네트워크서비스 프로토콜

10주차 1

- >> 소프트웨어학부
- >> 김형균 교수

수업에 들어가며



- 복습
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 - 노드 & 데이터베이스 실습
 - 실습파일 다운로드 후 압축풀기
 - Opentutorials 데이터베이스 생성
 - 테이블 생성 및 데이터 저장
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 - MySQL로 상세보기 구현

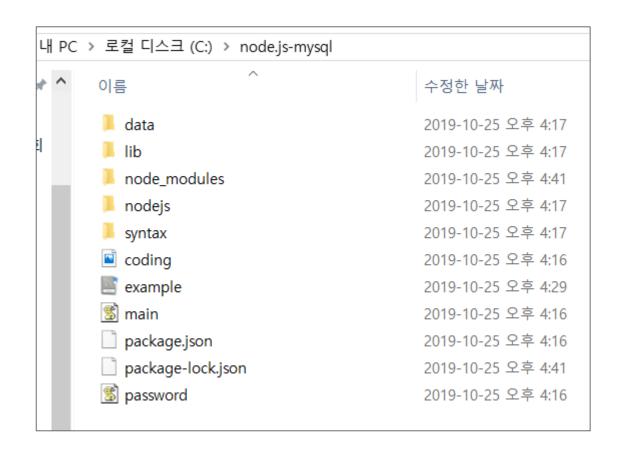


노드 & 데이터베이스 실습

실습파일 다운로드 후 압축풀기



node.js-mysql.zip



Opentutorials 데이터베이스 생성



C:\Users\kim>cd C:\Program Files\MySQL\MySQL Server 8.0\bin C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -h localhost -u root -p mysql> create database opentutorials;

mysql> show databases; mysql> use opentutorials;

```
:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -h localhost -u root -p
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or #g.
Your MySQL connection id is 27
Server version: 8.0.11 MySQL Community Server - GPL
Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names mav be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysgl> create database opentutorials
Query OK, 1 row affected (0.13 sec)
mysql> show database;
<u>FROR 1064 (42000): Y</u>ou have an error in your SQL syntax; check the manual that cor
for the right syntax to use near 'database' at line
nvsal> show databases;
  Database
  information schema
  mvsal
  nodebird
  node is
  opentutorials
  performance_schema
  rows in set (0.04 sec)
nysql> use opentutorials;
 atabase changed
```



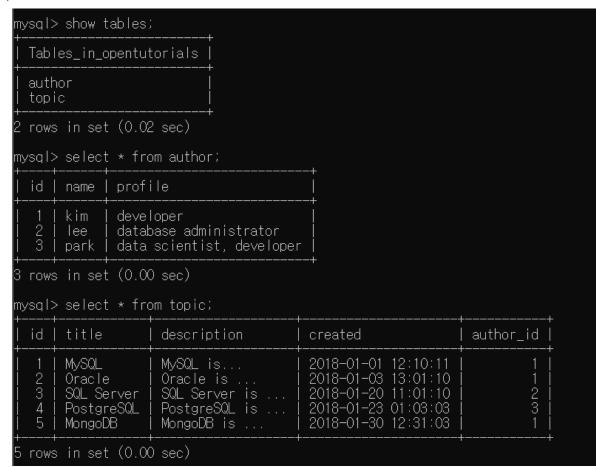


```
-- Table structure for table `author`
CREATE TABLE `author` (
  `id` int(11) NOT NULL AUTO INCREMENT,
 `name` varchar(20) NOT NULL,
 `profile` varchar(200) DEFAULT NULL,
 PRIMARY KEY ('id')
);
-- Dumping data for table `author`
INSERT INTO `author` VALUES (1,'kim','developer');
INSERT INTO `author` VALUES (2,'lee','database administrator');
INSERT INTO `author` VALUES (3,'park','data scientist, developer');
-- Table structure for table `topic`
CREATE TABLE `topic` (
  `id` int(11) NOT NULL AUTO INCREMENT,
 `title` varchar(30) NOT NULL,
 `description` text,
  `created` datetime NOT NULL,
  `author id` int(11) DEFAULT NULL,
 PRIMARY KEY ('id')
);
-- Dumping data for table `topic`
INSERT INTO `topic` VALUES (1, 'MySQL', 'MySQL is...', '2019-01-01 12:10:11',1);
INSERT INTO `topic` VALUES (2, 'Oracle', 'Oracle is ...', '2019-01-03 13:01:10',1);
INSERT INTO `topic` VALUES (3, 'SQL Server', 'SQL Server is ...', '2019-01-20 11:01:10',2);
INSERT INTO `topic` VALUES (4, 'PostgreSQL', 'PostgreSQL is ...', '2019-01-23 01:03:03',3);
INSERT INTO `topic` VALUES (5, 'MongoDB', 'MongoDB is ...', '2019-01-30 12:31:03',1);
```

생성 테이블 확인



```
mysql> show tables;
mysql> select * from author;
mysql> select * from topic;
```

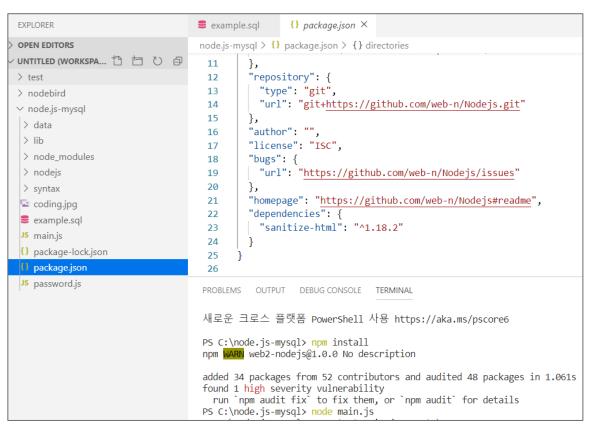


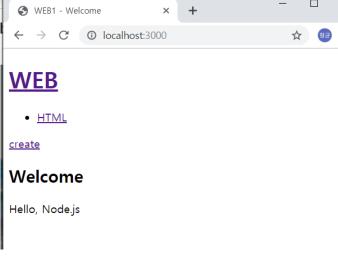
Node.js 세팅하기

Node. js

PS C:₩node.js-mysql> npm install

PS C:₩node.js-mysql> node main.js





Node.js와 MySQL 연동



- 압축을 푼 폴더에서 mysql 모듈 설치
 - npm install --save mysql
 - packageg.json -> dependencies 변경 확인

```
{} package.json ×
EXPLORER
                                   example.sql
OPEN EDITORS
                                    node.js-mysql > {} package.json > {} directories
UNTITLED (WORKSPA... † † 🗁 🖒 🗗
                                      8
> test
                                      9
                                              "scripts": {
> nodebird
                                               "test": "echo \"Error: no test specified\" && exit 1"
                                     10
∨ node.js-mysql
                                     11
                                     12
                                              "repository": {
> data
                                     13
                                                "type": "git",
 > lib
                                     14
                                                "url": "git+https://github.com/web-n/Nodejs.git"
 > node modules
                                     15
 ∨ nodejs
                                     16
                                              "author": "",
 JS fileread.is
                                             "license": "ISC",
                                     17
                                     18
                                             "bugs": {
 JS mpart.js
                                               "url": "https://github.com/web-n/Nodejs/issues"
                                     19
 Js muse.js
                                     20
 JS readdir.js
                                     21
                                             "homepage": "https://github.com/web-n/Nodejs#readme",
 = sample.txt
                                     22
                                              "dependencies": {
 > syntax
                                                "mysql": "^2.17.1"
                                     23
 coding.jpg
                                     24
                                                 sanıtıze-ntml": "^1.18.2"
 example.sql
                                     25
                                     26
 JS main.js
                                     27
 node.js-mysql.zip
 {} package-lock.json
 {} package.json
                                              OUTPUT DEBUG CONSOLE TERMINAL
 JS password.js
                                    PS C:\node.js-mysql>
                                    PS C:\node.js-mysql> npm install --save mysql
                                    npm WARN web2-nodejs@1.0.0 No description
                                    + mysql@2.17.1
                                    updated 1 package and audited 61 packages in 1.176s
                                    found 1 high severity vulnerability
                                      run `npm audit fix` to fix them, or `npm audit` for details
```

Node.js와 MySQL 연동



- >>> 1단계: mysql 모듈을 로딩한다. var mysql = require('mysql');
- >>> 2단계 : 로딩된 모듈로부터 Connection 객체를 생성한다. 이 때 실제적인 Connection 연결은 이루어지지 않는다.
 - var connection = mysql.createConnection({ });
- >>> 3단계 : 명시적으로 connect 메서드를 이용해서 connection을 연결한다. connection.connect();
- >> 4단계 : Query 메서드가 실행될 때, 위의 connection 객체의 정보를 이용해서 connection이 생성된다.
 - connection.query()
- >>> 5단계: 서버인 mysql 서버와 연결을 끝낸다. connection.end();

Node.js와 MySQL 연동



- createConnection 메소드
 - createConnection 메소드의 인자로 전달되는 객체에 자신의 데이터베이스 정보(유저명과 패스워드 등)를 입력

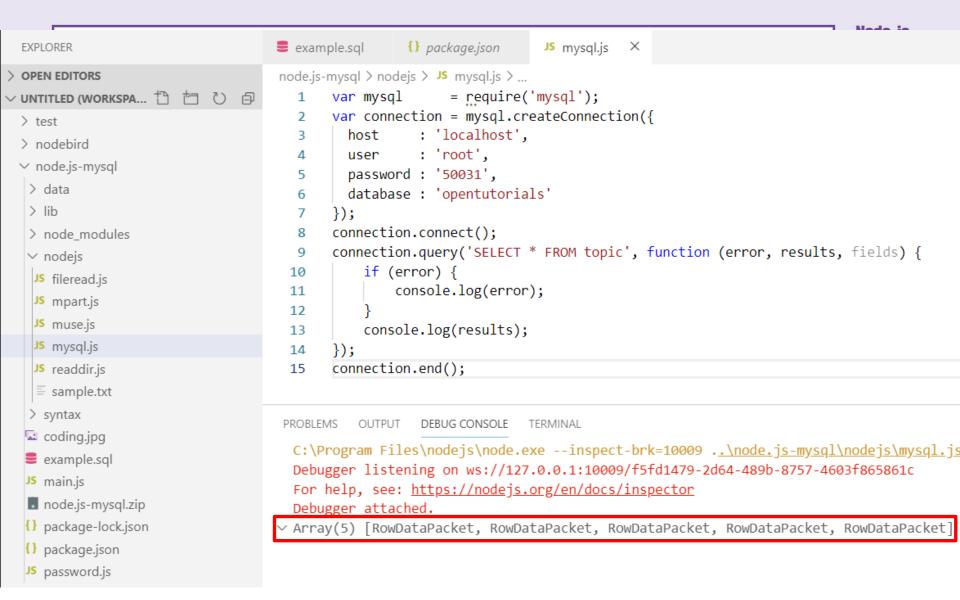
```
var mysql = require('mysql');
var connection = mysql.createConnection({
  host : 'localhost',
  user : '< MySQL username >',
  password : '< MySQL password >',
  port : < port >,
  database : 'my_db'
});
```



Node.js와 MySQL 연동 테스트

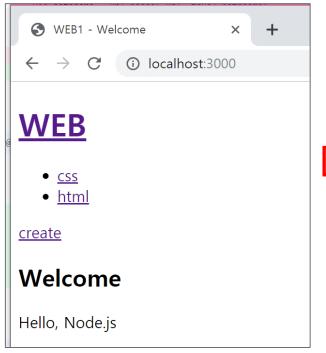
• 압축을 푼 폴더의 nodejs폴더 밑에 mysql.js 생성

```
var mysql = require('mysql');
var connection = mysql.createConnection({
 host : 'localhost',
 user : 'root',
 password: ',
 database: 'opentutorials'
});
connection.connect();
connection.query('SELECT * FROM topic', function (error, results, fields) {
   if (error) {
      console.log(error);
   console.log(results);
});
connection.end();
```

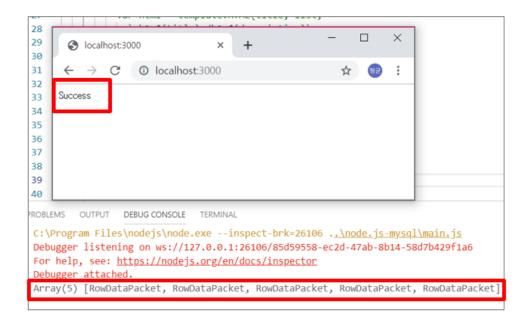


MySQL로 웹사이트 구현- 1단계 DB연결 ፟፟፟፟፟፟፟፟፟፟፟፟፟









MySQL로 웹사이트 구현- 1단계 DB연결 ₩



>> main.js 변경하기

```
\times
example.sgl
                JS mysql.js
                                  Js main.js
node.js-mysql > JS main.js > ...
      var http = require('http');
      var fs = require('fs');
       var url = require('url');
       var qs = require('querystring');
       var template = require('./lib/template.js');
       var path = require('path');
       var sanitizeHtml = require('sanitize-html');
       var mysql = require('mysql');
  8
       var db = mysql.createConnection({
         host: 'localhost',
 10
         user: 'root',
 11
 12
         password: '50031',
         database: 'opentutorials'
 13
       });
 14
       db.connect();
 15
```

MySQL로 웹사이트 구현- 1단계 DB연결 ₩

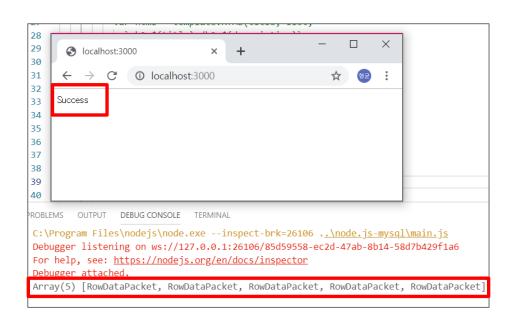


>> main.js 변경하기

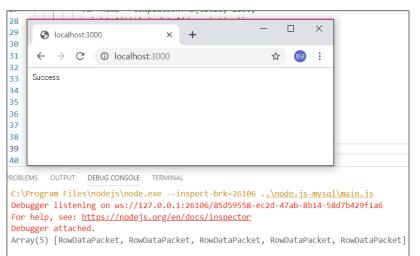
```
var app = http.createServer(function(request, response){
   var url = request.url;
   var queryData = url.parse(_url, true).query;
   var pathname = url.parse( url, true).pathname;
    if(pathname === '/'){
      if(queryData.id === undefined){
      /* fs.readdir('./data', function(error, filelist){
          var title = 'Welcome';
          var description = 'Hello, Node.js';
          var list = template.list(filelist);
          var html = template.HTML(title, list,
            `<h2>${title}</h2>${description}`,
           `<a href="/create">create</a>`
          );
          response.writeHead(200);
          response.end(html);
        }): */
       db.query(`SELECT * FROM topic`, function(error, topics){
          console.log(topics);
          response.writeHead(200);
          response.end('Success');
```

MySQL로 웹사이트 구현- 1단계 DB연결 ₩

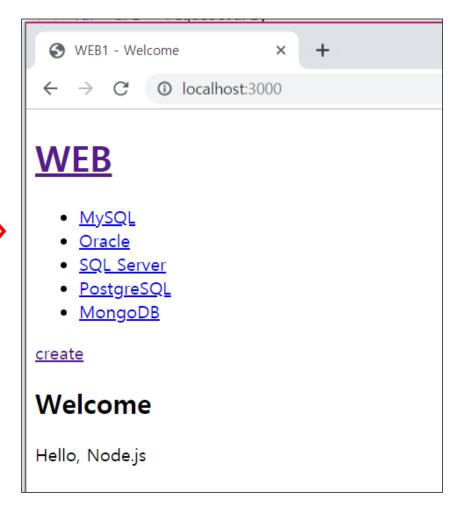














- main.js 변경(1단계 변경 사항 확인)
- 기존 data폴더의 메인 페이지를 보여주는 내용

```
if(pathname === '/'){
   if(queryData.id === undefined){
        db.query(`SELECT * FROM topic`, function(error,topics){
            console.log(topics);
            response.writeHead(200);
            response.end('Success');
        });
```







```
if(pathname === '/'){
   if(queryData.id === undefined){
     db.query(`SELECT * FROM topic`, function(error,topics){
      var title = 'Welcome';
      var description = 'Hello, Node.js';

     );
     response.writeHead(200);
     response.end(html);
   });
```

MySQL로 웹사이트 구현- 2단계 DB추출 ፟፟፟፟፟፟፟፟፟፟፟



- 기존 객체 모듈 is파일
- lib > template.js

fs.readdir('./data', function(error, filelist){

var description = 'Hello, Node.js'; var list = templateList(filelist);

`create`);

if(pathname == '/'){

if(queryData.id == undefined){

response.writeHead(200);

response.end(template);

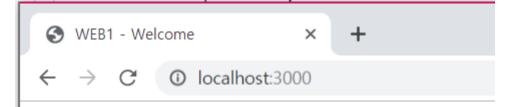
var title = 'Home';

```
node.js-mysql > lib > JS template.js > ...
                                                                                                                                                                                                                                      module.exports = {
                                                                                                                                                                                                                                               HTML:function(title, list, body, control){
                                                                                                                                                                                                                   3
                                                                                                                                                                                                                                                         return `
                                                                                                                                                                                                                                                         <!doctype html>
                                                                                                                                                                                                                  4
                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                         <html>
                                                                                                                                                                                                                                                          <head>
                                                                                                                                                                                                                  6
                                                                                                                                                                                                                                                                   <title>WEB1 - ${title}</title>
                                                                                                                                                                                                                                                                   <meta charset="utf-8">
                                                                                                                                                                                                                                                          </head>
                                                                                                                                                                                                                                                          <body>
                                                                                                                                                                                                                                                                  <h1><a href="/">WEB</a></h1>
                                                                                                                                                                                                                                                                   ${list}
var template = templateHTML(title, list, \( \hbar h2 > \frac{\h2 > \frac{
                                                                                                                                                                                                                                                                   ${control}
                                                                                                                                                                                                                                                                  ${body}
                                                                                                                                                                                                                                                          </body>
                                                                                                                                                                                                                                                          </html>
                                                                                                                                                                                                               16
                                                                                                                                                                                                              17
                                                                                                                                                                                                                                                },list:function(filelist){
                                                                                                                                                                                                              18
                                                                                                                                                                                                                                                         var list = '':
                                                                                                                                                                                                              19
                                                                                                                                                                                                                                                         var i = 0;
                                                                                                                                                                                                               20
                                                                                                                                                                                                                                                         while(i < filelist.length){</pre>
                                                                                                                                                                                                              21
                                                                                                                                                                                                                                                                 list = list + `<a href="/?id=${filelist[i]}">${filelist[i]}</a>;
                                                                                                                                                                                                              22
                                                                                                                                                                                                                                                                 i = i + 1;
                                                                                                                                                                                                              23
                                                                                                                                                                                                               24
                                                                                                                                                                                                                                                         list = list+'';
                                                                                                                                                                                                              25
                                                                                                                                                                                                                                                         return list;
                                                                                                                                                                                                              26
                                                                                                                                                                                                               27
                                                                                                                                                                                                               28
```

```
Node.js
元山村
```

```
module.exports = {
 HTML:function(title, list, body, control){
   return `
   <!doctype html>
   <html>
   <head>
     <title>WEB1 - ${title}</title>
     <meta charset="utf-8">
   </head>
   <bodv>
     <h1><a href="/">WEB</a></h1>
     ${list}
     ${control}
     ${body}
   </body>
   </html>
         쿼리 id 값을 DB 테이블 인덱스 번호와 연결
```





WEB

- MySQL
- Oracle
- <u>SQL Server</u>
- <u>PostgreSQL</u>
- MongoDB

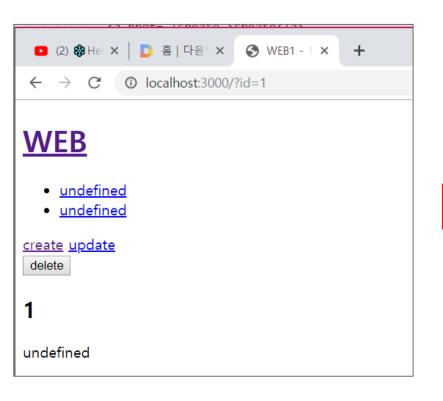
<u>create</u>

Welcome

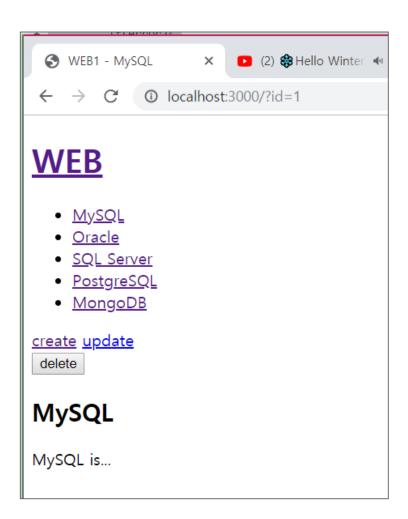
Hello, Node.js

MySQL로 상세보기 구현









MySQL로 상세보기 구현



C:₩Users₩kim>cd C:₩Program Files₩MySQL₩MySQL Server 8.0₩bin

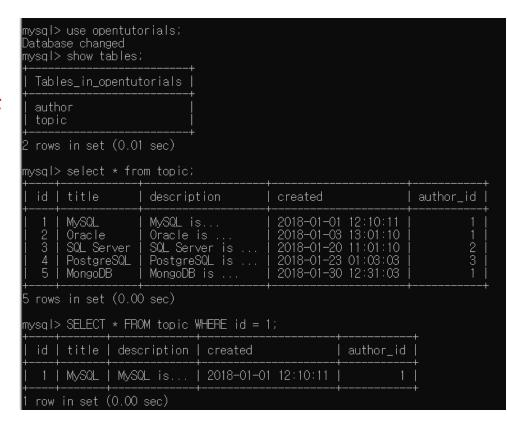
C:₩Program Files₩MySQL₩MySQL Server 8.0₩bin>mysql -h localhost -u root -p

mysql> use opentutorials;

mysql> show tables;

mysql> SELECT * FROM topic;

mysql> SELECT * FROM topic WHERE id = 1;



MySQL로 상세보기 구현



>> 기존 수정해야할 부분 확인

```
17
     var app = http.createServer(function(request, response){
         var url = request.url;
18
         var queryData = url.parse(_url, true).query;
19
         var pathname = url.parse( url, true).pathname;
20
         if(pathname === '/'){
21
22
           if(queryData.id === undefined){
             db.query(`SELECT * FROM topic`, function(error,topics){...
23 >
33
             });
34
           } else {
35
             fs.readdir('./data', function(error, filelist){
               var filteredId = path.parse(queryData.id).base;
36
               fs.readFile(`data/${filteredId}`, 'utf8', function(err, description){
37
                 var title = queryData.id;
38
                 var sanitizedTitle = sanitizeHtml(title);
39
40
                 var sanitizedDescription = sanitizeHtml(description, {
                   allowedTags:['h1']
41
42
                 });
43
                 var list = template.list(filelist);
44
                 var html = template.HTML(sanitizedTitle, list,
                    `<h2>${sanitizedTitle}</h2>${sanitizedDescription}`,
45
                    ` <a href="/create">create</a>
46
                     <a href="/update?id=${sanitizedTitle}">update</a>
47
                     <form action="delete_process" method="post">
48
                       <input type="hidden" name="id" value="${sanitizedTitle}">
49
                       <input type="submit" value="delete">
50
51
                     </form>`
52
                 );
53
                 response.writeHead(200);
                 response.end(html);
54
55
               });
56
             });
```

```
} else {
34
35
36
37
38
39
40
41
42
                 var title = topic[0].title;
43
                 var description = topic[0].description;
44
                 var list = template.list(topics);
45
                 var html = template.HTML(title, list,
46
                   `<h2>${title}</h2>${description}`,
47
                     <a href="/create">create</a>
48
                       <a href="/update?id=${queryData.id}">update</a>
49
                       <form action="delete process" method="post">
50
51
                         <input type="hidden" name="id" value="${queryData.id}">
                         <input type="submit" value="delete">
52
                       </form>`
53
                 );
54
                 response.writeHead(200);
55
                response.end(html);
56
                })
57
58
             });
59
```