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CSE 360
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Node.js and npm Presentation

Project:

For this project, we decided to show the class a few simple ways to utilize Node.js such as running javascript files and starting a basic HTTP server.

[1] Installing Node js:

For Ubuntu (Which we used)

1) sudo apt-get install -y nodejs
   -this command installs nodejs binary and npm
2) (Install build tools)
   sudo apt-get install -y build-essential
   -this command installs build tools that is required for some of the npm packages to work
   The official nodejs website strongly recommends you install the build tools.
3) sudo apt-get install nodejs-legacy
   -this package contains a symbolic link that allows the node command to work in terminal

For CentOS

1) (Install as root)
   yum -y install nodejs
2) (Install build tools)
   yum groupinstall ‘Development Tools’

[2] Creating and Running a Javascript file with Node:

We began by making this example Javascript file called ‘colors.js’.

```
-------------------------------------------------------------------------------------------------------------

*This program generates a HTML file that when viewed in a browser outputs a list colors in
hexadecimal format.*/

/*Declare variables*/
var digit = '';
var color ='';

/*Generates a random hexadecimal digit. (i.e.: 1-9, A-F)*/
genDigit = function(){
```

```
var randNumber = Math.random();
digit = '';
if(randNumber <= .0625){
  digit = '0';
  return digit;
}
else if(randNumber >.0625 && randNumber <= .125){
  digit = '1';
  return digit;
}
else if(randNumber >.125 && randNumber <= .1875){
  digit = '2';
  return digit;
}
else if(randNumber >.1875 && randNumber <= .25){
  digit = '3';
  return digit;
}
else if(randNumber >.25 && randNumber <= .3125){
  digit = '4';
  return digit;
}
else if(randNumber >.3125 && randNumber <= .375){
  digit = '5';
  return digit;
}
else if(randNumber >.375 && randNumber <= .4375){
  digit = '6';
  return digit;
}
else if(randNumber >.4375 && randNumber <= .5){
  digit = '7';
  return digit;
}
else if(randNumber >.5 && randNumber <= .5625){
  digit = '8';
  return digit;
}
else if(randNumber >.5625 && randNumber <= .625){
  digit = '9';
  return digit;
}
else if(randNumber >.625 && randNumber <= .6875){
  digit = 'A';
  return digit;
}else if(randNumber >.6875 && randNumber <= .75){
  digit = 'B';
  return digit;
}
else if(randNumber >.75 && randNumber <= .8125){
  digit = 'C';
```

```
    return digit;
  }
  else if(randNumber >.8125 && randNumber <= .875){
    digit = 'D';
    return digit;
  }
  else if(randNumber >.875 && randNumber <= .9375){
    digit = 'E';
    return digit;
  }
  else if(randNumber >.9375){
    digit = 'F';
    return digit;
  }
};

/*Generates a color value (i.e.:six hexadecimal digits.)*/
genColor = function(){
  color = '';
  for (var i = 0; i < 6; i++){
    color = color + genDigit();
  };
  return color;
};

/*Prints out the first half of the HTML file.*/
console.log('<html>\n  <head>\n    <meta charset="UTF-8">\n    \
<title>Ten random colors</title>\n  </head>\n  <body>\n    <ul>');

/*Loop that prints out a list of ten random colors.*/
for(var i = 0; i < 10; i++){
  var tempColor = genColor();
  console.log('      <li style="color: #' + tempColor + '">' + tempColor + '</li>');
};

/*Prints the last half of the HTML file.*/
console.log('    </ul>\n  </body>\n</html>');
-----------------------------------------------------------------------------------------------------------------------------------------
---
```

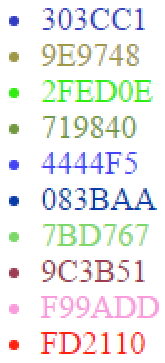
1) Place the above code in a file called ‘colors.js’.

2) You can then run this file with the command:
   node colors.js

   The output will result in an html format file.

3) To redirect the output into a file, we used the following command:
   node colors.js > colors.html

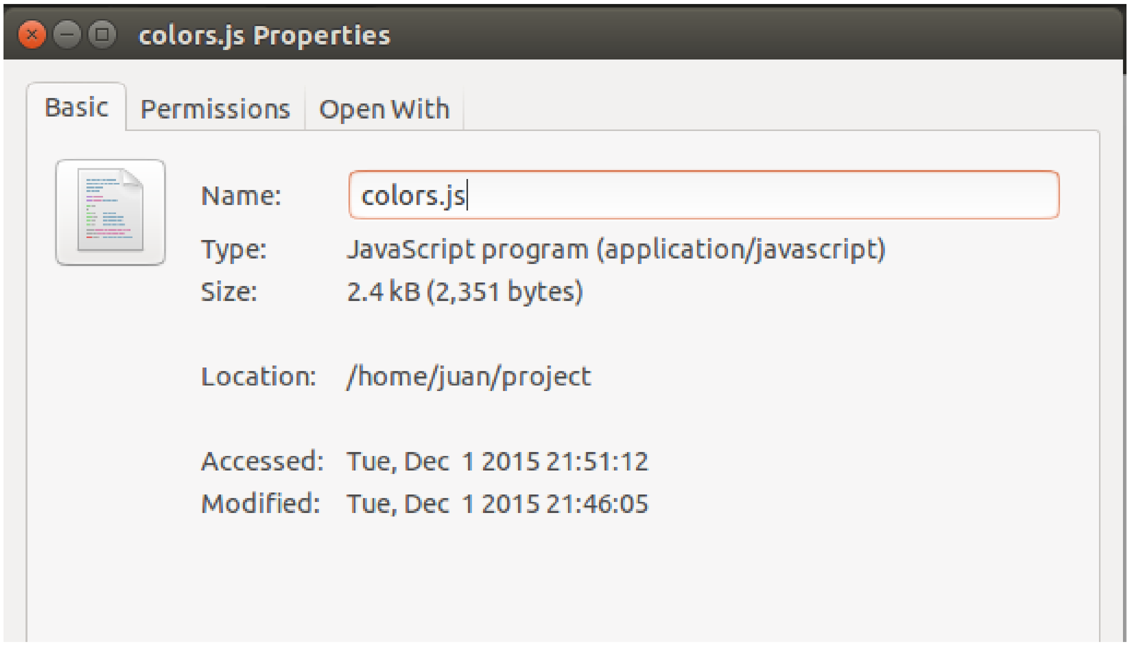
4) If you view the colors.html file in a browser, the output will look something like this:



```
• 303CC1
• 9E9748
• 2FED0E
• 719840
• 4444F5
• 083BAA
• 7BD767
• 9C3B51
• F99ADD
• FD2110
```

Do so by opening a browser and type the location of the colors.html file into the address bar. To do this, follow these steps.

1.) Open files directory program
2.) Find file location of colors.js
3.) Right click, scroll down to properties
4.) Copy and paste the location shown below



Name: colors.js
Type: JavaScript program (application/javascript)
Size: 2.4 kB (2,351 bytes)
Location: /home/juan/project
Accessed: Tue, Dec 1 2015 21:51:12
Modified: Tue, Dec 1 2015 21:46:05

[3] Creating and Running an HTTP Server:

We began by making this code for the server:

```
-----------------------------------------------------------------------------------------------
// Require HTTP module
```

```
var http = require('http');

// Defines the port we want to listen to
const PORT=5000;

// Function that handles requests and send response
function handleRequest(request, response){
        response.end('Hello World ' + request.url);
}

// Creates a server
var server = http.createServer(handleRequest);

// Starts the server
server.listen(PORT, function(){
            //Triggered when server is listening
        console.log("Server listening on: http://localhost:%s", PORT);
});
----------------------------------------------------------------------------------------------------
```

1) Place the above code in a file called ‘server.js’.

2) Run this file using the following command:
   node server.js

   -this starts the server

3) It should display “Server listening on...” in the terminal

4) Open localhost5000 in a browser by typing it in the address bar.

5) This should display “Hello World”.

[4] Combining colors.js With Our HTTP Server File:
Below, we will implement the file we created ‘colors.html’ to be displayed when we access localhost5000.

```
-------------------------------------------------------------------------------------------------------

var http = require('http');
fs = require('fs');
file = fs.readFileSync('colors.html');
```

```
const PORT=5000;

function handleRequest(request, response){
        response.writeHead(200, {'Content-Type': 'text/html'});
        response.end(file);
}

var server = http.createServer(handleRequest);

server.listen(PORT,function() {
        console.log("Listening at: " + PORT);
});
```

----

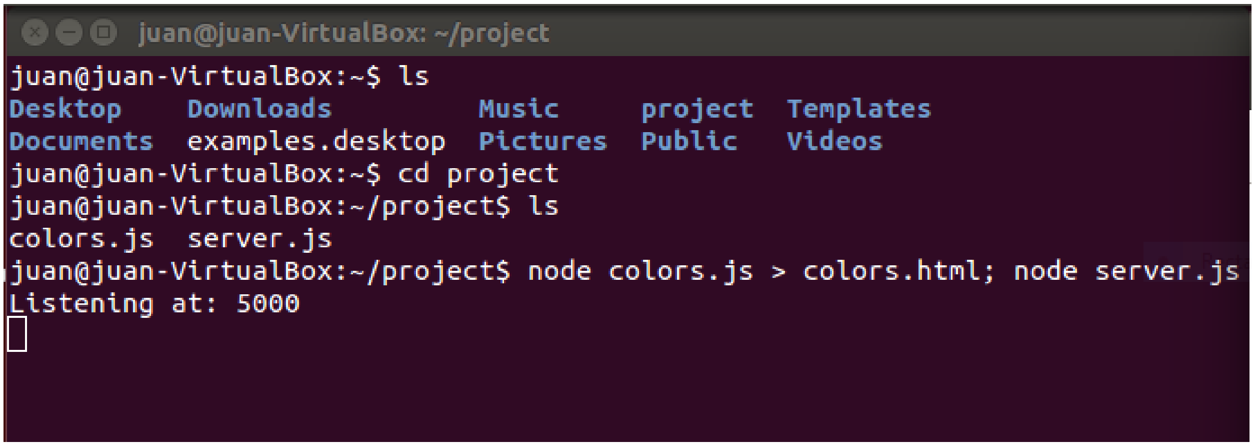
1) Make sure that the colors.html file and the server.js are in the same file directory

2) Update the ‘server.js’ file to the code above.

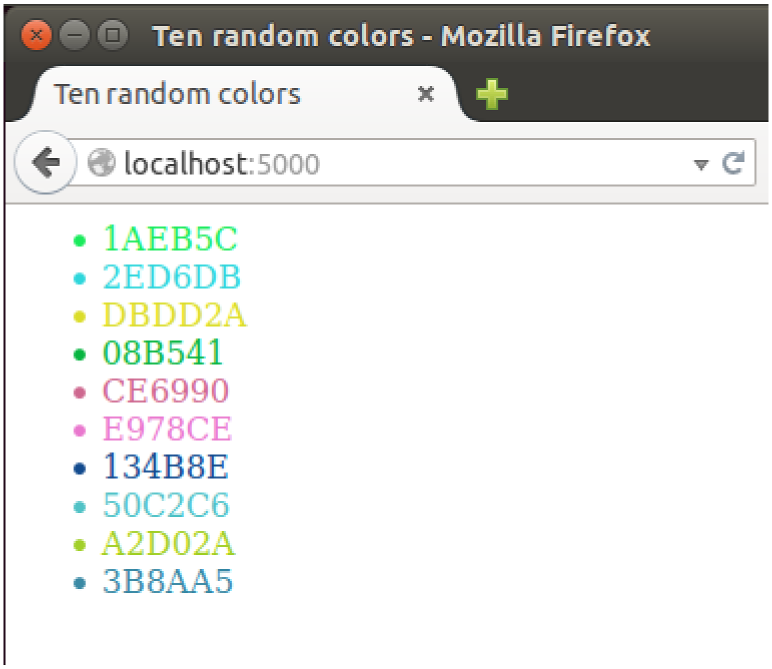
3) Run the file with the following command:
   node server.js

4) Open up localhost:5000 on your web browser. You should be able to view the ‘colors.html’ file.

   The final results are shown below.



```
juan@juan-VirtualBox:~$ ls
Desktop    Downloads         Music     project  Templates
Documents  examples.desktop  Pictures  Public   Videos
juan@juan-VirtualBox:~$ cd project
juan@juan-VirtualBox:~/project$ ls
colors.js  server.js
juan@juan-VirtualBox:~/project$ node colors.js > colors.html; node server.js
Listening at: 5000
```



```
• 1AEB5C
• 2ED6DB
• DBDD2A
• 08B541
• CE6990
• E978CE
• 134B8E
• 50C2C6
• A2D02A
• 3B8AA5
```