Node.js is a javascript runtime. Project will work to write a few RESTful endpoints running a server saving, retrieving, updating and deleting data.

**Project Creation**

* npm is the Node Package Manager (similar to nuget for .net or Linux apt-get)
* hapiJS is a node package (library) used to create a web server, including RESTful endpoints

|  |  |
| --- | --- |
| **Step Description** | **Command** |
| Open command line | Open Git Bash On windows or terminal on Linux/Mac |
| Change to root directory | * **cd /c** on windows **cd /** on Linux/Mac |
| Make a new directory for project | * mkdir nodeproj |
| Change directory to new project directory | * cd nodeproj |
| Initialize a git repository | * git init |
| Initial npm | * npm init |
| answer npm questions | * defaults are fine |
| Add third-party libraries hapi.js that will be used in this project  [www.hapijs.com](http://www.hapijs.com) | * npm install --save hapi |

**Project Setup**

|  |  |
| --- | --- |
| **Step Description** | **Command** |
| Create a new file **.gitignore** (filename begins with a dot)  Add files / directories git will ignore  node\_modules - packages installed by npm  \*.map - files that are for debugging  \*.bak - some editors keep original files with bak extension  ~\* - some temp files begin with ~ | * add the following: node\_modules \*.map \*.bak dist ~\* |

**HelloWord**

Simple test to make sure node is installed properly

|  |  |
| --- | --- |
| **Step Description** | **Command** |
| Create a directory called src | * mkdir src |
| Create a new file called main.js in src directory | * add the following: console.log('Hello World!'); |
| Setup npm to execute main.js | * edit package.json * under scripts (line 6/7)add the following * "start": "node src/main.js", * The file should be: |
| Execute the application | * npm start   returns:  Hello World! |

**Git Commit**

Let’s check in code to git

|  |  |
| --- | --- |
| **Step Description** | **Command** |
| Add files to git from command line in the root project directory | * git add .gitignore * git add package.json * git add src |
| Verify what is ready to be committed | * git status |
| Commit | * git commit -m "initial project commit" |

**Hapi HelloWorld**

Modify **main.js** to use hapi and return hello world with the following code:

'use strict';

var Hapi = require('hapi');

var server = new Hapi.Server();

server.connection({port: 3000});

server.route({

method: 'GET',

path: '/',

handler: function (request, reply) {

reply('Hello World! from Hapi');

}

});

server.start(function (err) {

if (err) {

throw err;

}

console.log('Server running at ', server.info.port);

});

From command line start application **npm start**

Start Chrome or another browser

Type [**http://localhost:3000**](http://localhost:3000)

Server will response with Hello, World! from Hapi

To stop the server use **ctrl-c**

**First RESTful Route**

Let’s commit code changes to get

git status shows modified files

**git add -u**  add modified files

git commit -m "hapi helloworld"

**Create Some Data**

Create a new file **games.json** & save it in the **src** directorywith the following:

[

{

"id": 1,

"name": "Tic-Tac-Toe"

},

{

"id": 2,

"name": "Checkers"

},

{

"id": 3,

"name": "Chess"

}

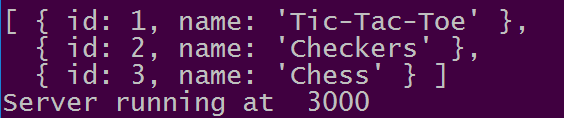
]

Add this file to our main.js after the var server line (around line 3)

var games = require('./games.json');

console.log(games);

star the application **npm start** and the result should be the following:



**Check-in change**

**git status**

notice a new untracked file games.json is listed **git add src/games.json** to add it

add modified files **git add -u**

commit change list **git commit -m "add games list"**

**First RESTful Route**

Add another route to the main js file. Add this just before server.start (about line 17). This route will return a full list of all games.

server.route( {

method: 'GET',

path: '/games',

handler: function (request, reply) {

reply(games);

}

});

Start the server **npm start**

In the browser [**http://localhost:3000/games**](http://localhost:3000/games)



**Check in changes**

stage changes in modified files **git add -u**

commit **git commit -m "added games endpoint"**

**Second Endpoint**

The last route returned a complete list of games. Let’s return just a game by its id. To do this we will use a library called lodash which we need to install first

**npm install --save lodash**

At the top of the main.js file using the \_ (underscore symbol is common for the library lodash. There is also a library called underscore that is very similar)

**var \_ = require('lodash');**

server.route( {

method: 'GET',

path: '/games/{id}',

handler: function (request, reply) {

var game = \_.find(games, {'id': parseInt(request.params.id, 10)});

reply(game);

}

});

In the function .find the first parameter (games is the data being searched. The second parameter an object with of what to search for in games. In this case search the property 'id' for the value **request.params.id** which is what is sent in the path {id}. parseInt is converting it to a number.

**Validation**

The /games/{id} endpoint works, but we can validate that id is a number using a library called joi. Let’s install this library

Install joi **npm install --save joi**

Add require statement to top of main.js **var Joi = require('joi');**

Modify the /games/{id} add the **config** object and remove the parseInt function:

server.route({

method: 'GET',

path: '/games/{id}',

handler: function (request, reply) {

// var game = \_.find(games, {'id': parseInt(request.params.id, 10)});

var game = \_.find(games, {'id': request.params.id});

reply(game);

},

config: {

validate: {

params: {

id: Joi.number().integer().min(1).required()

}

}

}

});

By adding the config object the param id is being converted to a number that must be an integer (no decimal) and a minimum value of 1. It is also required.

Start the server **npm start**

From the browser try the following:

<http://localhost:3000/games/1> <http://localhost:3000/games/2>

<http://localhost:3000/games/x> <http://localhost:3000/games/0> <http://localhost:3000/games/-99>

**Check-in changes (Do you remember the steps?**)

**Boom – return html errors**

Hapi has a library to return html error codes easily. For example 404 error if an a game is not found. For example, /games/4 doesn’t exist.

Install boom **npm install –save boom**

Require boom **var Boom = require('boom');**

Change the endpoint **/games/{id}** add the **if block**

var game = \_.find(games, {'id': request.params.id});

if (!game){

return reply(Boom.notFound('game id not found'));

}

reply(game);

The if (!game) will be true if game is not found. The ! is a not operator. i.e. !true is false

Note: It is a good idea to always return reply(). This avoids an issue of replying twice.

**Start the server**

Try [**http://localhost:3000/games/4**](http://localhost:3000/games/4)