Name : Nayan Mandliya

Roll No. : 1911027

Batch : MERN 1
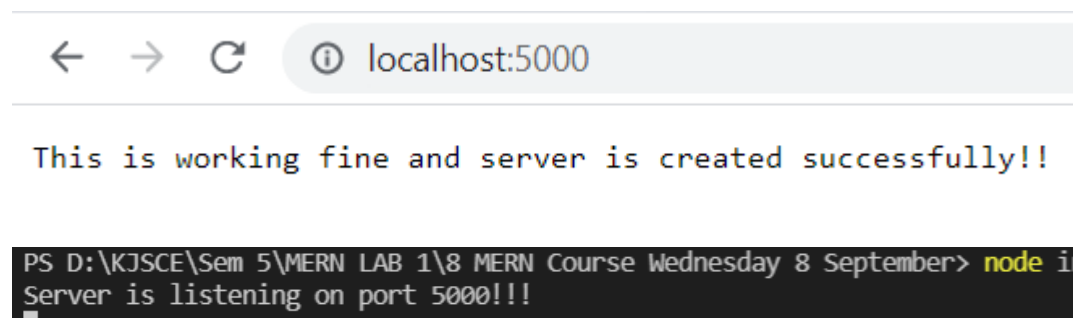
Experiment No. : 1

1) Basic Routing :

Q) Build First server application using http module

Code :

```js
const http=require("http");//required module to build server
//server created
const server=http.createServer((req,res)=>{
    res.end("This is working fine and server is created successfully!!");
})
//server listening on port 5000
server.listen(5000,()=>{
    console.log("Server is listening on port 5000!!!");
})
```

Output :

This is working fine and server is created successfully!!

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index.js
Server is listening on port 5000!!!
```


Q) Basic routing: Demonstrate it using simple HTML/Json file.

Code :

```js
const http=require("http");//required module to build server
const fs=require('fs')
//server created and routing inserted
const server=http.createServer((req,res)=>{
    if(req.url=='/')
    {
        fs.readFile('base.html',(err,data)=>{
            res.write(data);
```

```
                res.end();
            })
        }
        else if(req.url=='/home')
        {
            fs.readFile('home.html',(err,data)=>{
                res.write(data);
                res.end();
            })
        }
        else if(req.url=='/about')
        {
            fs.readFile('about.html',(err,data)=>{
                res.write(data);
                res.end();
            })
        }
        else if(req.url=='/contact')
        {
            fs.readFile('contact.json',(err,data)=>{
                res.write(data);
                res.end();
            })
        }
        else
        {
            fs.readFile('error.html',(err,data)=>{
                res.write(data);
                res.end();
            })
        }
    }
})
//server listening on port 5000
server.listen(5000,()=>{
    console.log("Server is listening on port 5000!!!");
})
```

Base.html :

```html
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
    <style>
        p{
            padding: 50px 50px 70px 70px;
```

```
            color: green;
            background-color: black;
            font-size: 100px;
        }
    </style>
</head>
<body>
    <p>This is the base page of my website. Having color as green.</p>
</body>
</html>
```

Code of home.html, about.html, contact.html and error.html is same as base.html only some text is changed.

Output :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index2.js
Server is listening on port 5000!!!
```

← → C ⓘ localhost:5000   ☆ ● ✕ ✱ Ⓝ ⋮

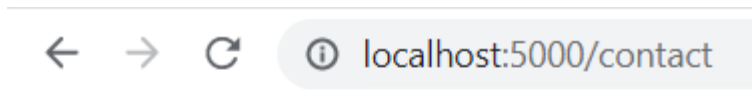# This is the base page of my website. Having color as green.

← → C ⓘ localhost:5000/home   ☆ ● ✕ ✱ Ⓝ ⋮

This is the home page of my website. Having color as yellow.

← → C ⓘ localhost:5000/about   ☆ ● ✕ ✱ Ⓝ ⋮

This is the about page of my website. Having color as brown.

```
{
    "name": "nayan",
    "year": "Third",
    "Subject": "Mern"
}
```

This is the Error page of my website. Having color as red.
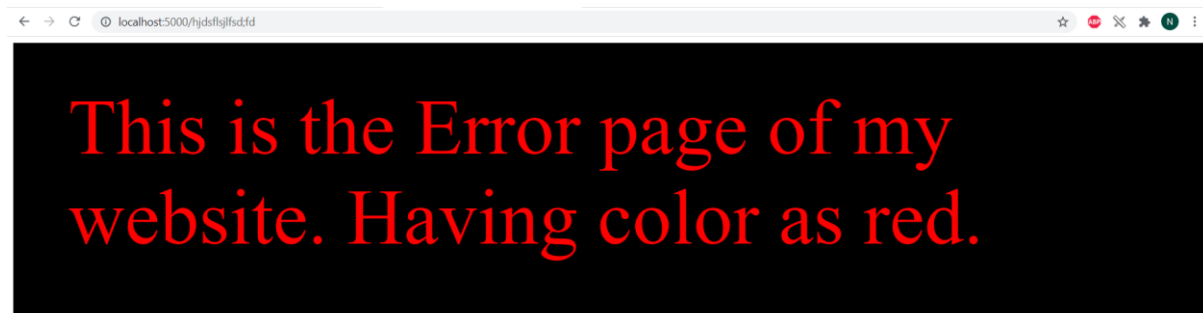
Q) Demonstrate the callback in node.js.

Code :
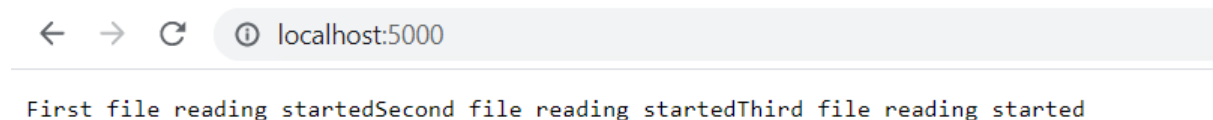
```
const http=require('http');
const fs=require('fs');
const server=http.createServer((req,res)=>{
    res.write("First file reading started");
    fs.readFile('first.txt',(data,err)=>{
        if(err)
        {
            console.log("There is some error generated!!")
        }
        else
        {
            res.write(data.toString());
            res.write("First file reading done!!!");
        }
    })
    res.write("Second file reading started");
    fs.readFile('second.txt',(data,err)=>{
        if(err)
        {
            console.log("There is some error generated!!")
        }
    }
```

```
            else
            {
                res.write(data.toString());
                res.write("Second file reading done!!!");
            }
        })
        res.write("Third file reading started");
        fs.readFile('third.txt',(data,err)=>{
            if(err)
            {
                console.log("There is some error generated!!")
            }
            else
            {
                res.write(data.toString());
                res.write("Third file reading done!!!");
            }
        })
        res.end();
})
server.listen(5000,()=>{
    console.log("Server listening on port 5000!!!");
})
```

Output :

```
←   →   C   ⓘ  localhost:5000
```

```
First file reading startedSecond file reading startedThird file reading started
```
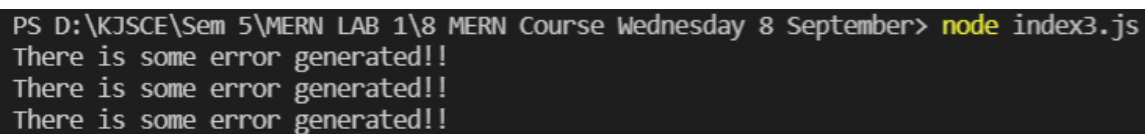
```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index3.js
There is some error generated!!
There is some error generated!!
There is some error generated!!
```

As there are no files like first.txt, second.txt and third.txt error will be generated and returned by callback function.

2) Event Emitter

Q) Demonstrate the use of Event Emitter for ATM Application. (Step-wise all events Occurs at ATM Machine like withdraw amount, checking balance etc...).

Code :

```javascript
const prompt=require('prompt-sync')();
var n=0;
const eventobj=require('events');
const e = require('express');
var emitter=new eventobj.EventEmitter();
var accounts=[["Nayan Mandliya", 11110, "0934", 35000, 9967890289],["Jane Doe"
, 11111, "1289", 37000, 9784845289],["John Doe", 11112, "7512", 39000, 7812456
887],["Scar Dean", 11113, "5614", 49000, 6357524897],["Robert Wilkist", 11114,
 "4500", 45000, 8879754125]]
emitter.on('get_details',(acc_no)=>{
    var i;
    var flag=0;
    for(i=0;i<accounts.length;i++)
    {
        if(accounts[i][1]==acc_no)
        {
            flag=1;
            var pass=prompt("\t\t\t\t\tPlease enter PIN : ");
            console.log("-----------------------------------------------------
-------------------------------------------------------------------");
            if(pass==accounts[i][2])
            {
                console.log(`\t\t\t\t\tAccount Number : ${accounts[i][1]}`);
                console.log(`\t\t\t\t\tName : ${accounts[i][0]}`);
                console.log(`\t\t\t\t\tAccount Balance : ${accounts[i][3]}`);
                console.log(`\t\t\t\t\tPhone Number : ${accounts[i][4]}`);
                console.log("-----------------------------------------------------
-------------------------------------------------------------------");
                break;
            }
            else
            {
                console.log("\t\t\t\t\tEntered PIN is wrong please try again!!
");
                console.log("-----------------------------------------------------
-------------------------------------------------------------------");
                break;
            }
        }
    }
    if(flag==0)
    {
```

```javascript
            console.log("\t\t\t\t\tAccount not found!!!");
            console.log("-----------------------------------------------------
-------------------------------------------------------------------");
        }
    emitter.emit('clicker');
})
emitter.on('withdraw',(acc_no)=>{
    var i;
    var flag=0;
    for(i=0;i<accounts.length;i++)
    {
        if(accounts[i][1]==acc_no)
        {
            flag=1;
            var pass=prompt("\t\t\t\t\tPlease enter PIN : ");
            console.log("---------------------------------------------------
------------------------------------------------------------------");
            if(pass==accounts[i][2])
            {
                console.log(`\t\t\t\t\tAvailable Clear Balance : ${accounts[i]
[3]}`);
                console.log("---------------------------------------------------
----------------------------------------------------------------");
                var amount=prompt("\t\t\t\t\tPlease enter amount to withdraw :
 ");
                console.log("---------------------------------------------------
----------------------------------------------------------------");
                if(amount<=0)
                {
                    console.log("\t\t\t\t\tAmount must be greater than or equa
l to 0!!");
                    console.log("-----------------------------------------------
------------------------------------------------------------------------
");
                }
                else if(amount>accounts[i][3])
                {
                    console.log("\t\t\t\t\tAmount entered must be less than av
ailable clear balance!!");
                    console.log("-----------------------------------------------
------------------------------------------------------------------------
");
                }
                else
                {
                    accounts[i][3]=accounts[i][3]-amount;
                    console.log("\t\t\t\t\tPlease collect your cash from botto
m!!");
```

```javascript
                console.log("------------------------------------------------
--------------------------------------------------------------------------------
");
            }
            break;
        }
        else
        {
            console.log("\t\t\t\t\tEntered PIN is wrong please try again!!
");
            console.log("------------------------------------------------------
-------------------------------------------------------------------");
            break;
        }
    }
}
if(flag==0)
{
    console.log("\t\t\t\t\tAccount not found!!!");
    console.log("------------------------------------------------------------
-----------------------------------------------------------");
}
emitter.emit('clicker');
})
emitter.on('pin_change',(acc_no)=>{
    var i;
    var flag=0;
    for(i=0;i<accounts.length;i++)
    {
        if(accounts[i][1]==acc_no)
        {
            flag=1;
            var pass=prompt("\t\t\t\t\tPlease enter old PIN : ");
            console.log("------------------------------------------------------
-------------------------------------------------------------");
            if(pass==accounts[i][2])
            {
                console.log(`\t\t\t\t\tAccount Number : ${accounts[i][1]}`);
                console.log(`\t\t\t\t\tName : ${accounts[i][0]}`);
                console.log(`\t\t\t\t\tAccount Balance : ${accounts[i][3]}`);
                console.log(`\t\t\t\t\tPhone Number : ${accounts[i][4]}`);
                console.log("--------------------------------------------------
-----------------------------------------------------------------");
                var pass1=prompt("\t\t\t\t\tPlease enter new PIN : ");
                console.log("--------------------------------------------------
-----------------------------------------------------------------");
                var pass2=prompt("\t\t\t\t\tConfirm PIN : ");
```

```
                console.log("------------------------------------------------
---------------------------------------------------------------------");
                if(pass1==pass2)
                {
                    accounts[i][2]=pass2;
                    console.log("\t\t\t\t\tPIN changed successfully");
                    console.log("------------------------------------------------
-----------------------------------------------------------------------
");
                }
                else
                {
                    console.log("\t\t\t\t\tYou have entered different password
 please try again!!!");
                    console.log("------------------------------------------------
-----------------------------------------------------------------------
");
                }
                break;
            }
            else
            {
                console.log("\t\t\t\t\tEntered PIN is wrong please try again!!
");
                console.log("------------------------------------------------
---------------------------------------------------------------------");
                break;
            }
        }
    }
    if(flag==0)
    {
        console.log("\t\t\t\t\tAccount not found!!!");
        console.log("------------------------------------------------
------------------------------------------------------------------");
    }
    emitter.emit('clicker');
})
emitter.on('exit',()=>{
    console.log("\t\t\t\t\tThank you for visiting!!!");
    console.log("------------------------------------------------
-------------------------------------------------------------");
})
emitter.on('invalid',()=>{
    console.log("\t\t\t\t\tInvalid input");
    console.log("------------------------------------------------
-------------------------------------------------------------");
    emitter.emit('clicker');
```

```javascript
})
emitter.on('shower',()=>{
    console.clear();
    console.log("-----------------------------------------------------------
---------------------------------------------------------");
    console.log("-----------------------------------------------MERN BANK--
---------------------------------------------------------");
    console.log("-----------------------------------------------------------
---------------------------------------------------------");
})
emitter.on('clicker',()=>{
    var int=prompt("\t\t\t\t\tPress enter to continue : ");
})
while(n!=4)
{
    console.clear();
    console.log("-----------------------------------------------------------
---------------------------------------------------------");
    console.log("-----------------------------------------------MERN BANK--
---------------------------------------------------------");
    console.log("-----------------------------------------------------------
---------------------------------------------------------");
    console.log("\t\t\t\t\t1. Get Details of your account.\n\t\t\t\t\t2. Withd
raw money.\n\t\t\t\t\t3. Change PIN\n\t\t\t\t\t4. Exit");
    console.log("-----------------------------------------------------------
---------------------------------------------------------");
    n=prompt("\t\t\t\t\tEnter you choice : ");
    if(n==1)
    {
        emitter.emit('shower');
        var acc_no=prompt("\t\t\t\t\tPlease enter acount number : ");
        console.log("-----------------------------------------------------------
---------------------------------------------------------");
        emitter.emit('get_details', acc_no);
    }
    else if(n==2)
    {
        emitter.emit('shower');
        var acc_no=prompt("\t\t\t\t\tPlease enter acount number : ");
        console.log("-----------------------------------------------------------
---------------------------------------------------------");
        emitter.emit('withdraw', acc_no);
    }
    else if(n==3)
    {
        emitter.emit('shower');
        var acc_no=prompt("\t\t\t\t\tPlease enter acount number : ");
```

```javascript
        console.log("-----------------------------------------------------
----------------------------------------------------------------");
        emitter.emit('pin_change', acc_no);
    }
    else if(n==4)
    {
        emitter.emit('shower');
        emitter.emit('exit');
    }
    else
    {
        emitter.emit('shower');
        emitter.emit('invalid');
    }
}
```

Output :

```
---------------------------------------------------------------------
-----------------------------MERN BANK-------------------------------
---------------------------------------------------------------------
                    1. Get Details of your account.
                    2. Withdraw money.
                    3. Change PIN
                    4. Exit
---------------------------------------------------------------------
                    Enter you choice : █
```

```
---------------------------------------------------------------------
-----------------------------MERN BANK-------------------------------
---------------------------------------------------------------------
                    Please enter acount number : 11110
---------------------------------------------------------------------
                    Please enter PIN : 1234
---------------------------------------------------------------------
                    Entered PIN is wrong please try again!!
---------------------------------------------------------------------
                    Press enter to continue : █
```

```
---------------------------------------------------------------------
-----------------------------MERN BANK-------------------------------
---------------------------------------------------------------------
                    Please enter acount number : 111234
---------------------------------------------------------------------
                    Account not found!!!
---------------------------------------------------------------------
                    Press enter to continue : █
```

```
---------------------------------------------------------------------
-----------------------------MERN BANK-------------------------------
---------------------------------------------------------------------
                    Please enter acount number : 11110
---------------------------------------------------------------------
                    Please enter PIN : 0934
---------------------------------------------------------------------
                    Account Number : 11110
                    Name : Nayan Mandliya
                    Account Balance : 35000
                    Phone Number : 9967890289
---------------------------------------------------------------------
                    Press enter to continue : █
```

```
------------------------------------------------------------------------------------------------
------------------------------------------MERN BANK----------------------------------------------
------------------------------------------------------------------------------------------------
                          Please enter acount number : 11110
------------------------------------------------------------------------------------------------
                          Please enter PIN : 1234
------------------------------------------------------------------------------------------------
                          Entered PIN is wrong please try again!!
------------------------------------------------------------------------------------------------
                          Press enter to continue : █
```

```
------------------------------------------------------------------------------------------------
------------------------------------------MERN BANK----------------------------------------------
------------------------------------------------------------------------------------------------
                          Please enter acount number : 11110
------------------------------------------------------------------------------------------------
                          Please enter PIN : 0934
------------------------------------------------------------------------------------------------
                          Available Clear Balance : 35000
------------------------------------------------------------------------------------------------
                          Please enter amount to withdraw : -100
------------------------------------------------------------------------------------------------
                          Amount must be greater than or equal to 0!!
------------------------------------------------------------------------------------------------
                          Press enter to continue : █
```

```
------------------------------------------------------------------------------------------------
------------------------------------------MERN BANK----------------------------------------------
------------------------------------------------------------------------------------------------
                          Please enter acount number : 11110
------------------------------------------------------------------------------------------------
                          Please enter PIN : 0934
------------------------------------------------------------------------------------------------
                          Available Clear Balance : 35000
------------------------------------------------------------------------------------------------
                          Please enter amount to withdraw : 1000
------------------------------------------------------------------------------------------------
                          Please collect your cash from bottom!!
------------------------------------------------------------------------------------------------
                          Press enter to continue : █
```

```
------------------------------------------------------------------------------------------------
------------------------------------------MERN BANK----------------------------------------------
------------------------------------------------------------------------------------------------
                          Please enter account number : 11110
------------------------------------------------------------------------------------------------
                          Please enter PIN : 0934
------------------------------------------------------------------------------------------------
                          Account Number : 11110
                          Name : Nayan Mandliya
                          Account Balance : 34000
                          Phone Number : 9967890289
------------------------------------------------------------------------------------------------
                          Press enter to continue : █
```

```
------------------------------------------------------------------------------------------------
------------------------------------------MERN BANK----------------------------------------------
------------------------------------------------------------------------------------------------
                          Please enter acount number : 11110
------------------------------------------------------------------------------------------------
                          Please enter old PIN : 0934
------------------------------------------------------------------------------------------------
                          Account Number : 11110
                          Name : Nayan Mandliya
                          Account Balance : 34000
                          Phone Number : 9967890289
------------------------------------------------------------------------------------------------
                          Please enter new PIN : 1124
------------------------------------------------------------------------------------------------
                          Confirm PIN : 1234
------------------------------------------------------------------------------------------------
                          You have entered different password please try again!!!
------------------------------------------------------------------------------------------------
                          Press enter to continue : █
```

```
--------------------------------------------------------------------------------
-------------------------------------MERN BANK----------------------------------
--------------------------------------------------------------------------------
                        Please enter acount number : 11110
--------------------------------------------------------------------------------
                        Please enter old PIN : 0934
--------------------------------------------------------------------------------
                        Account Number : 11110
                        Name : Nayan Mandliya
                        Account Balance : 34000
                        Phone Number : 9967890289
--------------------------------------------------------------------------------
                        Please enter new PIN : 1234
--------------------------------------------------------------------------------
                        Confirm PIN : 1234
--------------------------------------------------------------------------------
                        PIN changed successfully
--------------------------------------------------------------------------------
                        Press enter to continue : █
--------------------------------------------------------------------------------


--------------------------------------------------------------------------------
-------------------------------------MERN BANK----------------------------------
--------------------------------------------------------------------------------
                        Please enter acount number : 11110
--------------------------------------------------------------------------------
                        Please enter PIN : 1234
--------------------------------------------------------------------------------
                        Account Number : 11110
                        Name : Nayan Mandliya
                        Account Balance : 34000
                        Phone Number : 9967890289
--------------------------------------------------------------------------------
                        Press enter to continue : █
--------------------------------------------------------------------------------


--------------------------------------------------------------------------------
-------------------------------------MERN BANK----------------------------------
--------------------------------------------------------------------------------
                        Thank you for visiting!!!
--------------------------------------------------------------------------------
```

3) File operation

Q) Check Permissions of a File or Directory.

Code :

```javascript
const fs=require('fs');
const prompt=require('prompt-sync')();
var file=prompt("Enter name of the file/folder : ");
var flag=0;
fs.access(file, fs.constants.X_OK, (err)=>{
    if(err)
    {
        console.log(`${file} doesnt exists!!!`);
        flag=1;
    }
    else
    {
        console.log(`${file} can be executed!!!`);
    }
});
fs.access(file, fs.constants.R_OK, (err)=>{
    if(!err)
    {
        console.log(`${file} can be Readed!!!`);
    }
});
fs.access(file, fs.constants.W_OK, (err)=>{
    if(!err)
    {
        console.log(`${file} can be edited!!!`);
    }
});
```
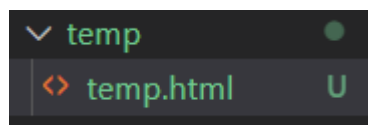
Directory structure :

Output :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index5.js
Enter name of the file/folder : temp/temp.html
temp/temp.html can be executed!!!
temp/temp.html can be Readed!!!
temp/temp.html can be edited!!!
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index5.js
Enter name of the file/folder : temp
temp can be Readed!!!
temp can be executed!!!
temp can be edited!!!
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index5.js
Enter name of the file/folder : nonexisting
nonexisting doesnt exists!!!
```

Q) Checking if a file or a directory exists.

Code :

```
const fs=require('fs');
const prompt=require('prompt-sync')();
var file=prompt("Enter name of the file/folder : ");
fs.access(file,(err)=>{
    if(err)
    {
        console.log(`${file} doesn't exists!!!`);
    }
    else    {
        console.log(`${file} exists!!!`);
    }
});
```

Directory Structure :
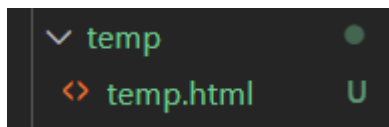
```
∨ temp                    ●
  <> temp.html            U
```

Output :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index6.js
Enter name of the file/folder : temp/home.html
temp/home.html doesn't exists!!!
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index6.js
Enter name of the file/folder : temp/temp.html
temp/temp.html exists!!!
```

Q) Determining the line count of a text file.

Code :

```
const fs=require('fs');
fs.readFile('text.txt',(err,data)=>{
    const d=data.toString().split('\n');
    console.log(`Number of lines in the text.txt is : ${d.length}`);
})
```

text.txt :

```
8 MERN Course Wednesday 8 September >    ≡ t
  1    This is the first line.
  2    This is the second line.
  3    This is the third line.
  4    This is the fourth line.
  5    This is the fifth line.
```

Output :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index7.js
Number of lines in the text.txt is : 5
```
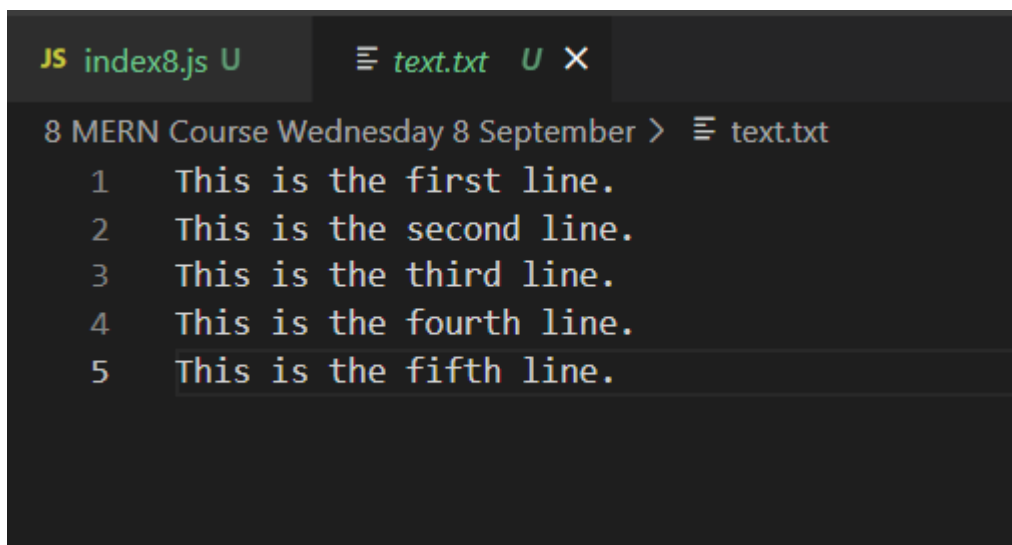
Q) Reading a file line by line.

Method 1: Using readline

Code :

```javascript
const fs=require('fs')
const readline=require('readline')
const readInterface = readline.createInterface({
    input: fs.createReadStream('text.txt'),
    output: process.stdout
});
readInterface.on('\n', function(line) {
    console.log(line);
});
```

Text.txt:

```
JS index8.js U          ≡ text.txt  U ×

8 MERN Course Wednesday 8 September >  ≡ text.txt
   1      This is the first line.
   2      This is the second line.
   3      This is the third line.
   4      This is the fourth line.
   5      This is the fifth line.
```

Output :

```
This is the first line.
This is the second line.
This is the third line.
This is the fourth line.
This is the fifth line.
```

Method 2 : Using linereader

Code :

```
const line=require('line-reader')
line.eachLine('text.txt',(line)=>{
    console.log(line);
})
```

Output :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course
This is the first line.
This is the second line.
This is the third line.
This is the fourth line.
This is the fifth line.
DS D:\KJSCE\Som 5\MERN LAB 1\8 MERN Courso
```

Q) See the file content through browser.

Code :

```
const fs=require('fs');
const http=require('http');
const prompt=require('prompt-sync')();
file=prompt("Please enter the name of the file (filename.extention): ");
const server=http.createServer((req,res)=>{
    fs.access(file,(err)=>{
        if(err)
        {
            res.end("File Doesnt exists please re run the server!!!");
        }
        else
        {
            const stream=fs.createReadStream(file);
            stream.pipe(res);
        }
    });
})
server.listen(5000,(req,res)=>{
    console.log("Server listening on port 5000!!");
})
```

Index.js :

```
ndex9.js U        JS index.js    ✕

ERN Course Wednesday 8 September > JS index.js > ...
1    const http=require("http");//required module to build server
2    //server created
3    const server=http.createServer((req,res)=>{
4        res.end("This is working fine and server is created successfully!!");
5    })
6    //server listening on port 5000
7    server.listen(5000,()=>{
8        console.log("Server is listening on port 5000!!!");
9    })
0
```

Output :

Browser :

```
←  →  C    ⓘ  localhost:5000
```

```
const http=require("http");//required module to build server
//server created
const server=http.createServer((req,res)=>{
    res.end("This is working fine and server is created successfully!!");
})
//server listening on port 5000
server.listen(5000,()=>{
    console.log("Server is listening on port 5000!!!");
})
```

Console :

```
Please enter the name of the file (filename.extention): index.js
Server listening on port 5000!!
```

If file doesn't exists : Browser

```
←   →  C    ⓘ  localhost:5000
```

```
File Doesnt exists please re run the server!!!
```

Console :

```
PS D:\KJSCE\Sem 5\MERN LAB 1\8 MERN Course Wednesday 8 September> node index9.js
Please enter the name of the file (filename.extention): index.txt
Server listening on port 5000!!
```

4) Building your custom modules

Q) To demonstrate this use some mathematics function to create custom module.

HTML code :

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form action="http://localhost:5000/example" method="POST">
        Enter Expression: <input type="text" name="expr"><br>
        <button type="submit">Calculate</button>
    </form>
</body>
</html>
```

Code :

```javascript
const express=require('express');
const bodyParser=require('body-parser');
const app=express();
const add=require('./add');
const sub=require('./sub');
const mul=require('./mul');
const div=require('./div');
const sinval=require('./sin');
const cosval=require('./cos');
const tanval=require('./tan');
app.use(bodyParser.urlencoded({ extended: true }));

app.post('/example', (req, res) => {
    if(req.body.expr[1]=='+')
    {
        var temp=add(Number(req.body.expr[0]),Number(req.body.expr[2]));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr[1]=='-')
    {
        var temp=sub(Number(req.body.expr[0]),Number(req.body.expr[2]));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr[1]=='*')
    {
```

```javascript
        var temp=mul(Number(req.body.expr[0]),Number(req.body.expr[2]));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr[1]=='/')
    {
        var temp=div(Number(req.body.expr[0]),Number(req.body.expr[2]));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr.slice(0,3)=='sin')
    {
        var temp=sinval(Number(req.body.expr.slice(3,5)));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr.slice(0,3)=='cos')
    {
        var temp=cosval(Number(req.body.expr.slice(3,5)));
        res.send(`Answer : ${temp}`);
    }
    else if(req.body.expr.slice(0,3)=='tan')
    {
        var temp=tanval(Number(req.body.expr.slice(3,5)));
        res.send(`Answer : ${temp}`);
    }
    else
    {
        res.send("Answer : Undefined");
    }
});

app.listen(5000, () => {
  console.log(`Server running on 5000!!`);
});
```

Modules Created :

```
const add=(a,b)=>{
    return a+b;
}
module.exports=add
```

```
const sub=(a,b)=>{
    return a-b;
}
module.exports=sub
```

```
const mul=(a,b)=>{
    return a*b;
}
module.exports=mul
```

```
const div=(a,b)=>{
    return a/b;
}
module.exports=div
```

```
const sin=(a)=>{
    a=a*Math.PI/180;
    return Math.sin(a);
}
module.exports=sin
```

```
const cos=(a)=>{
    a=a*Math.PI/180;
    return Math.cos(a);
}
module.exports=cos
```

```
const tan=(a)=>{
    a=a*Math.PI/180;
    return Math.tan(a);
}
module.exports=tan
```

Output :

Enter Expression: 5+9
Calculate

Answer : 14

Enter Expression: 9-2
Calculate

Answer : 7

Enter Expression: sin30
Calculate

Answer : 0.49999999999999994

Enter Expression: tan45
Calculate

Answer : 0.9999999999999999

5) Command Line operations using Nodejs

Q) Make use of Readline and Inquirer.

Readline :

Code :

```javascript
const readline=require('readline');
const fs=require('fs');
const readline2=readline.createInterface({
  input: process.stdin,
  output: process.stdout,
});
readline2.question('First Name : ',fname=>{
  readline2.question('Last Name : ',lname=>{
    readline2.question('Roll No. : ',roll=>{
      readline2.question('Class : ',css=>{
        readline2.question('Phone No. : ',phno=>{
          console.log("-------------------------------------------------");
          console.log("|\t\tID CARD\t\t\t\t|");
          console.log("-------------------------------------------------");
          console.log(`|\tName : ${fname} ${lname}\t\t\t|`);
          console.log("-------------------------------------------------");
          console.log(`|\tRoll No. : ${roll}\t\t\t|`);
          console.log("-------------------------------------------------");
          console.log(`|\tClass : ${css}\t\t\t|`);
          console.log("-------------------------------------------------");
          console.log(`|\tPhone No. : ${phno}\t\t\t|`);
          console.log("-------------------------------------------------");
          readline2.close();
        })
      })
    })
  })
})
```

Output :

```
First Name : Nayan
Last Name : Mandliya
Roll No. : 1911027
Class : Third Year
Phone No. : 1234567890
--------------------------------------------
|                  ID CARD                 |
--------------------------------------------
|        Name : Nayan Mandliya             |
--------------------------------------------
|        Roll No. : 1911027                |
--------------------------------------------
|        Class : Third Year                |
--------------------------------------------
|        Phone No. : 1234567890            |
--------------------------------------------
```

Inquirer :

Code :

```javascript
const inquirer=require('inquirer')
var questions=[
    {
        type: 'text',
        name: 'fname',
        message: "First name : "
    },
    {
        type: 'text',
        name: 'lname',
        message: "Last name : "
    },
    {
        type: 'password',
        name: 'pass',
        message: 'Enter password : ',
    },
    {
        type: 'text',
        name: 'course',
        message: 'Course Name : ',
        default: 'MERN'
    },
    {
        type: 'list',
        name: 'first',
        message: 'Option 1 : ',
        choices: ['MERN Stack', 'MEAN Stack', 'Django', 'Flutter', 'PHP', 'Wor
dpress'],
    },
    {
        type: 'checkbox',
        name: 'second',
        message: 'Option 2 : ',
        choices: ['MERN Stack', 'MEAN Stack', 'Django', 'Flutter', 'PHP', 'Wor
dpress'],
    },
]
inquirer.prompt(questions).then(answers=>{
    console.log("--------------------------------------------------------
----------------------------------------");
    console.log("Students Info : ");
    console.log("--------------------------------------------------------
----------------------------------------");
```

```javascript
    console.log(`Hello ${answers['fname']} ${answers['lname']} you have been s
uccessfully logged in!!!`);
    console.log("---------------------------------------------------------
------------------------------------------");
    console.log(`${answers['fname']} is currently learning ${answers['course']
}`);
    console.log("---------------------------------------------------------
------------------------------------------");
    console.log(`First choice ${answers['first']}`);
    console.log("---------------------------------------------------------
------------------------------------------");
    console.log(`Second choice ${answers['second']}`);
    console.log("---------------------------------------------------------
------------------------------------------");
})
```

Output :

```
? First name :  Nayan
? Last name :  Mandliya
? Enter password :  [hidden]
? Course Name :  MERN
? Option 1 :  Django
? Option 2 :  Flutter
------------------------------------------------------------------------------
Students Info :
------------------------------------------------------------------------------
Hello Nayan Mandliya you have been successfully logged in!!!
------------------------------------------------------------------------------
Nayan is currently learning MERN
------------------------------------------------------------------------------
First choice Django
------------------------------------------------------------------------------
Second choice Flutter
------------------------------------------------------------------------------
```