# Session 2.2

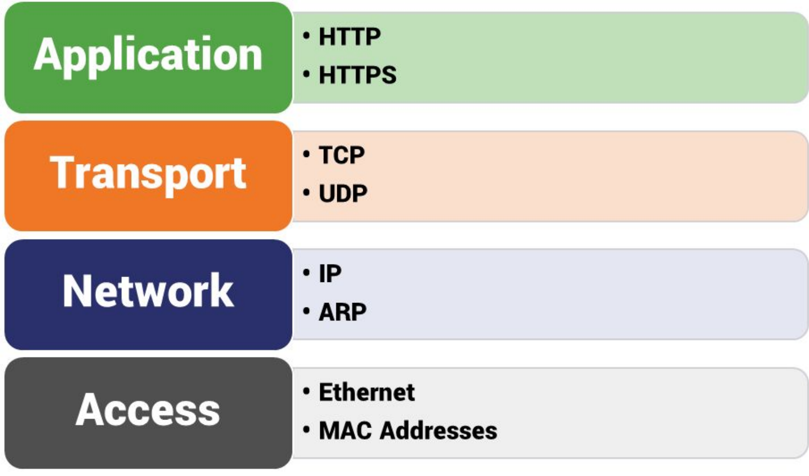
## Node - Web Server

# Topics

- **Node Networking and HTTP**
- **Node HTTP Module**
- **Creating a Web Server**

# Node Networking and HTTP

# Node.js and Networking



| | |
|---|---|
| Application | • HTTP<br>• HTTPS |
| Transport | • TCP<br>• UDP |
| Network | • IP<br>• ARP |
| Access | • Ethernet<br>• MAC Addresses |

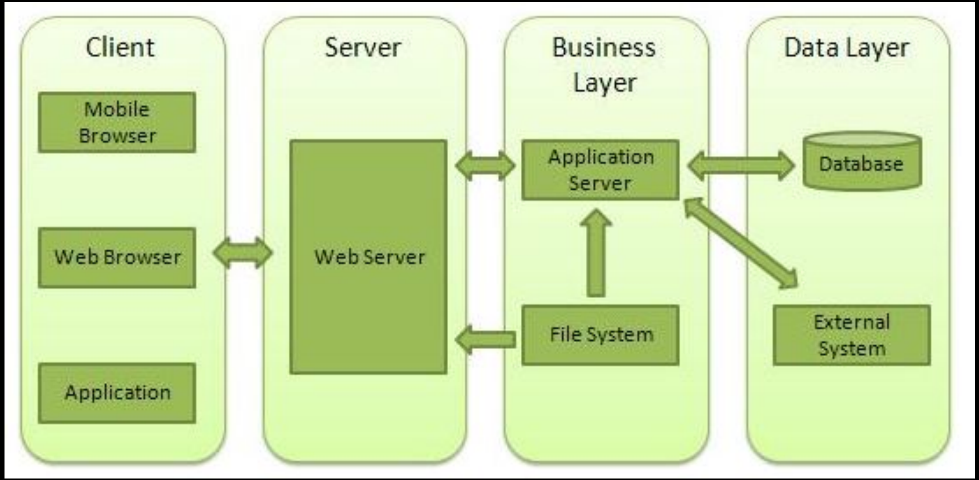
- Although, Node.js can be use for a wide variety of tasks, it's mostly known for building web applications.

- Node.js is thrives in the networking due to its asynchronous nature and build-in modules such as net and http.

# What is a Web Server?

- A Web Server is a software application which handles HTTP requests sent by the HTTP client, like web browsers, and returns web pages in response to the clients.

- Web servers usually deliver html documents along with images, style sheets, and scripts.



# HTTP Module

# What is HTTP?

- Hypertext Transfer Protocol is a connectionless text based protocol.

- It is used to send and receive web pages and files on the internet. It is the foundation of WWW (world wide web)

- Client (web browsers) send a request to web servers for web files. The server will transfer the data over the web, then disconnect.

# Node.js and HTTP

- One of the powerful building blocks of node is the HTTP module that we use for creating networking applications.
- We can create a web server that listens for HTTP requests on a given port.
- We can use this and create a back-end service for our client application like a web application

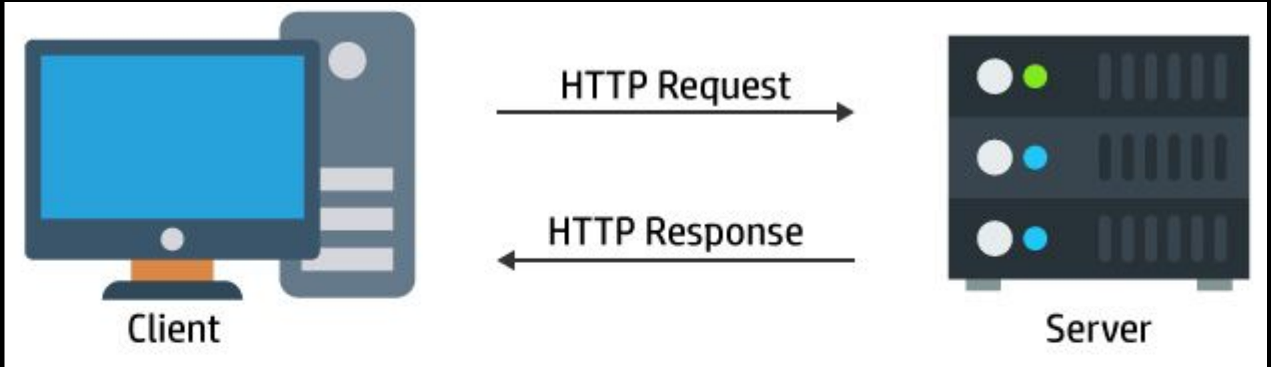
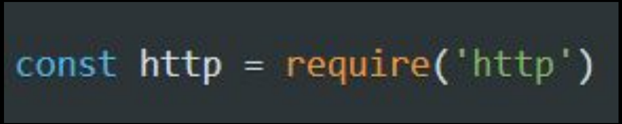


Fig: HTTP Protocol

# HTTP Module

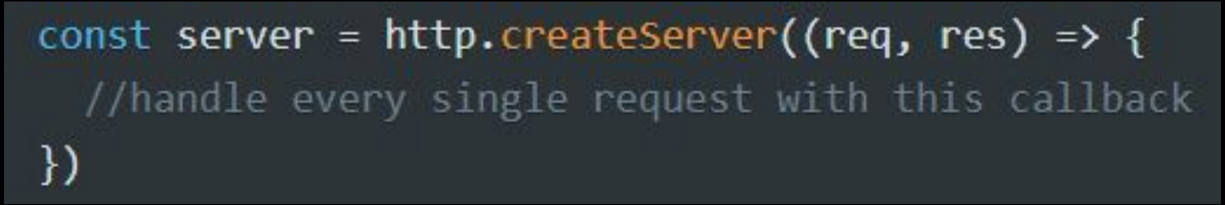
- The HTTP module can create an HTTP server that listens to server ports and gives a response back to the client.
- The HTTP module can included using require



```
const http = require('http')
```

## Methods

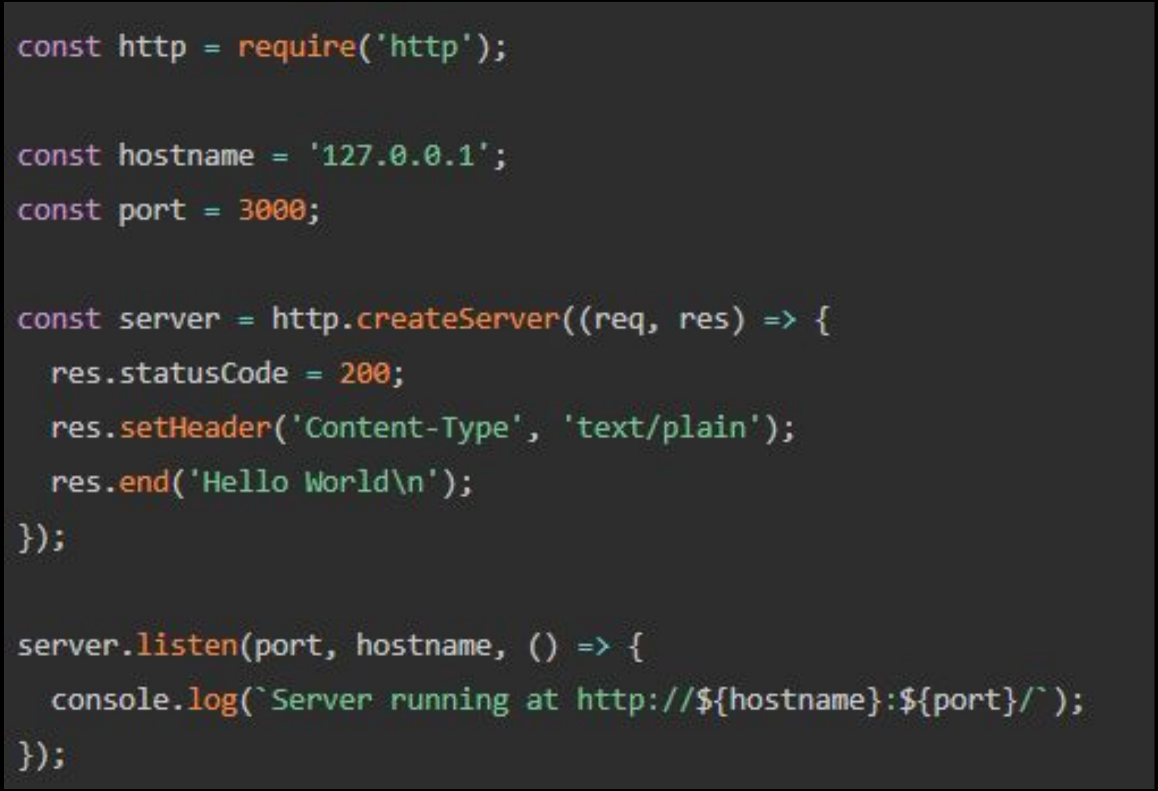
- http.createServer() - return a new instance of the http.Server class
- http.request() - Makes an HTTP request to a server
- http.get() - similar to http.request, but automatically sets the HTTP method to GET



```
const server = http.createServer((req, res) => {
  //handle every single request with this callback
})
```

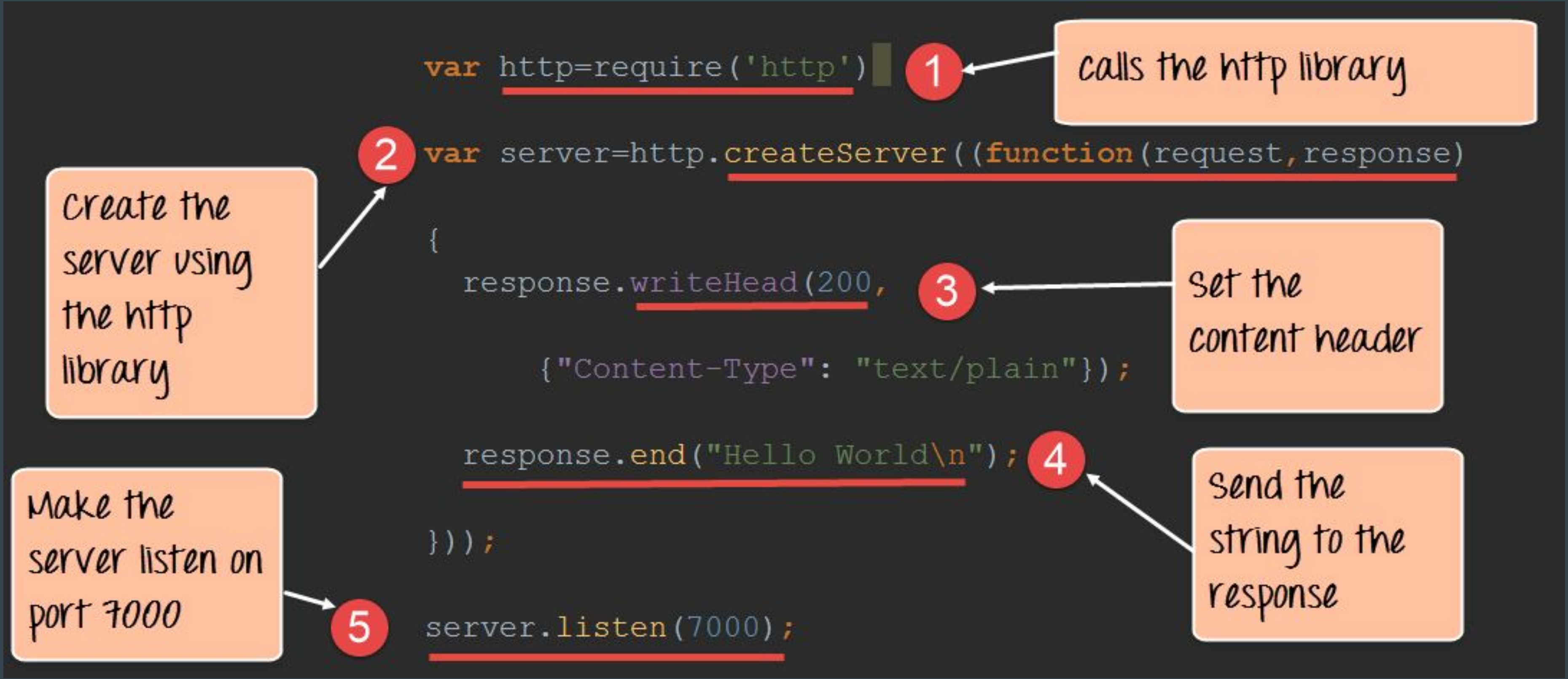
# Creating a Web Server

# Node.js Server in minutes..



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

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World\n');
});

server.listen(port, hostname, () => {
  console.log(`Server running at http://${hostname}:${port}/`);
});
```

# Node as a web server using HTTP



```
var http=require('http')
var server=http.createServer((function(request,response)
{
  response.writeHead(200,
      {"Content-Type": "text/plain"});
  response.end("Hello World\n");
}));
server.listen(7000);
```

1 calls the http library

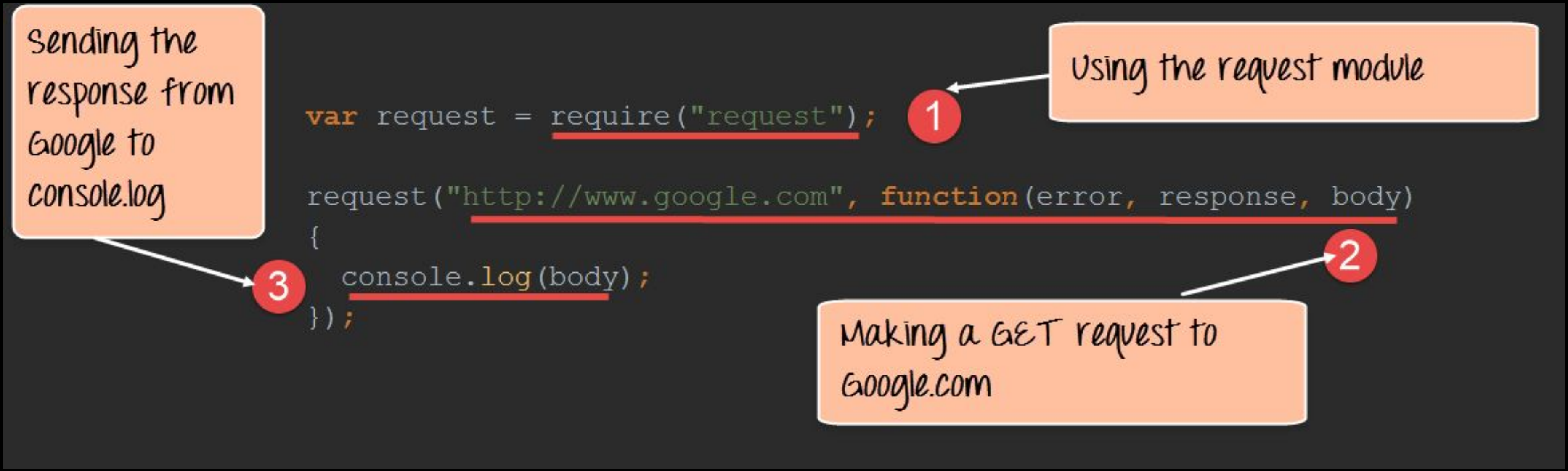
2 Create the server using the http library

3 Set the content header

4 Send the string to the response

5 Make the server listen on port 7000

# Node as Client: Handling GET Requests



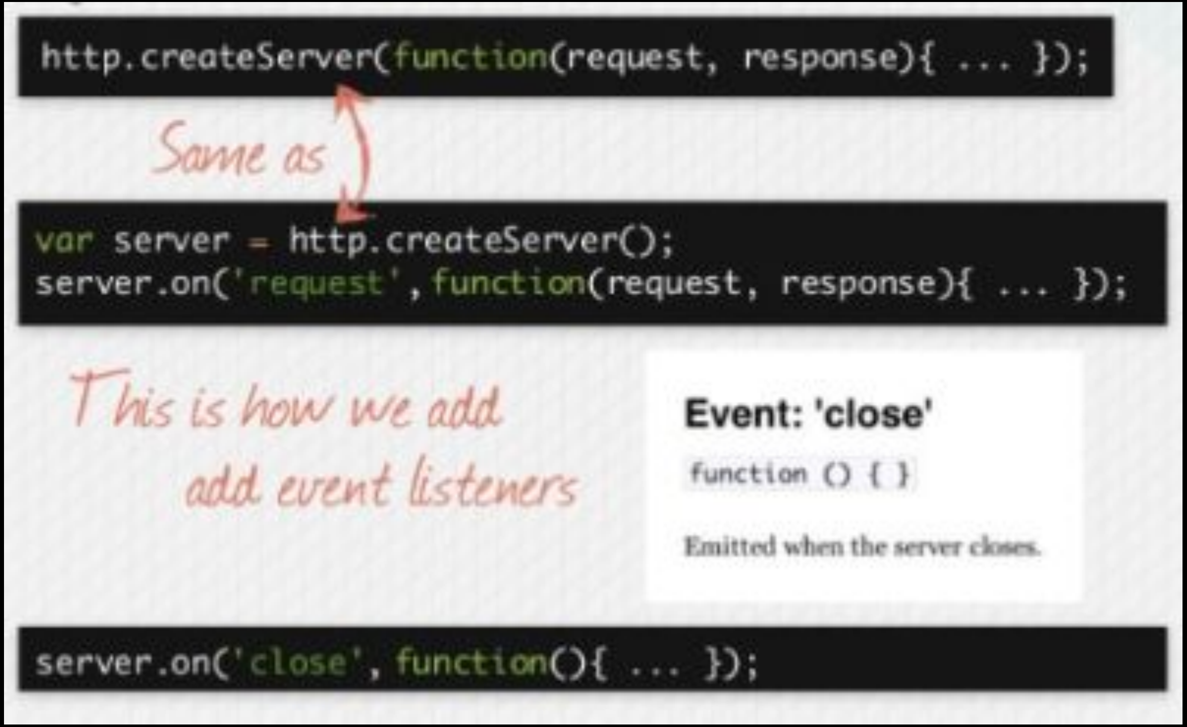
```
var request = require("request");

request("http://www.google.com", function(error, response, body)
{
  console.log(body);
});
```

1 Using the request module

2 Making a GET request to Google.com

3 Sending the response from Google to console.log

# Alternate Syntax



```
http.createServer(function(request, response){ ... });
```

Same as

```
var server = http.createServer();
server.on('request',function(request, response){ ... });
```

This is how we add add event listeners

**Event: 'close'**

`function () { }`

Emitted when the server closes.

```
server.on('close', function(){ ... });
```