist/latest-v16.x/docs/api/>

**Defining function and importing in another module** :

utils.js

console.log('util.js')

my\_name\_1 = 'my name from utils'

my\_name\_2 = 'my another name from utils'

// define our fucntion

function add(a,b){

    return a+b

}

function minus(a,b){

    return a-b

}

// export the function add and minus

module.exports =  {add, minus}

App.js

const a = require('./utils')  // import the function utils

const sum = a.add(2,10)

const sub = a.minus(10,4)

console.log(sum)

console.log(sub)

npm 🡪 it stands for **NODE PACKAGE MANAGER**. It have number of predefined packages that we can use to our projects. The link is <https://www.npmjs.com/>

**Steps to install a node module** : npm install [packageName@10.3.0](mailto:packageName@10.3.0) or npm i [packageName@32.2.1](mailto:packageName@32.2.1)

**Whenever we install a depenedcny we get node\_modules(which has all the packages) and the node module also get added to our package**.json file show below

  "dependencies": {

    "validator": "^13.7.0"

  }

To import node module in our app use :

var validator = require('validator');

**to validate a string is email or not**

console.log(validator.isEmail('andre@gmail.com')) // validates whether it's email or not : TRUE

console.log(validator.isEmail('satish')) // FALSE

**npm install** 🡪 to install all the packages by on its own. The node looks in package.json and installs all the required modules on its own.

**COMMAND LINE ARGUMENTS**

We can access the command line arguments using **process.argv** : it return array of items. Where the first is location of node executables, the 2nd is location of our app.js and then we get our inputs from cmd terminal.

To get individual item we us : **process.argv[n]**

// getting inputs from command line args

console.log(process.argv) // print all command line arguments

console.log(process.argv[2]) // prints the 2nd item

console.log(process.argv[3]) // prints the 3rd item

run this : node app.js satish kumar

o/p:

[

'C:\\Program Files\\nodejs\\node.exe',

'C:\\Users\\satissingh\\Documents\\Important\\NodeJS Tutorial\\Codes\\notes-app\\app.js',

'satish',

'kumar'

]

satish

kumar

**JAVASCRIPTS OBJECT NOTATION :**

const person = {  
  firstName: "John",  
  lastName: "Doe",  
  age: 50,  
  eyeColor: "blue",

fullName : function() {  
    return this.firstName + " " + this.lastName;  
  }  
};

**ACCESSING OBJECT PROPERTY:**

*objectName.propertyName* OR *objectName["propertyName"]*

**ACCESSING FUNCTION :** *objectName.methodName()*

**FILTER FUNCTION IN JS** :

filter() creates a new array filled with elements that pass a test provided by a function.

filter() does not execute the function for empty elements.

filter() does not change the original array.

const ages = [32, 33, 16, 40];  
const result = ages.filter(checkAdult);  
function checkAdult(age) {  
  return age >= 18;  
}

**ARROW FUNCTION**

The syntax or arrow function is similar to normal function with some difference.

// define const, then name and then = sign and then argument list and then => and then function

// definition

const square = (x) =>{

    return x \* x

}

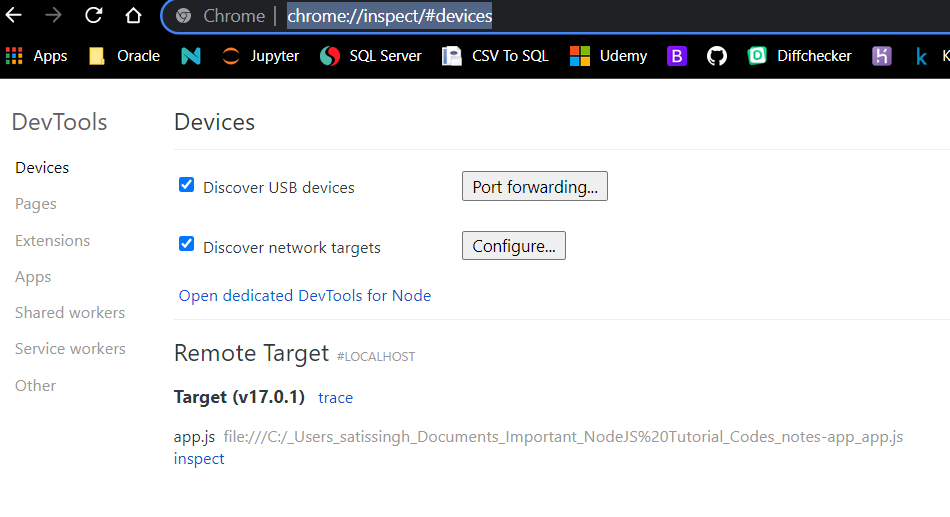
// if we;ve 1 line inside function we can remove the {} and return keyword also

const square = (x) => x \* x

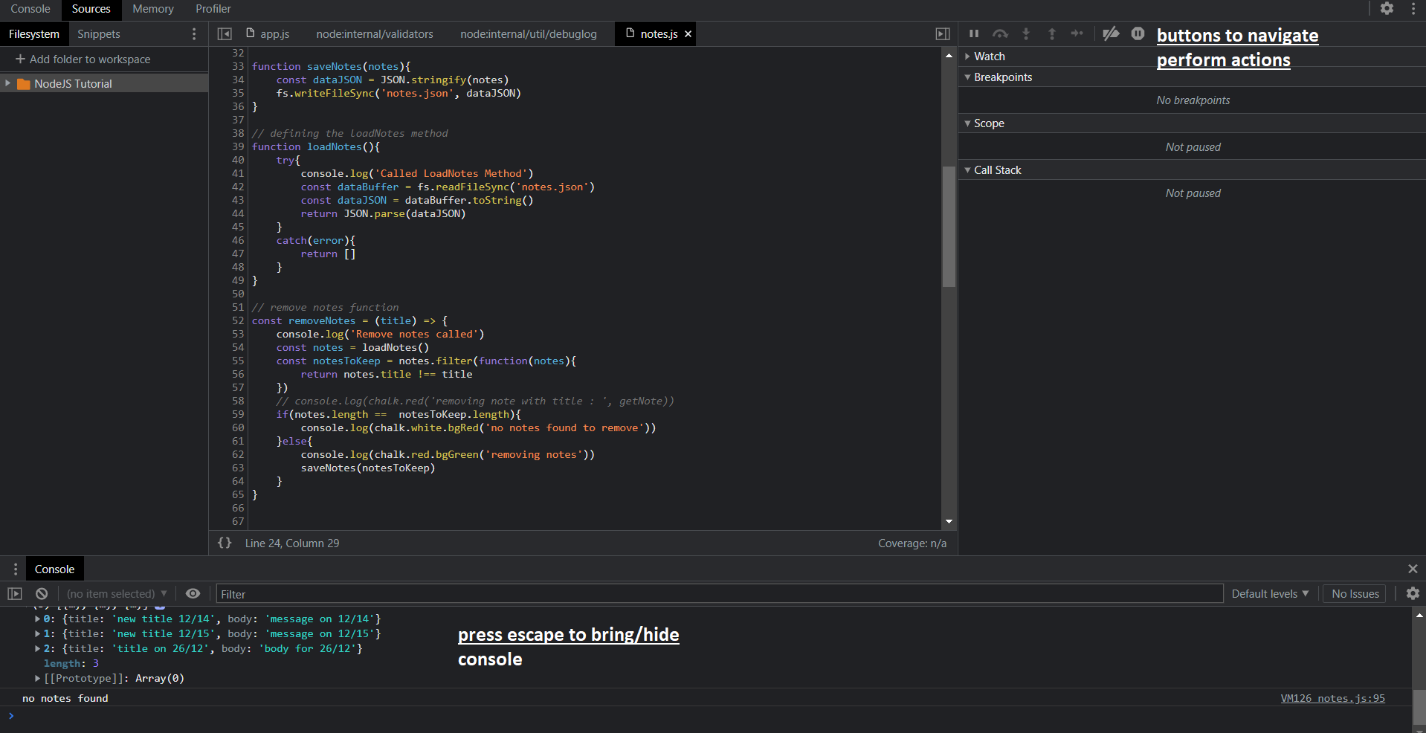
\* arrow function are not suited for using inside objects. It’s not able to access the variables using this keyword.

**DEBUGGING IN NODE JS**

1. Adding console.log(“message”) to various places to check the content of our code.
2. Debugger tool : adding **debugger** command in our code, which tells node to stop at that point and we can debug our code from that point and inspect the values.
   1. Type **node inspect app.js read --title="new title 12/14df"** in our VS and hit enter
   2. Head to chrome browser and open **chrome://inspect**



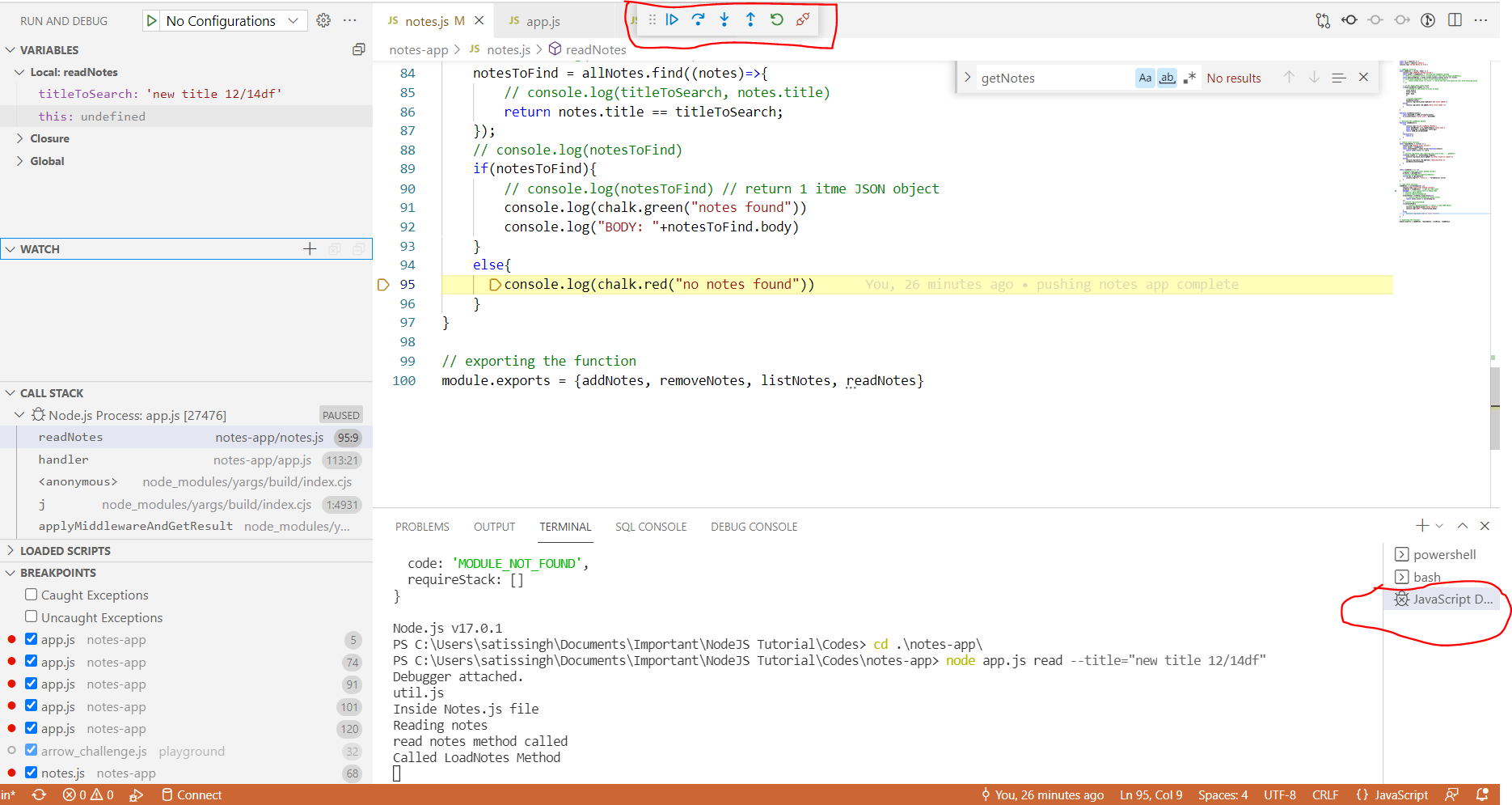
* 1. Click on inspect and it will open a dev terminal with console,



We can debug our code in chrome terminal in this fashion.

To quit debugger in VS studion – press CTRL+C twice.

1. Simply start the debugger from VS code with debugger enabled and the play with the extensions.



**Asynchronous JS**

console.log("starting")

// asynchronous method,

setTimeout(()=>{

    console.log("2 seconds timer")

}, 2000)

setTimeout(()=>{

    console.log("0 seconds timer")

}, 0)

console.log("stopping")

// o/p: starting

// stopping

// 0 seconds timer

// 2 seconds timer

The output is in the order which was not expected. The main reason is that, the setTimeout() method is implementation of **nodeJS API**. And the nodeJS api are only called when all the **call stack** is finished.

Whenever a method gets called, it is placed in **call stack** in form of stack(FILO), as and when methods are getting called they are placed inside the call stack and removed when the task is done. And in the end **main()** method is removed from call stack which denotes the end of program execution.

But in case of setTimeout(), it is placed in call stack and then placed to **NODE api calls** and then handed over to **callback queue** when it’s ready to be executed. But it is not placed in call stack until the main() is removed from call stack and so the order of the above log are little weird.

**MAKING HTTPS REQUEST**

To make a folder as npm package : npm init

To answer all question as yes : npm init -y (Enter) -> this will create package.json file in our folder.

<https://weatherstack.com/quickstart>

the above website provides api to get free weather information when we provide the Latitude and Longitude.

<https://www.mapbox.com/>

the above website provides geo-coding function. We can provide address and it gives Latitude and longitude.

**Forward geocoding** -> we provide the address and we get the Latitude and Longitude in return.

**Reverse Geocoding** -> we provide the latitude and longitude, and we get the address.

**Mapbox http request from nodejs with proper error handling demo**:

const urlGeoLocation = "https://api.mapbox.com/geocoding/v5/mapbox.places/Los%20Angeles.json?access\_token=pk.eyJ1Ijoic2F0aXNoa3I2MzkiLCJhIjoiY2t4b3I1bWZwMDJrNDJwbzIxZjB6bXY3cCJ9.KR7UTWnMLZyPXXLd8mHuDg"

request({ url: urlGeoLocation, json:true }, (error, response) =>{

    if(error){

        console.log('Unable to access mapbox service!')

    }

    else if(response.body.features.length == 0){

        console.log('Unable to find location. Please search different one.')

    }

    else{

        const latitude = response.body.features[0].center[1]

        const longitude = response.body.features[0].center[0]

        console.log(latitude, longitude)

        //console.log(response.body.features[0])  // get the response body and then features

    }

})

Implementation of calllback feature

// 1st approach :

const geoCode = (address, callback) =>{

    setTimeout(() =>{

        const data = {

            longitude : 0,

            latitude : 0

        }

        return data

    }, 2000)

}

const data = geoCode('America')

console.log(data) // undefined. as setTimeoout() is node api implementation

// and it gets called when the main() is over from calllback queue. and we are expecting

// data value to be returned when main() is termiated which is not possible.

// so we need to use callback feature to get the data values.

// 2nd Approach: to get data values using callback

const geoCodeUsingCallback = (address, callback) =>{

    setTimeout(() =>{

        const data = {

            longitude : 0,

            latitude : 0

        }

        callback(data) // calling the callback method with data value

    }, 2000)

}

// geoCode() method is getting called with America and a callback method.

geoCodeUsingCallback('America', (data) =>{

    console.log(data) // { longitude: 0, latitude: 0 }

})

**WEATHER APP**

Forecast.js

// this file is to get the weather condition of a place

const request = require('request')

const forecast = (longitude, latitude, callback) => {

    // console.log(' forcase method called')

    const url = 'http://api.weatherstack.com/current?access\_key=a0363848e9a8e08c3c14df2366ec8adb&query='+encodeURIComponent(longitude+','+latitude)

    // const url = 'http://api.weatherstack.com/current?access\_key=a0363848e9a8e08c3c14df2366ec8adb&query=37.8267,-122.4233'

    // console.log(url)

    request({uri : url, json : true}, (error, response) =>{

        if(error){

            // calling the callback method with 2 arguments

            callback( 'Unable to connect ot weatherstack service!' ,undefined)

        }

        else if(response.body.error){

            // calling the callback method with 2 arguments

            callback('Please specify proper location', undefined)

        }

        else{

            // calling the callback method with 2 arguments and with proper data

            // console.log("The Weather is : ",response.body.current)

            // console.log( response.body.current)

            callback(undefined, response.body)

        }

    })

}

// exporting the module to app.js

module.exports = {

    forecast

}

**Geocode.js**

const request = require('request')

// code to fetch the longitude and latitude from mapbox service and return in app.js

const geoCode = (address, callback) => {

    // encodeURIComponent is to convert special charcter into some url format

    const url = 'https://api.mapbox.com/geocoding/v5/mapbox.places/'+encodeURIComponent(address)+'.json?access\_token=pk.eyJ1Ijoic2F0aXNoa3I2MzkiLCJhIjoiY2t4b3I1bWZwMDJrNDJwbzIxZjB6bXY3cCJ9.KR7UTWnMLZyPXXLd8mHuDg'

    request({uri: url, json : true}, (error, response) =>{

        if(error){

            callback('Unable to access mapbox service!', undefined)

        }

        else if (response.body.features.length == 0){

            callback('Unable to find location. Please search different one.', undefined)

        }

        else{

            // if everything is perfect we get the longitude, latitude from mapbox api

            callback(undefined, {

                latitude : response.body.features[0].center[1],

                longitude : response.body.features[0].center[0],

                location : response.body.features[0].place\_name

            })

        }

    })

}

module.exports = {

    geoCode

}

***App.js***

// weather app

// make call to weatherstack.com

const geoCode = require('./utils/geocode')

const forecast = require('./utils/forecast')

const address = process.argv[2]

// process.argv[2] is to get the location from command line

geoCode.geoCode(address, (error, data) =>{

    // if user doesn't provide any location while executing the program

    if (!address){

        return console.log('Please provide a location to search')

    }

    if(error){

        return console.log(error)

    }

    // callback chaining. calling a callback inside another callback

    forecast.forecast(data.latitude, data.longitude, (error, forecastData) => {

        if(error){

            return console.log('Error: ', error)

        }

        console.log('Location: ',forecastData.location.region)

        console.log('The temperature is : ', forecastData.current.temperature+" Degree Celcius")

    })

})

// command to get user input from command line arguments

console.log('Location provided is : '+process.argv[2])

// console.log(process.argv.length)

// to execute the weather app

// node app.js location name hit enter

// to search for a location having more than 1 word use : node app.js "New York"

**LIST OF MODULES**

**chalk** 🡪 used to make terminal text colourful

**validator** 🡪 to perform different type of validation like url,email and others

**nodemon** 🡪 nodemon is a tool that helps develop node.js based applications by automatically restarting the node application when file changes in the directory are detected. To install it use npn i nodemon -g hit enter

**-g stands for global.**

To verify nodemon installation : nodemon -v

**To run a file using nodemon** : nodemon filename.js : the nodemon keeps running and will execute file when we make changes and save it to our file.

**YARGS** : parsing arguments and generating an elegant user interface.

It helps us in grabbing command line arguments easily without much parsing. We can pass key value pair easily and grab in our application.

yargs = require('yargs')

// get all command line arguments

console.log(yargs.argv) // node fileName.js satish kumar

o/p: { \_: [ 'satish', 'kumar' ], '$0': 'yargs\_demo.js'

console.log(yargs.argv) // node fileName.js satish --title="kumar" ::

op :{ \_: [ 'satish' ], title: 'kumar', '$0': 'yargs\_demo.js' }

// to access our custom key value

console.log(yargs.argv.title)

we can define our own command in yargs.command function and when we use that in cmd terminal that particular function is called.

// we can use yargs command to define our custom command and it will call the respective version of that.

yargs.command({

    command: 'add',

    describe: 'Add a new note',

    handler : function(){

        console.log('Called Add Function')

    }

})

// using yargs module

console.log(yargs.argv)

--help

app.js [command]

Commands:

app.js add Add a new note

Options:

--help Show help [boolean]

--version Show version number [boolean]

To call our function we can use : node app.js add ENTER : it will call the function mapped to add

**REQUEST MODULE (**the module is deprecated, the new updated module is postman-request**)**

npm install request (Enter).

Request is designed to be the simplest way possible to make http calls. It supports HTTPS and follows redirects by default.

To make a simple request :

const request = require('request')

const url = "http://api.weatherstack.com/current?access\_key=a0363848e9a8e08c3c14df2366ec8adb&query=37.8267,-122.4233"

// setting json:true parse the data to true itself.

request({url: url, json:true}, (error, response) =>{

// if there is any error, then response will be null. If response is having values means

// there’s no error nd so error will be null

    // console.log(response)

    // console.log(error)

    // const data = JSON.parse(response.body) // parase the JSON data

    console.log(response.body.current) // get the current info only

})

asdga