



DOP: / /2023

DOS: / /2023

Experiment No: 08

Title: Build Hello World App in Node.js

Theory:

◆ What is Node.js:

Node.js is a cross-platform runtime environment and library for running JavaScript applications outside the browser. It is used for creating server-side and networking web applications. It is open source and free to use. It can be downloaded from this link <https://nodejs.org/en/>.

Many of the basic modules of Node.js are written in JavaScript. Node.js is mostly used to run real-time server applications.

◆ Features of Node.js:

Following is a list of some important features of Node.js that makes it the first choice of software architects.

- **Extremely fast:** Node.js is built on Google Chrome's V8 JavaScript Engine, so its library is very fast in code execution.
- **I/O is Asynchronous and Event Driven:** All APIs of Node.js library are asynchronous i.e. non-blocking. So a Node.js based server never waits for an API to return data. The server moves to the next API after calling it and a notification mechanism of Events of Node.js helps the server to get a response from the previous API call. It is also a reason that it is very fast.
- **Single threaded:** Node.js follows a single threaded model with event looping.
- **Highly Scalable:** Node.js is highly scalable because event mechanism helps the server to respond in a non-blocking way.
- **No buffering:** Node.js cuts down the overall processing time while uploading audio and video files. Node.js applications never buffer any data. These applications simply output the data in chunks.
- **Open source:** Node.js has an open-source community which has produced many excellent modules to add additional capabilities to Node.js applications.
- **License:** Node.js is released under the MIT license.

◆ Install Node.js on Windows:

To install and setup an environment for Node.js, you need the following two softwares available on your computer:

1. Text Editor.
2. Node.js Binary installable

Text Editor:

The text editor is used to type your program. For example: Notepad is used in Windows, vim or vi can be used on Windows as well as Linux or UNIX. The name and version of the text editor can be different from operating system to operating system.

The files created with text editor are called source files and contain program source code. The source files for Node.js programs are typically named with the extension ".js".

The Node.js Runtime:

The source code written in source file is simply JavaScript. It is interpreted and executed by the Node.js interpreter.

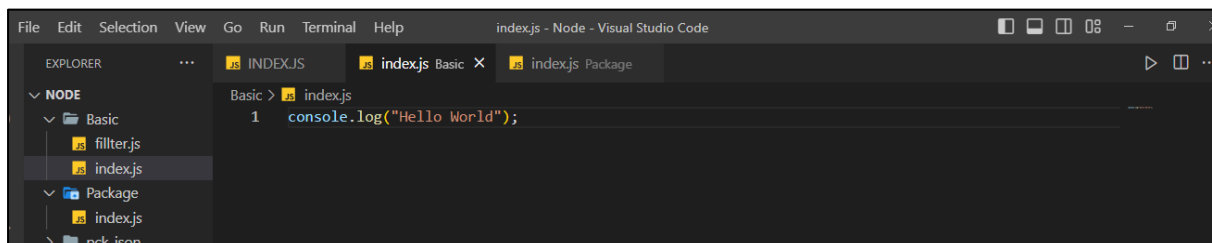
How to download Node.js:

You can download the latest version of Node.js installable archive file from <https://nodejs.org/en/>

Hello World App in Node.js

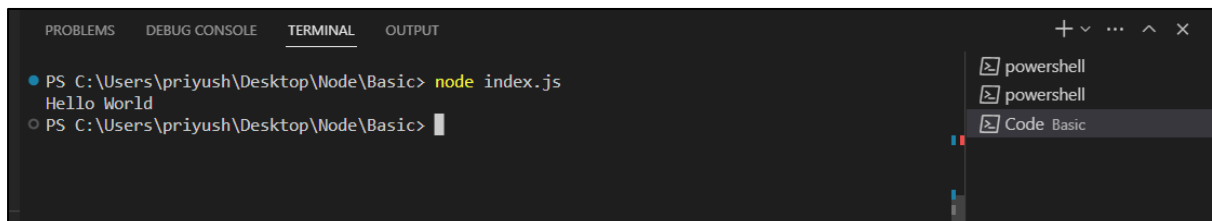
Input:

Console base:



```
File Edit Selection View Go Run Terminal Help index.js - Node - Visual Studio Code
EXPLORER
  NODE
    Basic
      filter.js
      index.js
    Package
      index.js
      package.json
  index.js Basic x index.js Package
Basic > index.js
1 console.log("Hello World");
```

Output:



```
PROBLEMS DEBUG CONSOLE TERMINAL OUTPUT
PS C:\Users\priyush\Desktop\Node\Basic> node index.js
Hello World
PS C:\Users\priyush\Desktop\Node\Basic>
```

Node.js web-based Example

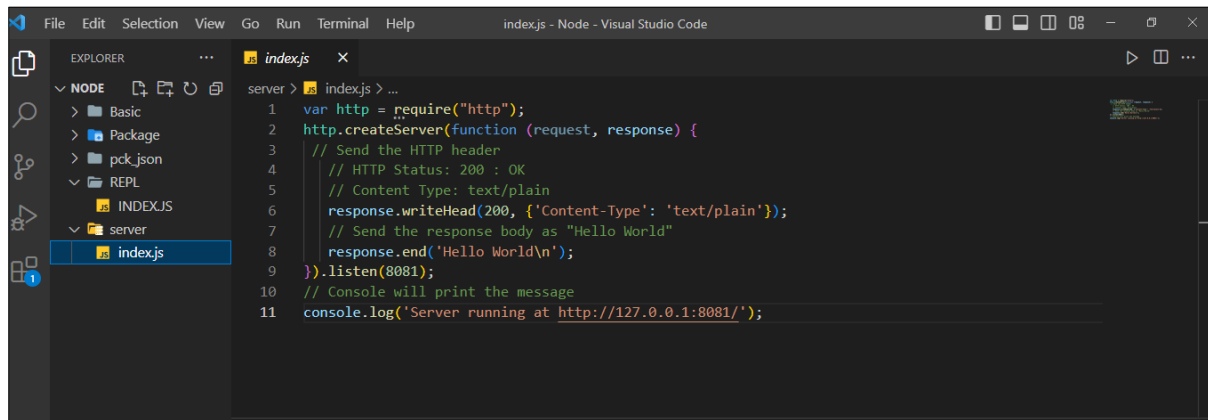
A node.js web application contains the following three parts:

1. **Import required modules:** The "require" directive is used to load a Node.js module.
2. **Create server:** You have to establish a server which will listen to client's request similar to Apache HTTP Server.
3. **Read request and return response:** Server created in the second step will read HTTP request made by client which can be a browser or console and return the response



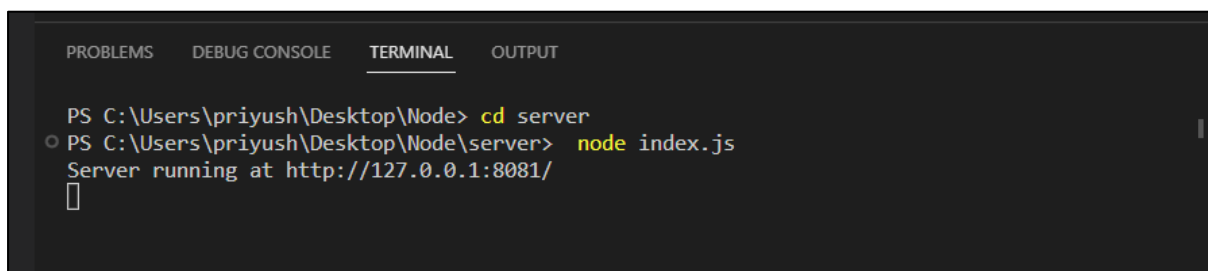
Jawahar Education Society's Annasaheb Chudaman Patil College of Engineering, Kharghar, Navi Mumbai

Input:

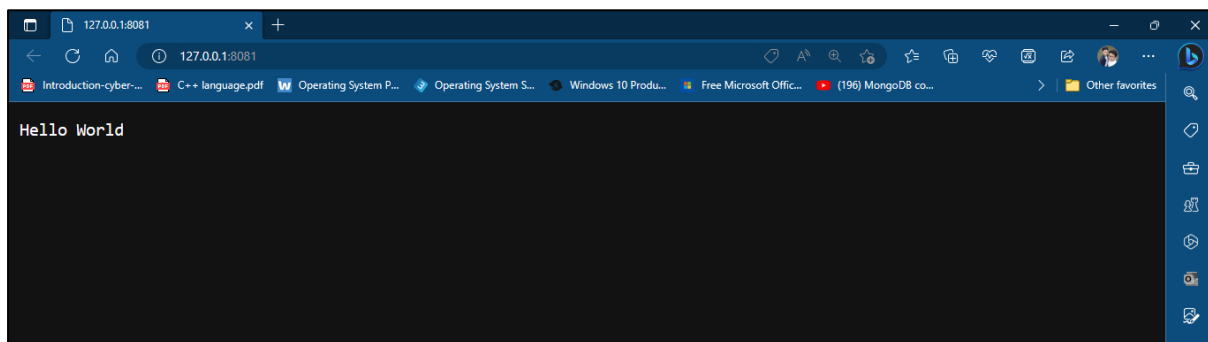


```
1 var http = require("http");
2 http.createServer(function (request, response) {
3   // Send the HTTP header
4   // HTTP Status: 200 : OK
5   // Content Type: text/plain
6   response.writeHead(200, {'Content-Type': 'text/plain'});
7   // Send the response body as "Hello World"
8   response.end('Hello World\n');
9 }).listen(8081);
10 // Console will print the message
11 console.log('Server running at http://127.0.0.1:8081/');
```

Output:



```
PS C:\Users\priyush\Desktop\Node> cd server
PS C:\Users\priyush\Desktop\Node\server> node index.js
Server running at http://127.0.0.1:8081/
```



Conclusion: - We Successfully implement Installation of NodeJS in windows, small code for programs like Hello World.