Git + NodeJS + MongoDB + ExpressJS

- Install Git.
- Install Node JS

```
Node.js = Runtime Environment + JavaScript Library
```

```
C:\WINDOWS\system32>node --version
v5.10.0

C:\WINDOWS\system32>node
> var x=10;
var x=10;
undefined
> var y=20;
undefined
> x
10
> y
20
> x+y
30
>
```

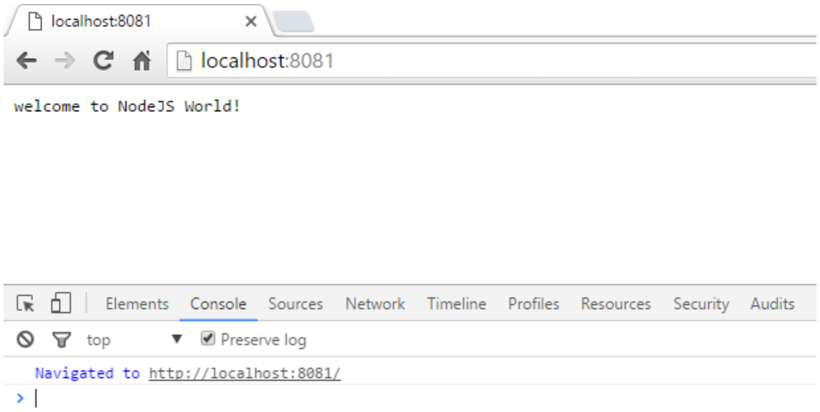
staticPage.js

```
var http = require("http");
http.createServer(function (request, response) {

    // Send the HTTP header
    // HTTP Status: 200 : OK
    // Content Type: text/plain
    response.writeHead(200, {'Content-Type': 'text/plain'});

    // Send the response body as "Hello World"
    response.end('welcome to NodeJS World!\n');
}).listen(8081);

// Console will print the message
console.log('Node Server running at http://127.0.0.1:8081/');
console.log('welcome to NodeJS World!');
```

Running staticPage.js using node server, before that, we need to install modules using npn, like:

```
C:\Program Files\nodejs\node_modules\npm\node_modules>npm install connect
npm@3.8.3 C:\Program Files\nodejs\node_modules\npm
`-- connect@3.4.1


C:\Program Files\nodejs\node_modules\npm\node_modules>npm install server
npm@3.8.3 C:\Program Files\nodejs\node_modules\npm
+-- connect@3.4.1
`-- server@0.0.3  extraneous


C:\Program Files\nodejs\node_modules\npm\node_modules>npm install http
npm@3.8.3 C:\Program Files\nodejs\node_modules\npm
+-- connect@3.4.1
+-- http@0.0.0  extraneous
`-- server@0.0.3  extraneous


C:\Program Files\nodejs\node_modules\npm\node_modules>node server

C:\Program Files\nodejs\node_modules\npm>E:
```

```
E:\work\GitHub\Projects\nodeJSApps>node staticPage.js
Server running at http://127.0.0.1:8081/
welcome to NodeJS World!
```



```
welcome to NodeJS World!
```

```
Navigated to http://localhost:8081/
>
```

- Install MongoDB

```
C:\WINDOWS\system32>node --version
v5.10.0

C:\WINDOWS\system32>mongod --directoryperdb --dbpath E:\work\softwares\MongoDB\Server\3.2\data\db --logpath E:\work\softwares\MongoDB\Server\3.2\log\mongodb.log --logappend --rest --service --httpinterface --replSet "rs0" --install

C:\WINDOWS\system32>net start mongoDB

The MongoDB service was started successfully.


C:\WINDOWS\system32>mongo
MongoDB shell version: 3.2.4
connecting to: test
> rs.initiate()
{
        "info2" : "no configuration specified. Using a default configuration for the set",
        "me" : "thanooj:27017",
        "ok" : 1
}
rs0:SECONDARY> rs.conf()
{
        "_id" : "rs0",
        "version" : 1,
        "protocolVersion" : NumberLong(1),
        "members" : [
                {
                        "_id" : 0,
                        "host" : "thanooj:27017",
                        "arbiterOnly" : false,
                        "buildIndexes" : true,
                        "hidden" : false,
                        "priority" : 1,
                        "tags" : {

                        },
                        "slaveDelay" : NumberLong(0),
                        "votes" : 1
                }
        ],
        "settings" : {
                "chainingAllowed" : true,
                "heartbeatIntervalMillis" : 2000,
                "heartbeatTimeoutSecs" : 10,
                "electionTimeoutMillis" : 10000,
                "getLastErrorModes" : {

                },
                "getLastErrorDefaults" : {
                        "w" : 1,
                        "wtimeout" : 0
                },
                "replicaSetId" : ObjectId("5700cbbf631f200f57c27ddc")
        }
}
rs0:PRIMARY> rs.status()
{
        "set" : "rs0",
        "date" : ISODate("2016-04-03T07:53:01.361Z"),
        "myState" : 1,
        "term" : NumberLong(1),
        "heartbeatIntervalMillis" : NumberLong(2000),
        "members" : [
                {
                        "_id" : 0,
                        "name" : "thanooj:27017",
                        "health" : 1,
                        "state" : 1,
                        "stateStr" : "PRIMARY",
                        "uptime" : 123,
                        "optime" : {
                                "ts" : Timestamp(1459669953, 1),
                                "t" : NumberLong(1)
                        },
                        "optimeDate" : ISODate("2016-04-03T07:52:33Z"),
                        "infoMessage" : "could not find member to sync from",
                        "electionTime" : Timestamp(1459669952, 2),
                        "electionDate" : ISODate("2016-04-03T07:52:32Z"),
                        "configVersion" : 1,
                        "self" : true
                }
        ],
        "ok" : 1
}
rs0:PRIMARY> db.createCollection("cust");
{ "ok" : 1 }
rs0:PRIMARY> show collections;
cust
rs0:PRIMARY> use mydb;
switched to db mydb
rs0:PRIMARY> db.createCollection("cust");
{ "ok" : 1 }
rs0:PRIMARY> show collections;
cust
```

```
rs0:PRIMARY> db.cust.insert({id:1,name:'sriram',loction:'ayodya'})
WriteResult({ "nInserted" : 1 })
rs0:PRIMARY> db.cust.find();
{ "_id" : ObjectId("5700cca43133bfac6bf15d07"), "id" : 1, "name" : "sriram", "loction" : "ayodya" }
rs0:PRIMARY>
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700cca43133bfac6bf15d07"),
        "id" : 1,
        "name" : "sriram",
        "loction" : "ayodya"
}
rs0:PRIMARY> db.cust.insert({id:2,name:'lakshman',loction:'ayodya'})
WriteResult({ "nInserted" : 1 })
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700cca43133bfac6bf15d07"),
        "id" : 1,
        "name" : "sriram",
        "loction" : "ayodya"
}
{
        "_id" : ObjectId("5700cf5f3133bfac6bf15d08"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodya"
}
```

```
rs0:PRIMARY> db.cust.findOne({id:1})
{
        "_id" : ObjectId("5700cca43133bfac6bf15d07"),
        "id" : 1,
        "name" : "sriram",
        "loction" : "ayodya"
}
rs0:PRIMARY> db.cust.findOne({id:2})
{
        "_id" : ObjectId("5700cf5f3133bfac6bf15d08"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodya"
}
```

```
rs0:PRIMARY> db.cust.update({id:1},{id:1,name:"raghuram"},{upsert:true});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700d4c93133bfac6bf15d0b"),
        "id" : 1,
        "name" : "raghuram"
}
{
        "_id" : ObjectId("5700d4d53133bfac6bf15d0c"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodhya"
}
rs0:PRIMARY> db.cust.update({id:1},{id:1,name:"raghuram",locations:"ayodhya"},{upsert:true});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700d4c93133bfac6bf15d0b"),
        "id" : 1,
        "name" : "raghuram",
        "locations" : "ayodhya"
}
{
        "_id" : ObjectId("5700d4d53133bfac6bf15d0c"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodhya"
}
rs0:PRIMARY> db.cust.insert({id:3,name:'bharatha',loction:'ayodya'})
WriteResult({ "nInserted" : 1 })
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700d4c93133bfac6bf15d0b"),
        "id" : 1,
        "name" : "raghuram",
        "locations" : "ayodhya"
}
{
        "_id" : ObjectId("5700d4d53133bfac6bf15d0c"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodhya"
}
{
        "_id" : ObjectId("5700d60b3133bfac6bf15d0d"),
        "id" : 3,
        "name" : "bharatha",
        "loction" : "ayodya"
}
rs0:PRIMARY> db.cust.remove({id:3});
WriteResult({ "nRemoved" : 1 })
rs0:PRIMARY> db.cust.find().pretty();
{
        "_id" : ObjectId("5700d4c93133bfac6bf15d0b"),
        "id" : 1,
        "name" : "raghuram",
        "locations" : "ayodhya"
}
{
        "_id" : ObjectId("5700d4d53133bfac6bf15d0c"),
        "id" : 2,
        "name" : "lakshman",
        "loction" : "ayodhya"
}
rs0:PRIMARY> db.cust.remove({});
WriteResult({ "nRemoved" : 2 })
rs0:PRIMARY> db.cust.find().pretty();
rs0:PRIMARY>
```

- Non-Blocking Code Example

```
C:\Program Files\nodejs\node_modules\npm\node_modules>npm install fs
npm@3.8.3 C:\Program Files\nodejs\node_modules\npm
+-- connect@3.4.1
+-- express@4.13.4  extraneous
+-- fs@0.0.2  extraneous
+-- http@0.0.0  extraneous
`-- server@0.0.3  extraneous


C:\Program Files\nodejs\node_modules\npm\node_modules>E:

E:\work\GitHub\Projects\nodeJSApps>dir
 Volume in drive E is SPACE
 Volume Serial Number is BAD5-CB77

 Directory of E:\work\GitHub\Projects\nodeJSApps

04/03/2016  03:32 PM    <DIR>          .
04/03/2016  03:32 PM    <DIR>          ..
04/03/2016  03:32 PM                16 cust.csv
04/03/2016  03:32 PM               191 fs.js
04/03/2016  02:57 PM    <DIR>          node_modules
04/03/2016  03:17 PM               490 staticPage.js
04/03/2016  02:56 PM    <DIR>          test
               3 File(s)            697 bytes
               4 Dir(s)  165,199,478,784 bytes free

E:\work\GitHub\Projects\nodeJSApps>node fs.js
NodeJS fs module.
1,sriram,ayodhya

E:\work\GitHub\Projects\nodeJSApps>
```

- Express

Express Overview

Express is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It facilitates a rapid development of Node based Web applications. Following are some of the core features of Express framework:

- Allows setting up middleware’s to respond to HTTP Requests.
- Defines a routing table which is used to perform different action based on HTTP Method and URL.
- Allows to dynamically rendering HTML Pages based on passing arguments to templates.

Installing Express

```
C:\Program Files\nodejs\node_modules\npm\node_modules>npm install express
npm@3.8.3 C:\Program Files\nodejs\node_modules\npm
+-- connect@3.4.1
+-- express@4.13.4  extraneous
+-- http@0.0.0  extraneous
`-- server@0.0.3  extraneous
```

There are following important modules which you should install along with express:

- body-parser - This is a node.js middleware for handling JSON, Raw, Text and URL encoded form data.
- cookie-parser - Parse Cookie header and populate req.cookies with an object keyed by the cookie names.
- multer - This is a node.js middleware for handling multipart/form-data.

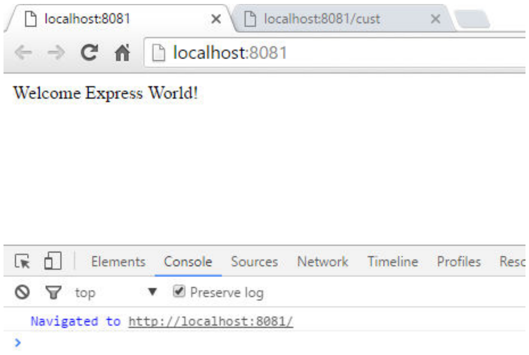
```
E:\work\GitHub\Projects\nodeJSApps>npm install express --save
npm WARN saveError ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
E:\work\GitHub\Projects\nodeJSApps
`-- express@4.13.4
  +-- accepts@1.2.13
  | +-- mime-types@2.1.10
  | | `-- mime-db@1.22.0
  | `-- negotiator@0.5.3
  +-- array-flatten@1.1.1
  +-- content-disposition@0.5.1
  +-- content-type@1.0.1
  +-- cookie@0.1.5
  +-- cookie-signature@1.0.6
  +-- debug@2.2.0
  | `-- ms@0.7.1
  +-- depd@1.1.0
  +-- escape-html@1.0.3
  +-- etag@1.7.0
  +-- finalhandler@0.4.1
  | `-- unpipe@1.0.0
  +-- fresh@0.3.0
  +-- merge-descriptors@1.0.1
  +-- methods@1.1.2
  +-- on-finished@2.3.0
  | `-- ee-first@1.1.1
  +-- parseurl@1.3.1
  +-- path-to-regexp@0.1.7
  +-- proxy-addr@1.0.10
  | +-- forwarded@0.1.0
  | `-- ipaddr.js@1.0.5
  +-- qs@4.0.0
  +-- range-parser@1.0.3
  +-- send@0.13.1
  | +-- destroy@1.0.4
  | +-- http-errors@1.3.1
  | | `-- inherits@2.0.1
  | +-- mime@1.3.4
  | `-- statuses@1.2.1
  +-- serve-static@1.10.2
  +-- type-is@1.6.12
  | `-- media-typer@0.3.0
  +-- utils-merge@1.0.0
  `-- vary@1.0.1

npm WARN enoent ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
npm WARN nodeJSApps No description
npm WARN nodeJSApps No repository field.
npm WARN nodeJSApps No README data
npm WARN nodeJSApps No license field.

E:\work\GitHub\Projects\nodeJSApps>dir
 Volume in drive E is SPACE
 Volume Serial Number is BAD5-CB77

 Directory of E:\work\GitHub\Projects\nodeJSApps

04/03/2016  04:34 PM    <DIR>          .
04/03/2016  04:34 PM    <DIR>          ..
04/03/2016  03:32 PM                16 cust.csv
04/03/2016  03:48 PM               595 expressOne.js
04/03/2016  03:32 PM               191 fs.js
04/03/2016  04:34 PM    <DIR>          node_modules
04/03/2016  03:17 PM               490 staticPage.js
```

```
               4 File(s)          1,292 bytes
               3 Dir(s)  165,150,875,648 bytes free

E:\work\GitHub\Projects\nodeJSApps>npm install body-parser --save
npm WARN saveError ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
E:\work\GitHub\Projects\nodeJSApps
`-- body-parser@1.15.0
  +-- bytes@2.2.0
  +-- http-errors@1.4.0
  +-- iconv-lite@0.4.13
  +-- qs@6.1.0
  `-- raw-body@2.1.6
    `-- bytes@2.3.0

npm WARN enoent ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
npm WARN nodeJSApps No description
npm WARN nodeJSApps No repository field.
npm WARN nodeJSApps No README data
npm WARN nodeJSApps No license field.

E:\work\GitHub\Projects\nodeJSApps>npm install multer --save
npm WARN saveError ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
E:\work\GitHub\Projects\nodeJSApps
`-- multer@1.1.0
  +-- append-field@0.1.0
  +-- busboy@0.2.13
  | +-- dicer@0.2.5
  | | `-- streamsearch@0.1.2
  | `-- readable-stream@1.1.13
  |   +-- core-util-is@1.0.2
  |   +-- isarray@0.0.1
  |   `-- string_decoder@0.10.31
  +-- concat-stream@1.5.1
  | +-- readable-stream@2.0.6
  | | +-- isarray@1.0.0
  | | +-- process-nextick-args@1.0.6
  | | `-- util-deprecate@1.0.2
  | `-- typedarray@0.0.6
  +-- mkdirp@0.5.1
  | `-- minimist@0.0.8
  +-- object-assign@3.0.0
  `-- xtend@4.0.1

npm WARN enoent ENOENT: no such file or directory, open 'E:\work\GitHub\Projects\nodeJSApps\package.json'
npm WARN nodeJSApps No description
npm WARN nodeJSApps No repository field.
npm WARN nodeJSApps No README data
npm WARN nodeJSApps No license field.
```

expressOne.js

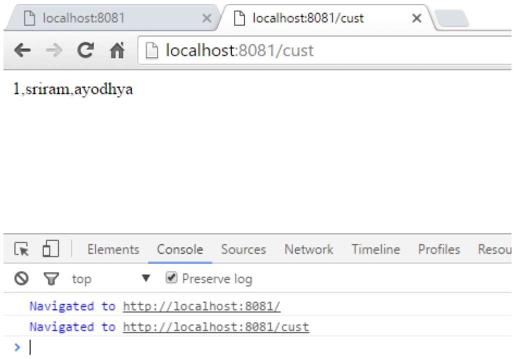
```
var express = require('express');
var app = express();
var fs = require("fs");
var cust_data;
app.get('/', function (req, res) {
   res.send('Welcome Express World!');
})

fs.readFile('cust.csv', function (err, data) {
    if (err) return console.error(err);
    cust_data = data.toString();
    console.log(data.toString());
});
app.get('/cust', function (req, res) {
   res.send(cust_data);
})

var server = app.listen(8081, function () {

  var host = server.address().address
  var port = server.address().port

  console.log("Express, listening at http://%s:%s", host, port)

})
E:\work\GitHub\Projects\nodeJSApps>dir
 Volume in drive E is SPACE
 Volume Serial Number is BAD5-CB77

 Directory of E:\work\GitHub\Projects\nodeJSApps

04/03/2016  04:34 PM    <DIR>          .
```

```
04/03/2016  04:34 PM    <DIR>          ..
04/03/2016  03:32 PM                16 cust.csv
04/03/2016  03:48 PM               595 expressOne.js
04/03/2016  03:32 PM               191 fs.js
04/03/2016  04:34 PM    <DIR>          node_modules
04/03/2016  03:17 PM               490 staticPage.js
               4 File(s)          1,292 bytes
               3 Dir(s)  165,148,434,432 bytes free

E:\work\GitHub\Projects\nodeJSApps>node expressOne.js
Express, listening at http://:::8081
1,sriram,ayodhya
```



Welcome Express World!

```
Navigated to http://localhost:8081/
```



1,sriram,ayodhya

```
Navigated to http://localhost:8081/
Navigated to http://localhost:8081/cust
```