



# Blockchain simulator

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I am using this project as a demonstration in my Graduate Software Design course at Drexel University (SE575).

## Introduction

The purpose of this project is to demonstrate the "Blockchain Simulator". I used Node.js for this project. I used Express.js framework. I used JavaScript as the frontend.

- Link of the demo video:

<https://www.youtube.com/watch?v=kdofx9OhmHk&feature=youtu.be>

- Link of the source code repository:

[https://github.com/SaimaMahmud/Final\\_Project\\_submission](https://github.com/SaimaMahmud/Final_Project_submission)

## Instructions

Because these are node projects, after cloning this repo you will need to run the following

```
>> npm install
```

```
>> npm install express
```

The run command for this project is:

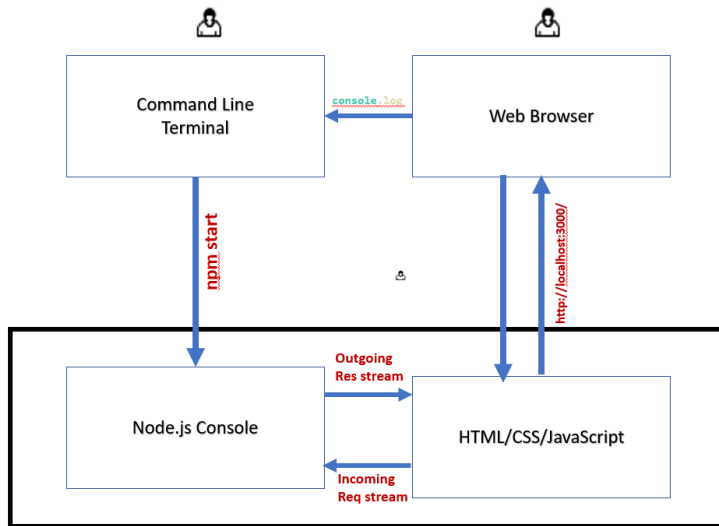
```
>> npm start
```

## Architecture

The context diagram contains:

- Command Line Terminal
- Web Browser
- Node.js Console
- HTML/CSS/JavaScript

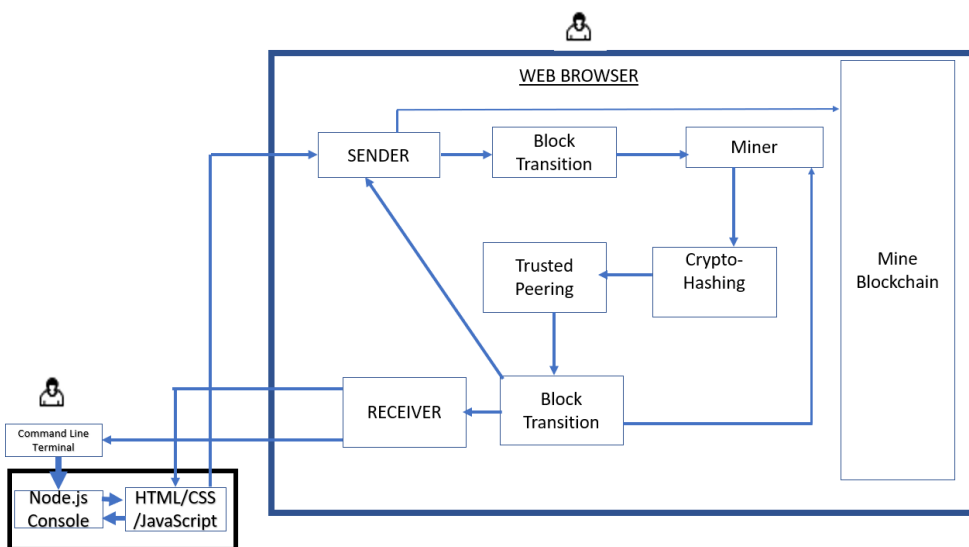
## Context Diagram



## Web Browser

In the "Web Browser" container is a placeholder for the architectural design of how the web page works. In the transition manner the sender sends bitcoins to the Miner and ask Miner to give a amount to the receiver and then give the rest of the coins back to the sender. As a mining reward the Miner will get 10% or 20% or 30% or 40% or 50% mining reward which depends on the sender that what he set as a reward. The miner solves the hash and approves the transition.

## Container Diagram



## Node.js Console

The Node.js Console container contains all the back-end architecture. Incoming Request stream comes to the Node.js control's Router. Router contains all the functions call.

So whenever we entered the localhost 3000 it goes to the router/index.js

```
router.get('/', function(req, res, next) {  
  res.render('index', { title: 'Blockchain Simulator' });  
});
```

and router.get get called. It calls this function with req and res variable, it renders the res. render line, it looks at the index{ title: and says I need to load the index page and it looks at this { title: 'Blockchain Simulator' }); and says I need to pass this variable to jade to render the index page.

So, it goes to the index. Jade and says I need to extend the layout in the file called layout looks out layout. Jade start rendering doctype HTML, head looks at

```
title= title
```

and says oh title=title I don't know what title is, looks at index.js

```
{ title: 'Blockchain Simulator' });
```

That we passed in and says okay title is equal to "Blockchain Simulator", goes back to layout. Jade replaces

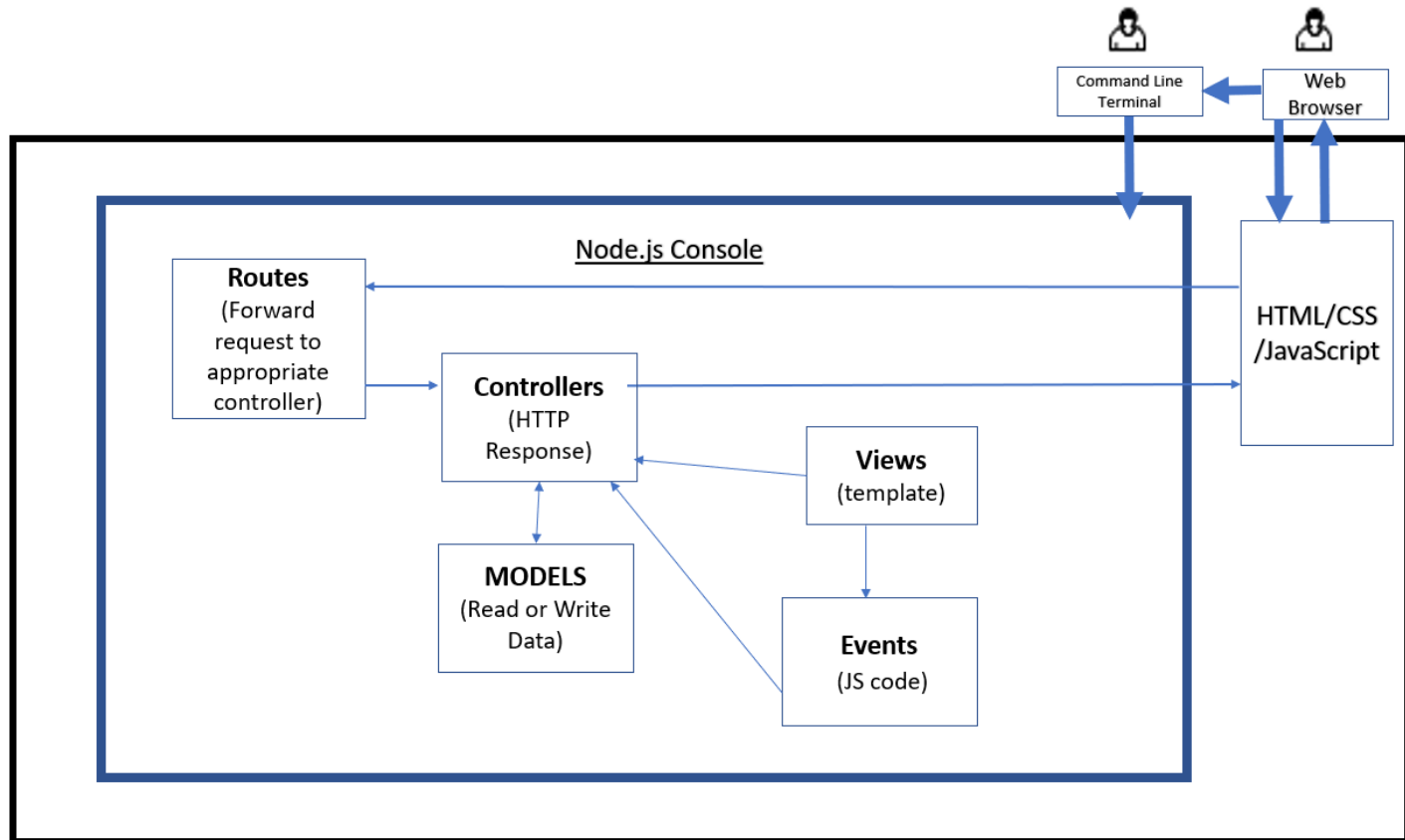
```
title= title
```

to "Blockchain Simulator", looks at link creates HTML link tag, close the body tag and then says I don't know what body content is, looks back at index. Jade and says okay block contents had been defines here and start appending the rest of the stuff in index. Jade in here.

Node is service side JavaScript, it doesn't run on client it doesn't run on your browser. It run on your server in the back end.

Express along with node help you serve pages. So view engine is a templating engine. What it does is it takes HTML file and allows us to export stuff inside the HTML file

## Container Diagram



## HTML/CSS/JavaScript

The HTML/CSS/JavaScript contains all the frontend JavaScript code. It sends back and forth the request stream and response stream. It creates servers and stored variable in the server.

## Container Diagram

