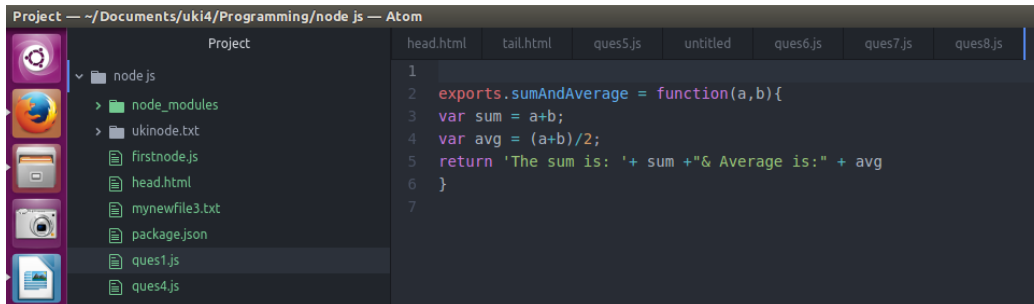
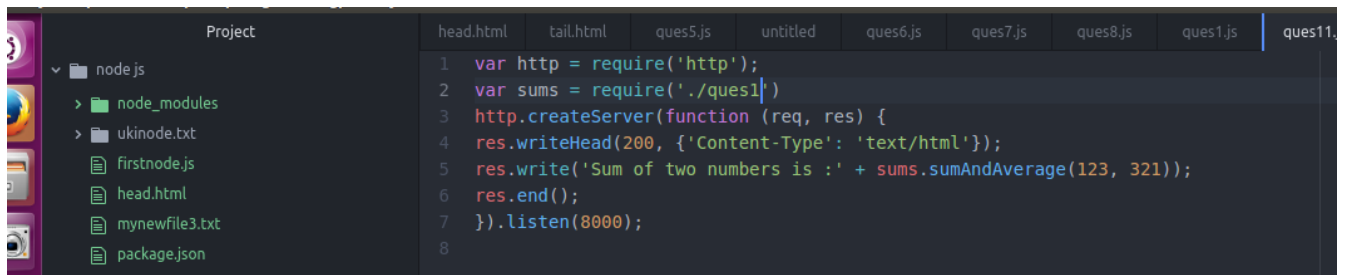


1. Create a custom module which returns the sum and average of any two numbers passed into it. Require the module and run the server by passing 123 and 321 so that the server prints out the sum and average.



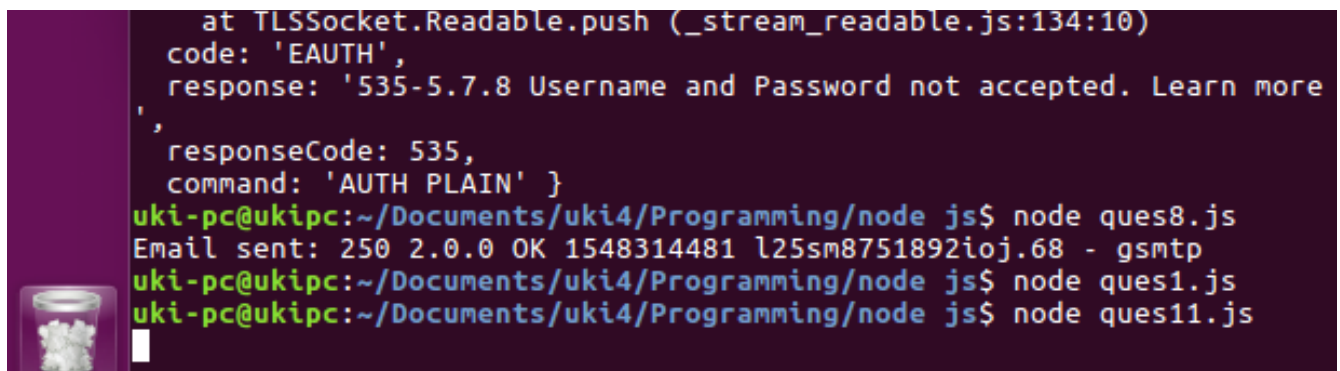
The screenshot shows the Atom editor interface. The left sidebar displays a project tree with a folder named 'node js' containing subfolders 'node\_modules' and 'ukinode.txt', and files 'firstnode.js', 'head.html', 'mynewfile3.txt', 'package.json', 'ques1.js', and 'ques4.js'. The main editor pane shows the content of 'ques1.js' with the following code:

```
1
2 exports.sumAndAverage = function(a,b){
3   var sum = a+b;
4   var avg = (a+b)/2;
5   return 'The sum is: ' + sum + "& Average is:" + avg
6 }
7
```



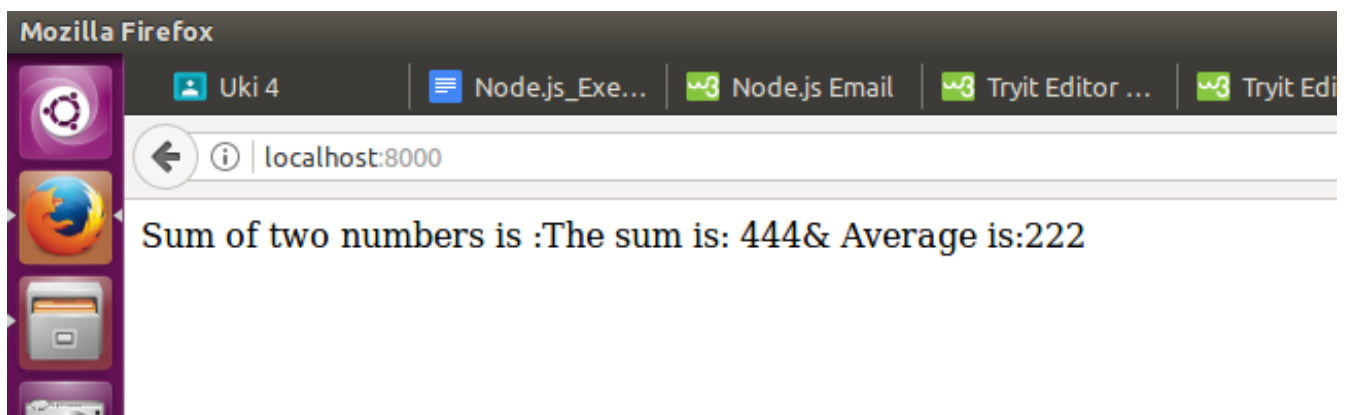
The screenshot shows the Atom editor interface with the 'ques11.js' file open. The code in the editor is as follows:

```
1 var http = require('http');
2 var sums = require('./ques1')
3 http.createServer(function (req, res) {
4   res.writeHead(200, {'Content-Type': 'text/html'});
5   res.write('Sum of two numbers is : ' + sums.sumAndAverage(123, 321));
6   res.end();
7 }).listen(8000);
8
```



The screenshot shows a terminal window with the following output:

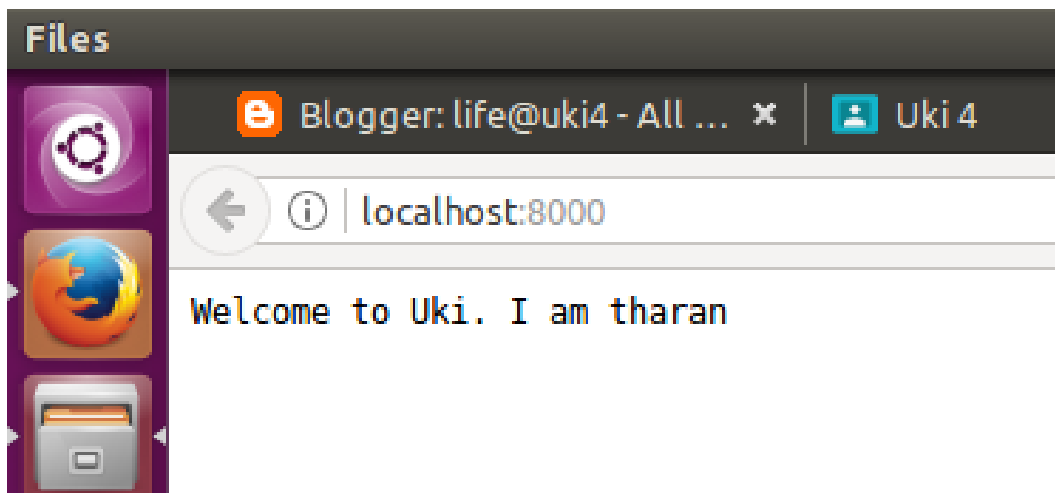
```
at TLSSocket.Readable.push (_stream_readable.js:134:10)
code: 'EAUTH',
response: '535-5.7.8 Username and Password not accepted. Learn more
',
responseCode: 535,
command: 'AUTH PLAIN' }
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques8.js
Email sent: 250 2.0.0 OK 1548314481 l25sm8751892ioj.68 - gsmt
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques1.js
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques11.js
```



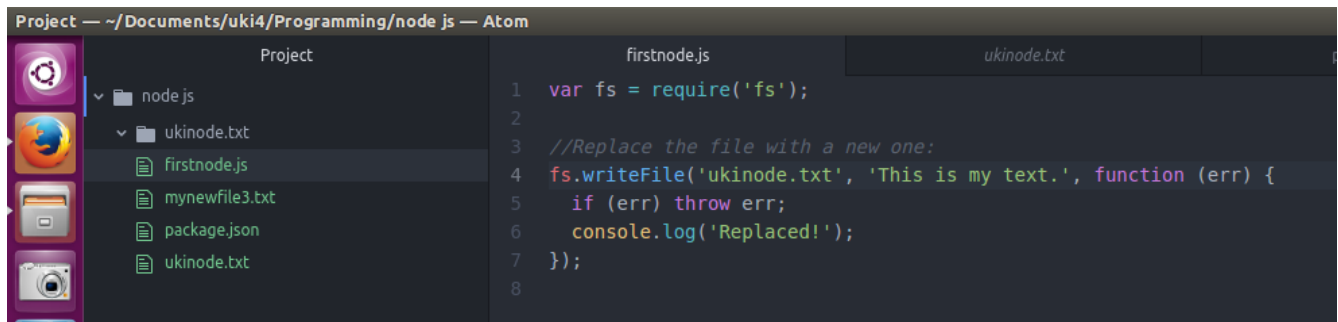
2. Create a simple http server and print “Welcome to Uki. I am **yourname**” when a request is sent to your server via the port 8000. (Note - Change different port numbers and check)

```
uki-pc@ukipc: ~/Documents/uki4/Programming/node js
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node js/firstnode.js:8
client
^
ReferenceError: client is not defined
    at Server.<anonymous> (/home/uki-pc/Documents/uki4/Programming/node js/firstnode.js:8:1)
    at emitTwo (events.js:106:13)
    at Server.emit (events.js:191:7)
    at HTTPParser.parserOnIncoming [as onIncoming] (_http_server.js:567:12)
    at HTTPParser.parserOnHeadersComplete (_http_common.js:99:23)
uki-pc@ukipc:~/Documents/uki4/Programming/node js$
```

```
Atom
firstnode.js — ~/Documents/uki4/Programming/node js — Atom
Project
  node js
    > ukinode.txt
    firstnode.js
    package.json
Welcome Guide
1 var http = require('http');
2
3 //create a server object:
4
5 http.createServer(function (req, res) {
6
7   res.write('Welcome to Uki. I am tharan'); //write a response to the
8   client
9
10  res.end(); //end the response
11
12 }).listen(8000); //the server object listens on port
13
```

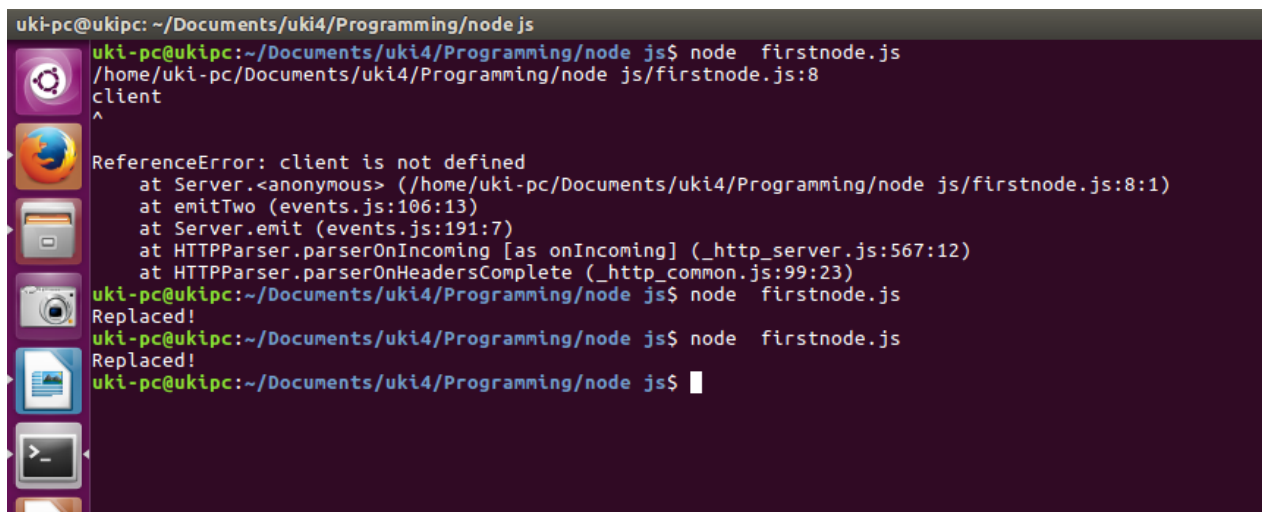


### 3. Using the file system module create a new file called ukinode.txt



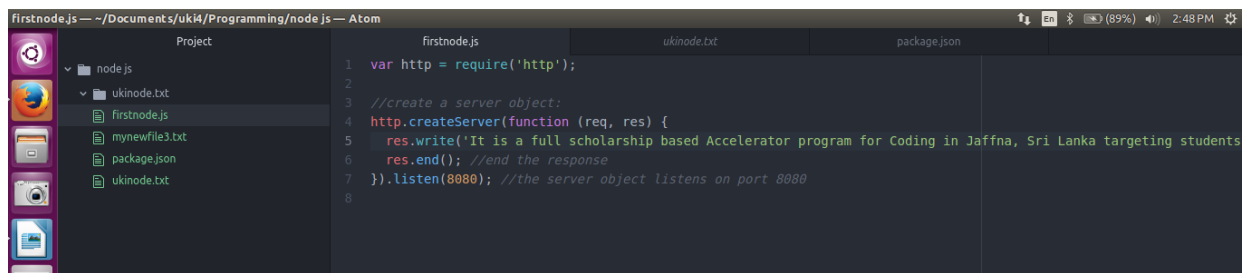
The screenshot shows the Atom editor interface. On the left, the 'Project' sidebar displays a file tree for a project named 'node.js' located at '~/.Documents/uki4/Programming/'. The tree includes a subfolder 'ukinode.txt' containing 'firstnode.js', 'mynewfile3.txt', 'package.json', and 'ukinode.txt'. The main editor area shows the content of 'firstnode.js', which contains the following code:

```
1 var fs = require('fs');
2
3 //Replace the file with a new one:
4 fs.writeFile('ukinode.txt', 'This is my text.', function (err) {
5   if (err) throw err;
6   console.log('Replaced!');
7 });
8
```



The screenshot shows a terminal window with the prompt 'uki-pc@ukipc: ~/.Documents/uki4/Programming/node.js'. The user runs the command 'node firstnode.js'. The output shows a 'ReferenceError: client is not defined' at line 8 of 'firstnode.js'. The user then runs 'node firstnode.js' again, and the output shows 'Replaced!'. The user runs the command again, and the output shows 'Replaced!'.

#### 3.1 Write a paragraph about Uki into that file



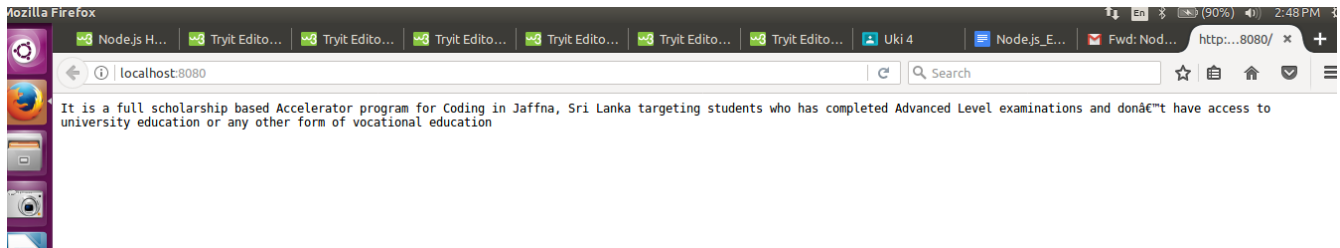
The screenshot shows the Atom editor interface. The 'Project' sidebar displays the same file tree as before. The main editor area shows the content of 'firstnode.js', which contains the following code:

```
1 var http = require('http');
2
3 //create a server object:
4 http.createServer(function (req, res) {
5   res.write('It is a full scholarship based Accelerator program for Coding in Jaffna, Sri Lanka targeting students
6   res.end(); //end the response
7 }).listen(8080); //the server object listens on port 8080
8
```

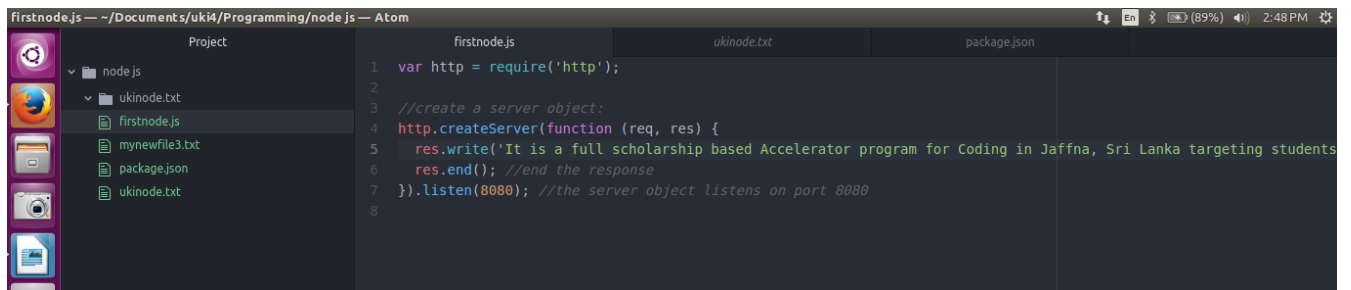


The screenshot shows a terminal window with the prompt 'uki-pc@ukipc: ~/.Documents/uki4/Programming/node.js'. The user runs the command 'node firstnode.js'. The output shows a 'SyntaxError: missing ) after argument list' at line 5 of 'firstnode.js'. The error message is: 'SyntaxError: missing ) after argument list at createScript (vm.js:56:10) at Object.runInThisContext (vm.js:97:10) at Module.\_compile (module.js:549:28) at Object.Module.\_extensions..js (module.js:586:10) at Module.load (module.js:494:32) at tryModuleLoad (module.js:453:12) at Function.Module.\_load (module.js:445:3) at Module.runMain (module.js:611:10) at run (bootstrap\_node.js:394:7) at startup (bootstrap\_node.js:168:9)'. The user then runs the command again, and the output shows 'Replaced!'.

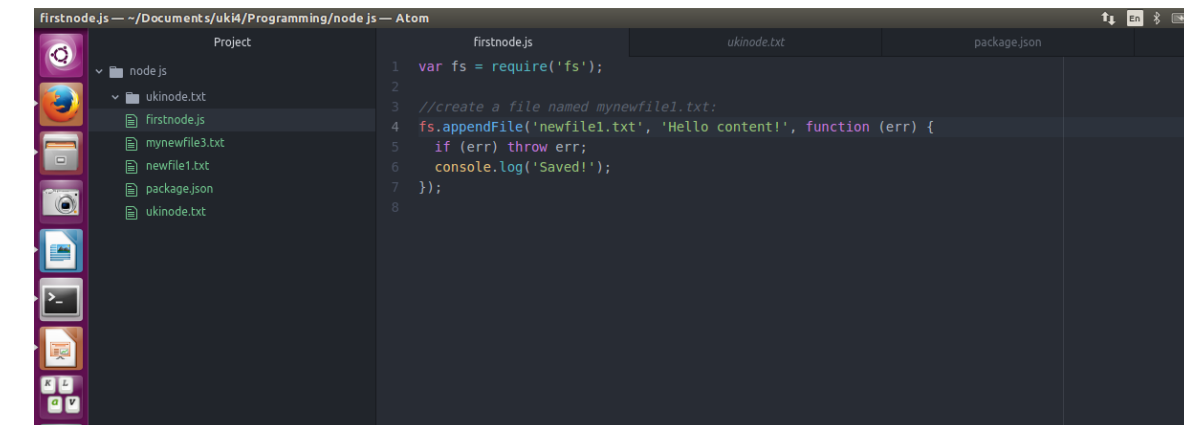
## 3.2 Serve that file to the client (Read File) over your server



```
uki-pc@ukipc: ~/Documents/uki4/Programming/node.js
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node.js/firstnode.js:5
  res.write('It is a full scholarship based Accelerator program for Coding in Jaffna, Sri Lanka targeting students who has completed Advanced Level examinations and don't have access to university education or any other form of vocational education'); //write a response to the client
  ^^^
SyntaxError: missing ) after argument list
    at createScript (vm.js:56:10)
    at Object.runInThisContext (vm.js:97:10)
    at Module._compile (module.js:549:28)
    at Object.Module._extensions..js (module.js:586:10)
    at Module.load (module.js:494:32)
    at tryModuleLoad (module.js:453:12)
    at Function.Module._load (module.js:445:3)
    at Module.runMain (module.js:611:10)
    at run (bootstrap_node.js:394:7)
    at startup (bootstrap_node.js:160:9)
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$
```

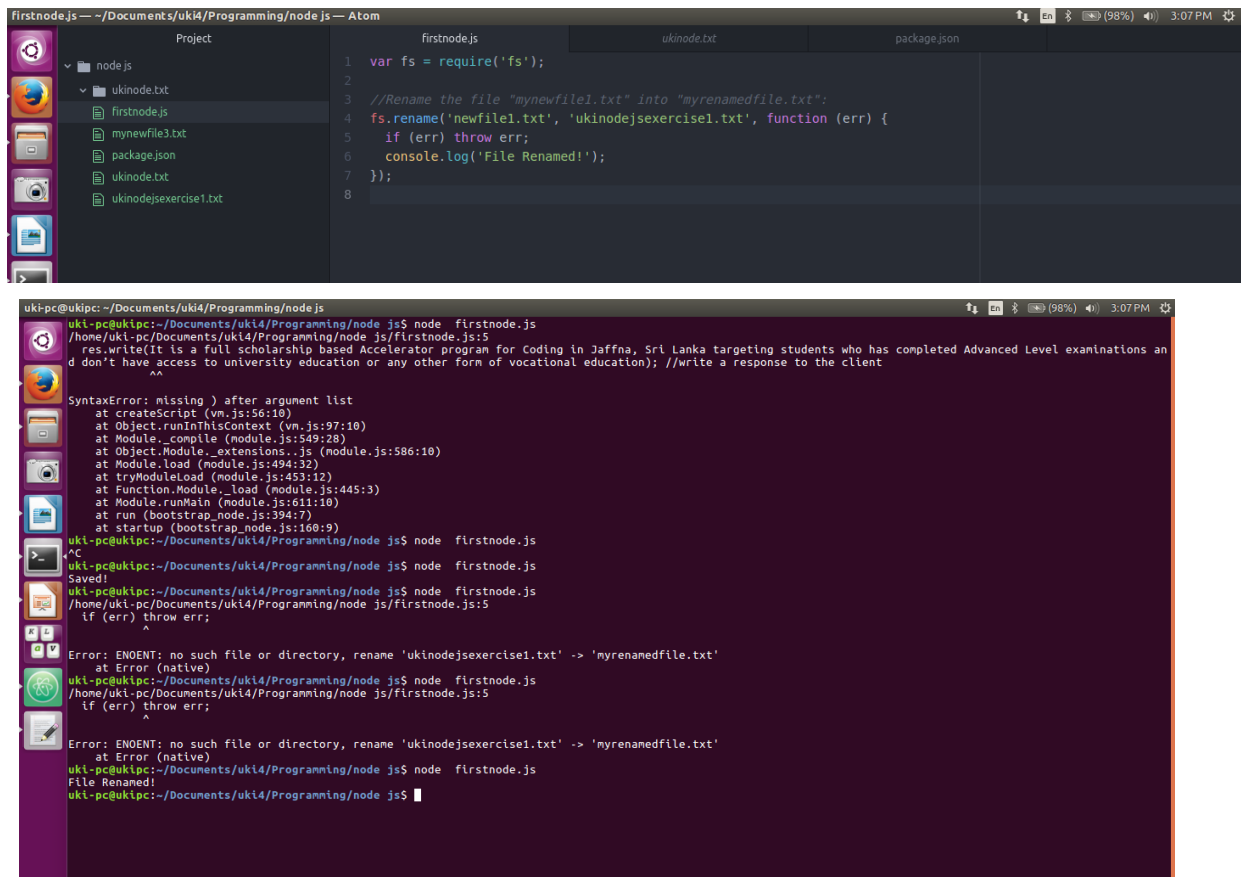


## 3.3 Append another paragraph about Uki and now serve the new file



```
uki-pc@ukipc: ~/Documents/uki4/Programming/node.js
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node.js/firstnode.js:5
  res.write('It is a full scholarship based Accelerator program for Coding in Jaffna, Sri Lanka targeting students who has completed Advanced Level examinations and don't have access to university education or any other form of vocational education'); //write a response to the client
  ^^^
SyntaxError: missing ) after argument list
    at createScript (vm.js:56:10)
    at Object.runInThisContext (vm.js:97:10)
    at Module._compile (module.js:549:28)
    at Object.Module._extensions..js (module.js:586:10)
    at Module.load (module.js:494:32)
    at tryModuleLoad (module.js:453:12)
    at Function.Module._load (module.js:445:3)
    at Module.runMain (module.js:611:10)
    at run (bootstrap_node.js:394:7)
    at startup (bootstrap_node.js:160:9)
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$
```

### 3.4 Rename the file as ukinodejsexercise1.txt



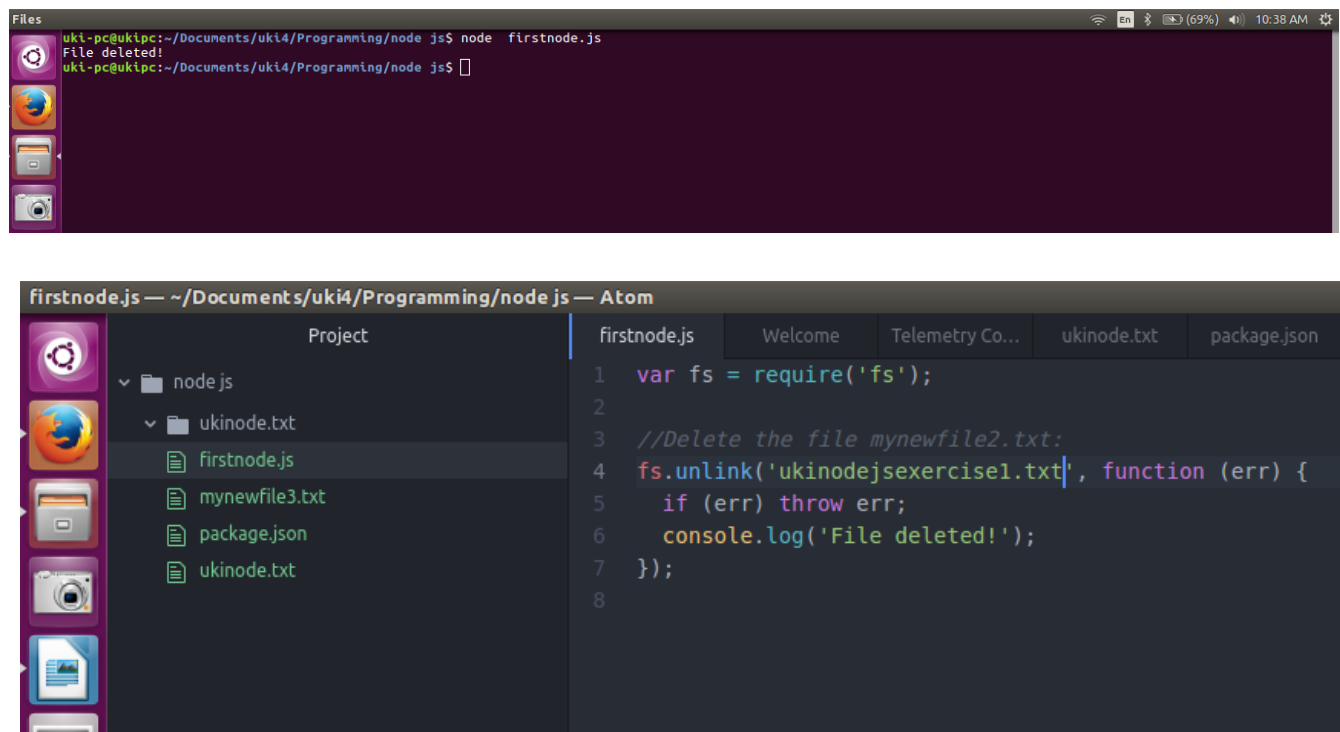
The top image shows the Atom editor interface. The file explorer on the left shows a project structure with a folder 'node.js' containing 'firstnode.js', 'mynewfile3.txt', 'package.json', 'ukinode.txt', and 'ukinodejsexercise1.txt'. The main editor window shows the code in 'firstnode.js':

```
1 var fs = require('fs');
2
3 //Rename the file "mynewfile1.txt" into "myrenamedfile.txt":
4 fs.rename('newfile1.txt', 'ukinodejsexercise1.txt', function (err) {
5   if (err) throw err;
6   console.log('File Renamed!');
7 });
8
```

The bottom image shows a terminal window with the following commands and output:

```
uki-pc@ukipc: ~/Documents/uki4/Programming/node.js
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node.js/firstnode.js:5
res.write(It is a full scholarship based Accelerator program for Coding in Jaffna, Sri Lanka targeting students who has completed Advanced Level examinations and don't have access to university education or any other form of vocational education); //write a response to the client
    ^
SyntaxError: missing ) after argument list
    at createScript (vm.js:56:10)
    at Object.runInThisContext (vm.js:97:10)
    at Module._compile (module.js:549:28)
    at Object.Module._extensions..js (module.js:586:10)
    at Module.load (module.js:494:32)
    at tryModuleLoad (module.js:453:12)
    at Function.Module._load (module.js:445:3)
    at Module.runMain (module.js:611:10)
    at run (bootstrap_node.js:394:7)
    at startup (bootstrap_node.js:160:9)
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node.js/firstnode.js:5
if (err) throw err;
    ^
Error: ENOENT: no such file or directory, rename 'ukinodejsexercise1.txt' -> 'myrenamedfile.txt'
    at Error (native)
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
/home/uki-pc/Documents/uki4/Programming/node.js/firstnode.js:5
if (err) throw err;
    ^
Error: ENOENT: no such file or directory, rename 'ukinodejsexercise1.txt' -> 'myrenamedfile.txt'
    at Error (native)
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
File Renamed!
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$
```

### 3.5 Delete the file you created



The top image shows a terminal window with the following commands and output:

```
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node.js$
```

The bottom image shows the Atom editor interface. The file explorer on the left shows a project structure with a folder 'node.js' containing 'firstnode.js', 'mynewfile3.txt', 'package.json', 'ukinode.txt', and 'ukinodejsexercise1.txt'. The main editor window shows the code in 'firstnode.js':

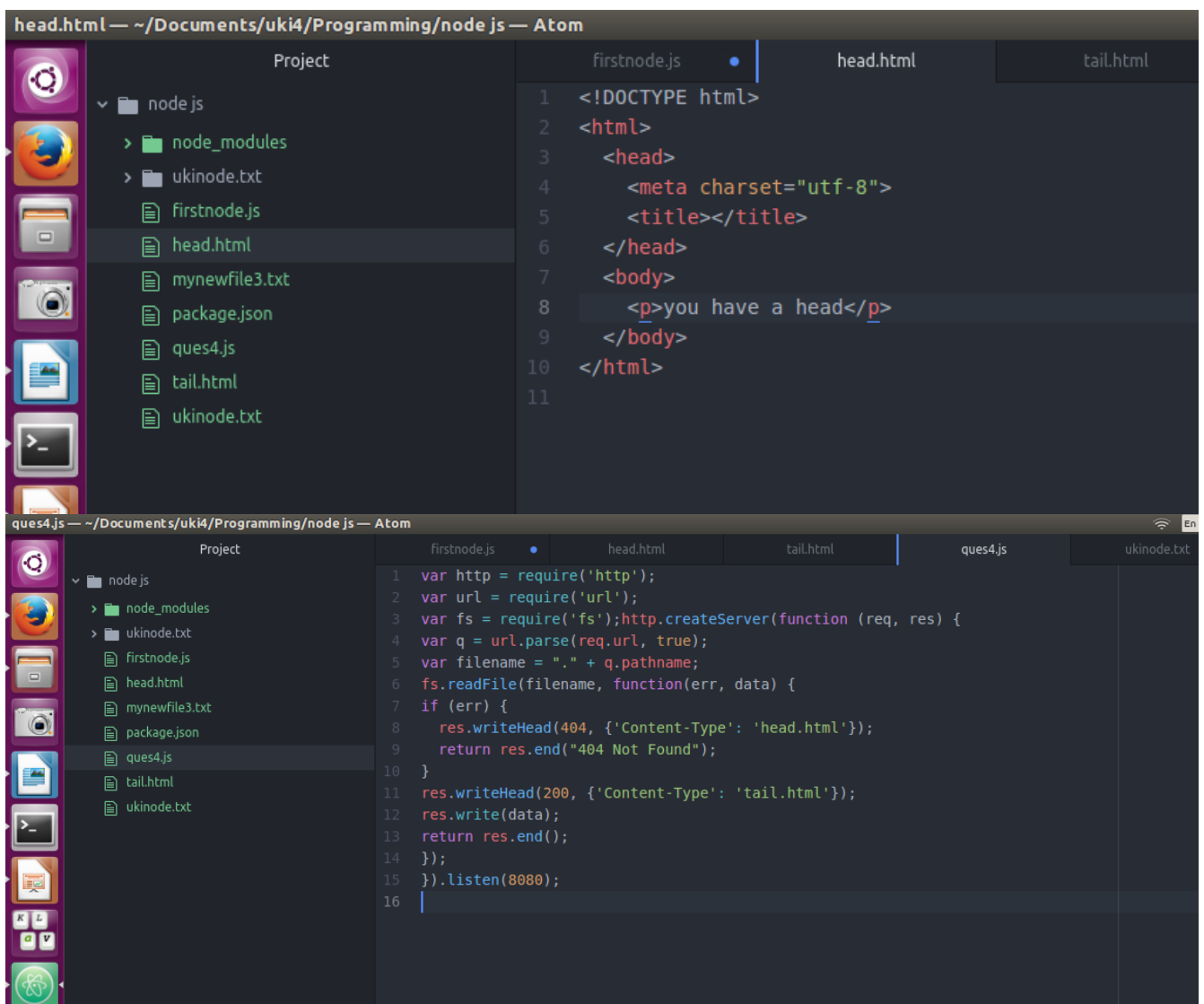
```
1 var fs = require('fs');
2
3 //Delete the file mynewfile2.txt:
4 fs.unlink('ukinodejsexercise1.txt', function (err) {
5   if (err) throw err;
6   console.log('File deleted!');
7 });
8
```

4. Create two html files called head.html which is a web page which says 'you have got head ' and tail.html which is a web page which says 'you have got tail' and save them in the same folder as your node.js files. Create a Node.js file that opens the requested file and returns the content to the client. If anything goes wrong, throw a 404 error.

If you have followed the correct steps you should see two different results when opening these two addresses:

<http://localhost:8080/head.html> -> You have got head

<http://localhost:8080/tail.html> -> You have got tail



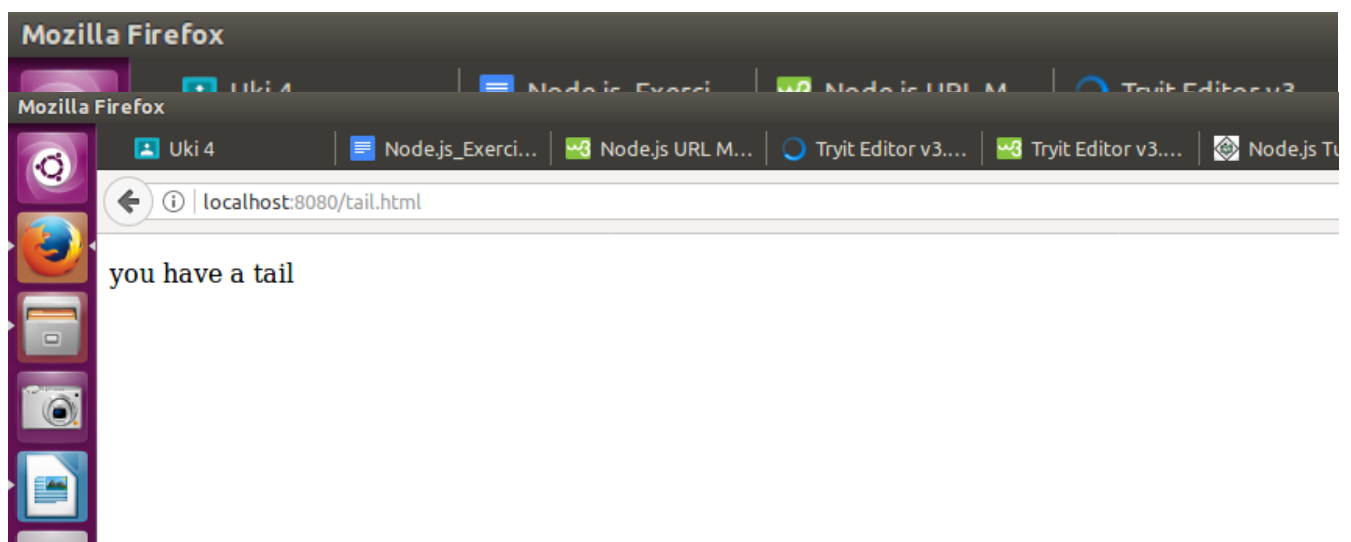
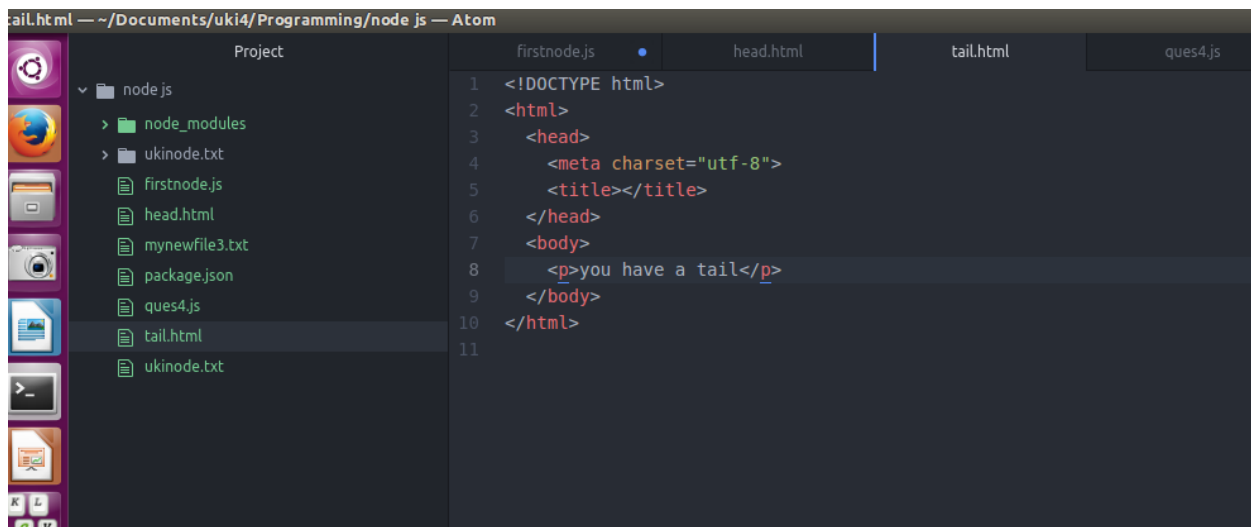
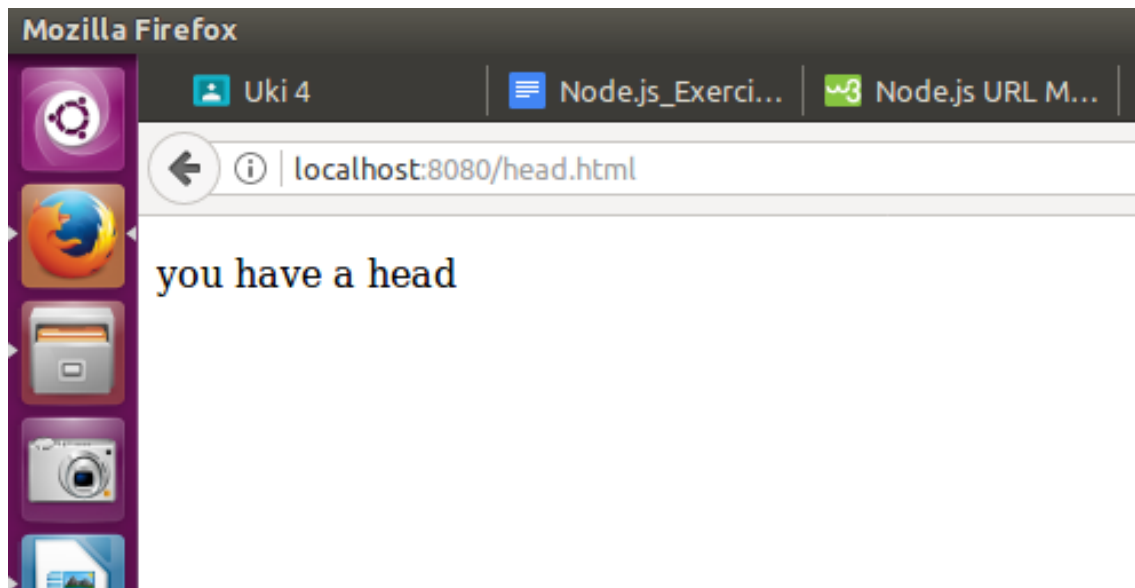
The image consists of two screenshots of the Atom code editor, showing the implementation of a simple web server in Node.js.

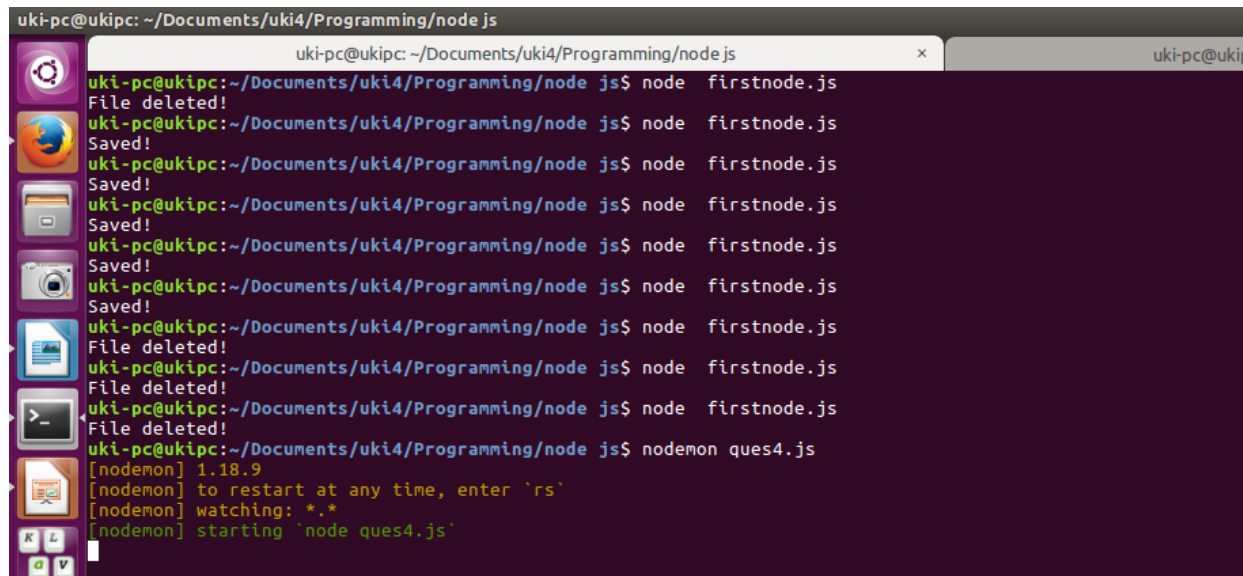
The top screenshot shows the `head.html` file being edited. The file content is:

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <meta charset="utf-8">
5     <title></title>
6   </head>
7   <body>
8     <p>you have a head</p>
9   </body>
10 </html>
11
```

The bottom screenshot shows the `ques4.js` file being edited. The file content is:

```
1 var http = require('http');
2 var url = require('url');
3 var fs = require('fs'); http.createServer(function (req, res) {
4   var q = url.parse(req.url, true);
5   var filename = "." + q.pathname;
6   fs.readFile(filename, function(err, data) {
7     if (err) {
8       res.writeHead(404, {'Content-Type': 'head.html'});
9       return res.end("404 Not Found");
10    }
11    res.writeHead(200, {'Content-Type': 'tail.html'});
12    res.write(data);
13    return res.end();
14  });
15 }).listen(8080);
16
```





```
uki-pc@ukipc: ~/Documents/uki4/Programming/node js
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ nodemon ques4.js
[nodemon] 1.18.9
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node ques4.js`
```

5. Install the package “upper-case” using NPM and create a Node.js file that will convert the output "Uki is the best place to learn programming !" into upper-case letters.



```
uki-pc@ukipc: ~/Documents/uki4/Programming/node js
uki-pc@ukipc: ~/Documents/uki4/Programming/node js$ npm install upper-case
tharan@1.0.0 /home/uki-pc/Documents/uki4/Programming/node js
└─ upper-case@1.1.3

npm WARN tharan@1.0.0 No description
npm WARN tharan@1.0.0 No repository field.
uki-pc@ukipc:~/Documents/uki4/Programming/node js$
```

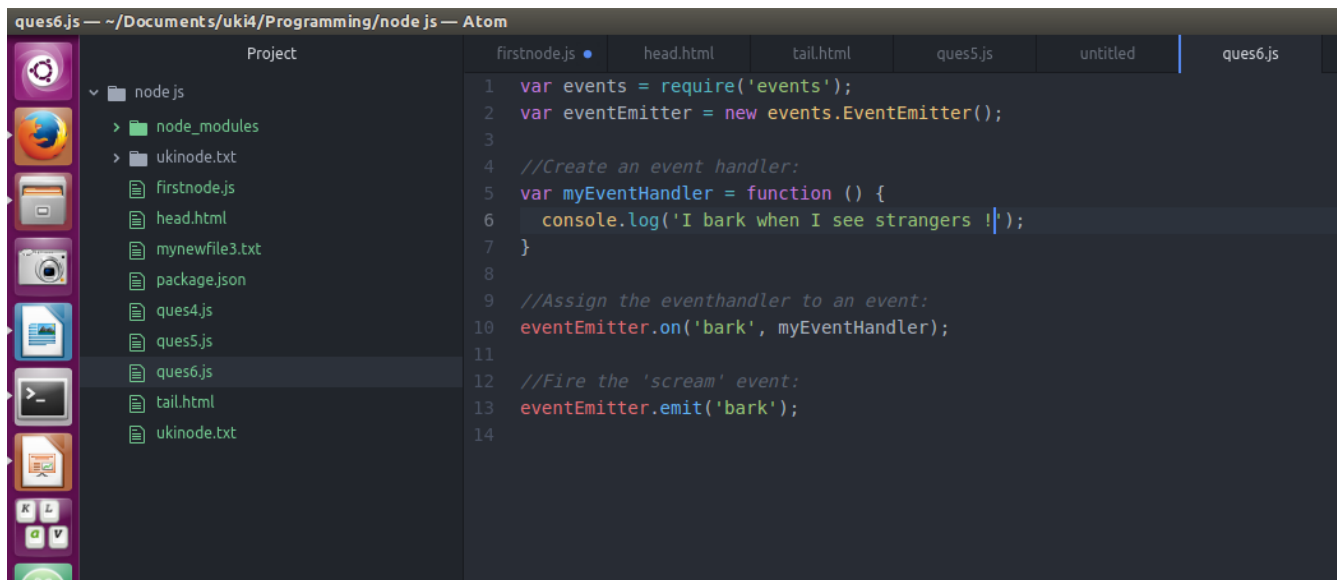
```
ques5.js -- ~/Documents/uki4/Programming/node js -- Atom
Project
  node js
  node_modules
  ukinode.txt
  firstnode.js
  head.html
  mynewfile3.txt
  package.json
  ques4.js
  ques5.js
  tail.html
  ukinode.txt

1 var http = require('http');
2 var uc = require('upper-case');
3 http.createServer(function (req, res) {
4   res.writeHead(200, {'Content-Type': 'text/html'});
5   res.write(uc("Uki is the best place to learn programming !"));
6   res.end();
7 }).listen(8080);
8
```

```
uki-pc@ukipc: ~/Documents/uki4/Programming/node js
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
Saved!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node firstnode.js
File deleted!
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ nodemon ques4.js
[nodemon] 1.18.9
[nodemon] to restart at any time, enter 'rs'
[nodemon] watching: *.*
[nodemon] starting 'node ques4.js'
[nodemon] restarting due to changes...
[nodemon] starting 'node ques4.js'
[nodemon] restarting due to changes...
[nodemon] starting 'node ques4.js'
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques5.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques5.js
```

6. Create an event handler function that will say "I bark when I see strangers !" when a "bark" event is fired.

```
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques6.js
I bark when I see strangers !
uki-pc@ukipc:~/Documents/uki4/Programming/node js$
```



```
ques6.js — ~/Documents/uki4/Programming/node js — Atom
Project
  node js
    node_modules
    ukinode.txt
    firstnode.js
    head.html
    mynewfile3.txt
    package.json
    ques4.js
    ques5.js
    ques6.js
    tail.html
    ukinode.txt
  firstnode.js
  head.html
  tail.html
  ques5.js
  untitled
  ques6.js

1 var events = require('events');
2 var eventEmitter = new events.EventEmitter();
3
4 //Create an event handler:
5 var myEventHandler = function () {
6   console.log('I bark when I see strangers !');
7 }
8
9 //Assign the eventhandler to an event:
10 eventEmitter.on('bark', myEventHandler);
11
12 //Fire the 'scream' event:
13 eventEmitter.emit('bark');
14
```

7. Install “formidable” module using npm and make a web page in Node.js that lets the user upload files to your computer.

7.1 Save that uploaded file into your Documents directory.

```
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ npm install formidable
tharan@1.0.0 /home/uki-pc/Documents/uki4/Programming/node js
└─ formidable@1.2.1

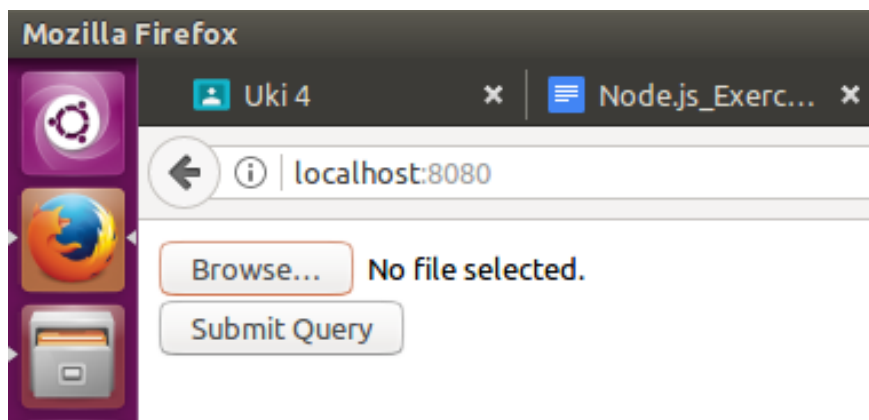
npm WARN tharan@1.0.0 No description
npm WARN tharan@1.0.0 No repository field.
uki-pc@ukipc:~/Documents/uki4/Programming/node js$
```

ques7.js — ~/Documents/uki4/Programming/node js — Atom

Project

- node js
  - node\_modules
  - ukinode.txt
    - firstnode.js
    - head.html
    - mynewfile3.txt
    - package.json
    - ques4.js
    - ques5.js
    - ques6.js
    - ques7.js
    - tail.html
    - ukinode.txt

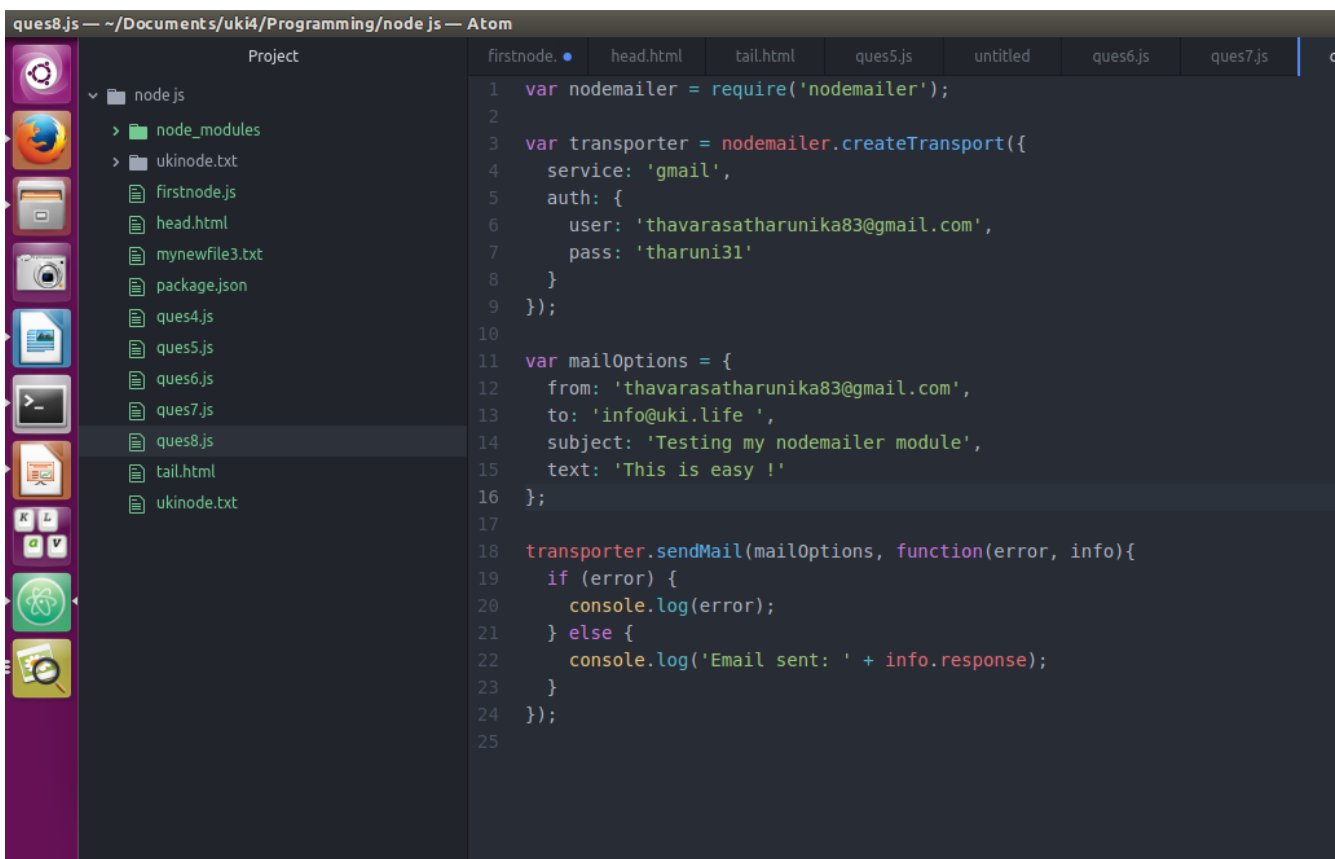
```
1 var http = require('http');
2 var formidable = require('formidable');
3 var fs = require('fs');
4
5 http.createServer(function (req, res) {
6   if (req.url == '/fileupload') {
7     var form = new formidable.IncomingForm();
8     form.parse(req, function (err, fields, files) {
9       var oldpath = files.fileupload.path;
10      var newpath = 'C:/Users/Your Name/' + files.fileupload.name;
11      fs.rename(oldpath, newpath, function (err) {
12        if (err) throw err;
13        res.write('File uploaded and moved!');
14        res.end();
15      });
16    });
17   } else {
18     res.writeHead(200, {'Content-Type': 'text/html'});
19     res.write('<form action="fileupload" method="post" enctype="multipart/form-data">');
20     res.write('<input type="file" name="fileupload"><br>');
21     res.write('<input type="submit">');
22     res.write('</form>');
23     return res.end();
24   }
25 }).listen(8080);
26
```



```
[nodemon] restarting due to changes...
[nodemon] starting 'node ques4.js'
^Cuki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques5.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques5.js
^C
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques6.js
I bark when I see strangers !
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques7.js
```

8. Using the Nodemailer module create a server and send a mail to info@uki.life with the subject : “Testing my nodemailer module” , text: “This is easy !”

```
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques8.js
{ Error: Invalid login: 535-5.7.8 Username and Password not accepted. Learn more at
535 5.7.8 https://support.google.com/mail/?p=BadCredentials y12sm35970763pfk.70 - gsmt
  at SMTPConnection._formatError (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:774:19)
  at SMTPConnection._actionAUTHComplete (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:1509:34)
  at SMTPConnection._responseActions.push.str (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:547:26)
  at SMTPConnection._processResponse (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:933:20)
  at SMTPConnection._onData (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:739:14)
  at TLSSocket._socket.on.chunk (/home/uki-pc/Documents/uki4/Programming/node js/node_modules/nodemailer/lib/smtp-connection/index.js:691:47)
  at emitOne (events.js:96:13)
  at TLSSocket.emit (events.js:188:7)
  at readableAddChunk (_stream_readable.js:176:18)
  at TLSSocket.Readable.push (_stream_readable.js:134:10)
  code: 'EAUTH',
  response: '535-5.7.8 Username and Password not accepted. Learn more at\n535 5.7.8 https://support.google.com/mail/?p=BadCredentials y12sm35970763pfk.70 - gsmt
',
  responseCode: 535,
  command: 'AUTH PLAIN' }
uki-pc@ukipc:~/Documents/uki4/Programming/node js$ node ques8.js
Email sent: 250 2.0.0 OK 1548314481 l25Sn8751892loj.68 - gsmt
uki-pc@ukipc:~/Documents/uki4/Programming/node js$
```



The screenshot shows the Atom code editor with a project named 'node js' open. The file explorer on the left lists various files, including 'ques8.js' which is currently selected and open in the editor. The code in 'ques8.js' is as follows:

```
1 var nodemailer = require('nodemailer');
2
3 var transporter = nodemailer.createTransport({
4   service: 'gmail',
5   auth: {
6     user: 'thavarasatharunika83@gmail.com',
7     pass: 'tharuni31'
8   }
9 });
10
11 var mailOptions = {
12   from: 'thavarasatharunika83@gmail.com',
13   to: 'info@uki.life ',
14   subject: 'Testing my nodemailer module',
15   text: 'This is easy !'
16 };
17
18 transporter.sendMail(mailOptions, function(error, info){
19   if (error) {
20     console.log(error);
21   } else {
22     console.log('Email sent: ' + info.response);
23   }
24 });
25
```